

15. NEUROLOGICAL MANIFESTATIONS

15.1 Introduction

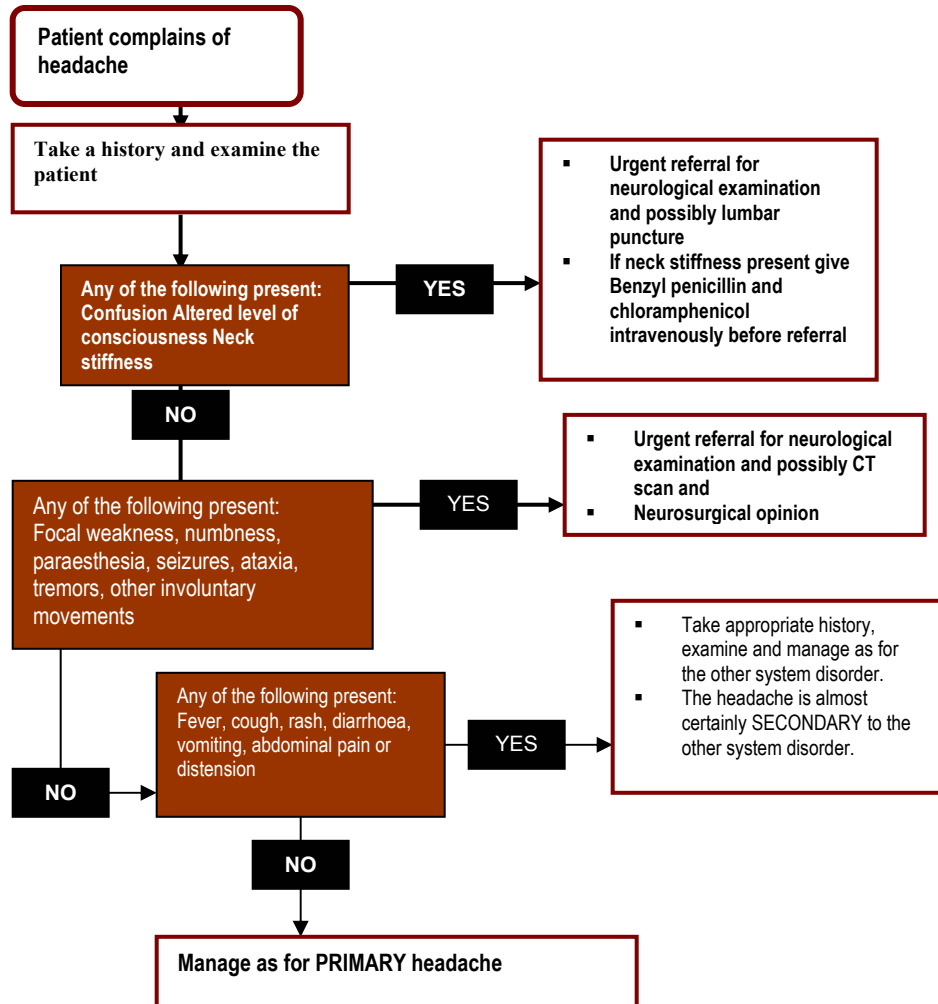
In addition to being lymphotropic, HIV is a neurotropic virus as well. Invasion of the nervous system occurs soon after infection is acquired. HIV infected persons are prone to developing opportunistic infections, including infections affecting the nervous system, and are also prone to developing manifestations related to the effects of the virus on the central and peripheral nervous system. A large range of clinical neurologic syndromes may therefore occur in persons with HIV infection.

Neurological symptoms are common in persons with HIV infection. It is therefore important for the care provider to carefully assess all patients with symptoms related to the nervous system. The health worker should determine when a symptom is serious and what to do about it.

15.2 Headache

A common form of headache is the **tension-type headache (TTH)**. This is very common in the general population, and even more common in persons with HIV infection. Serious causes can usually be excluded from the history. A few patients with headache should be referred for investigations and specialist management. An approach to the diagnosis and management of headache in persons with HIV infection is shown in section 15.2.1.

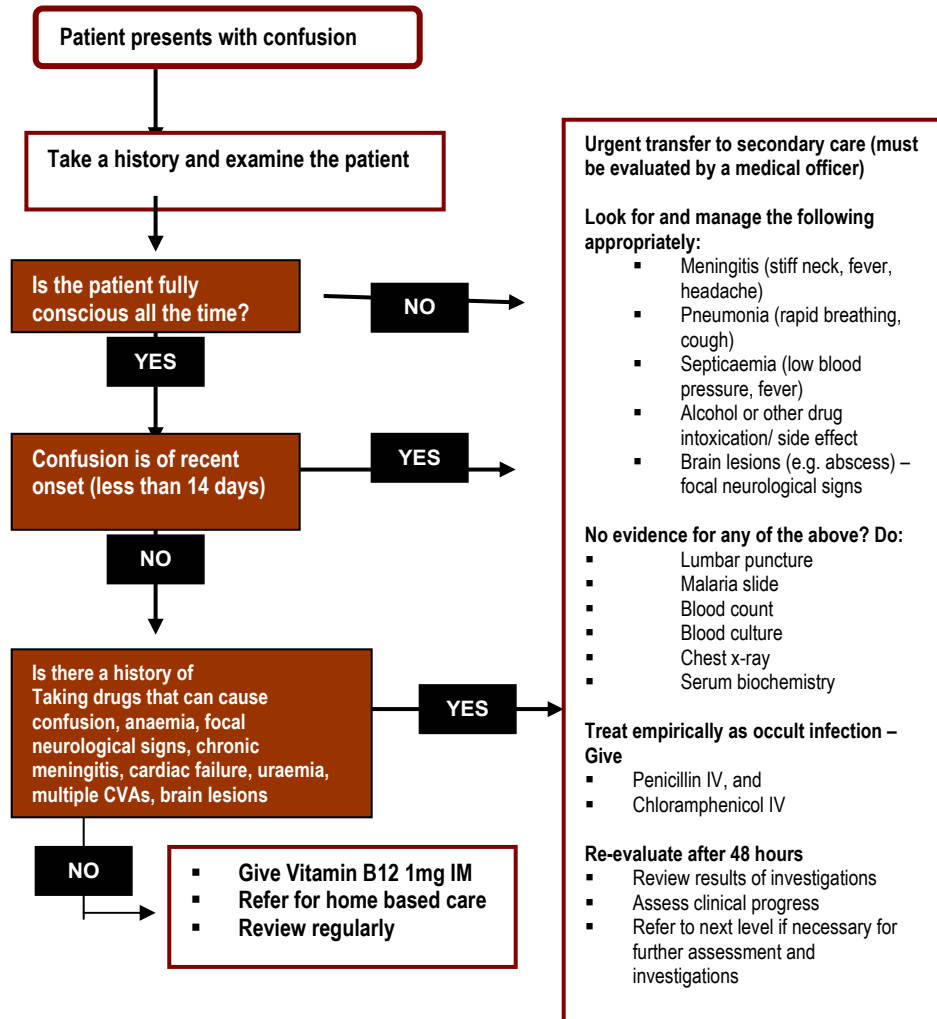
15.2.1 Guidelines for the assessment of headache in persons with HIV infection



15.3 Confusion and

Acute confusional state requires urgent treatment in order to prevent intellectual (cognitive) impairment. The diagnostic plan for whom they know to be section 15.3.1. The home-based care s

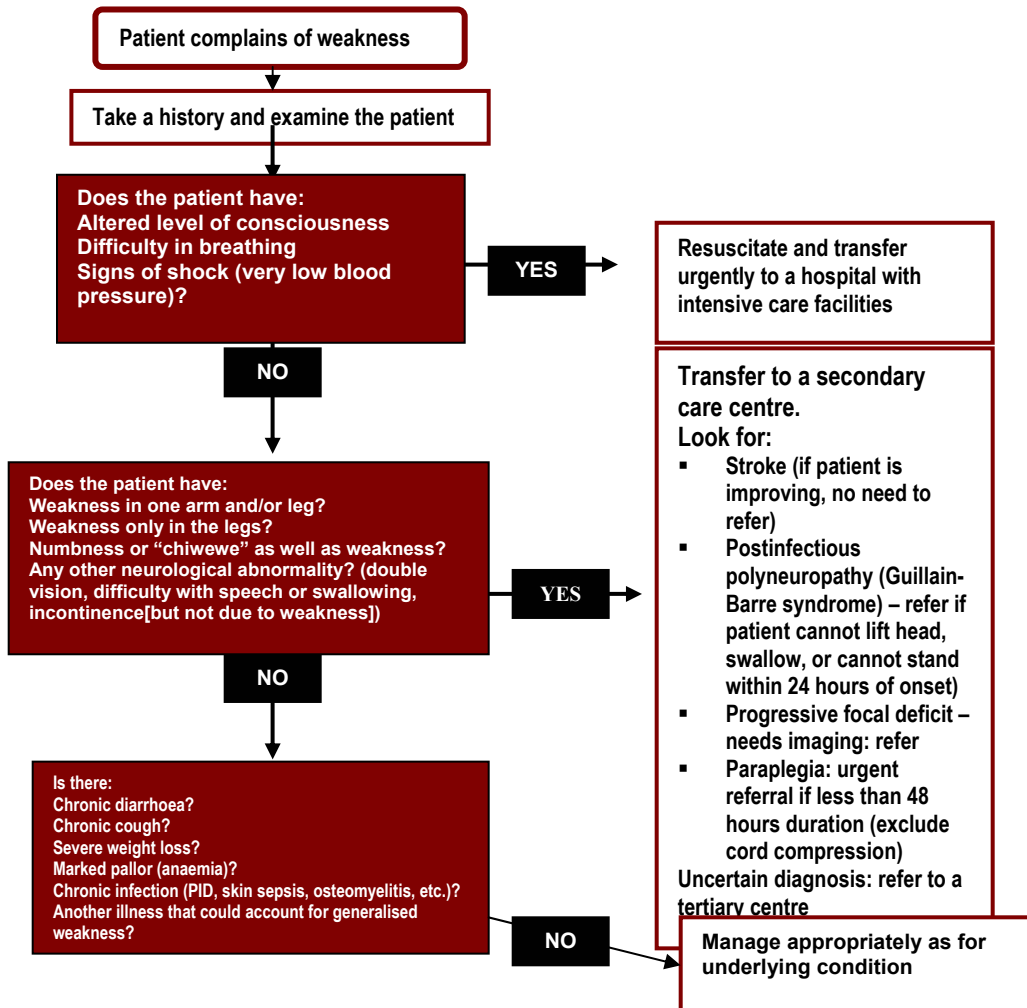
15.3.1 Guidelines for the assessment of confusion in persons with HIV infection



15.4 Weakness - focal or generalised

Persons with HIV infection commonly complain of weakness, and the causes are often not related to the nervous system but other conditions (like chronic diarrhoea, anaemia or pulmonary tuberculosis) they suffer from. Focal weakness (like one arm and leg, or just the legs), or an abrupt onset, as well as accompanying sensory symptoms (numbness or parasthesiae) suggest a neurological cause, and are often best evaluated at a tertiary centre where imaging of the brain or spinal cord can be considered. A diagnostic plan for the assessment of HIV infected persons who present with weakness is shown in section 15.4.1.

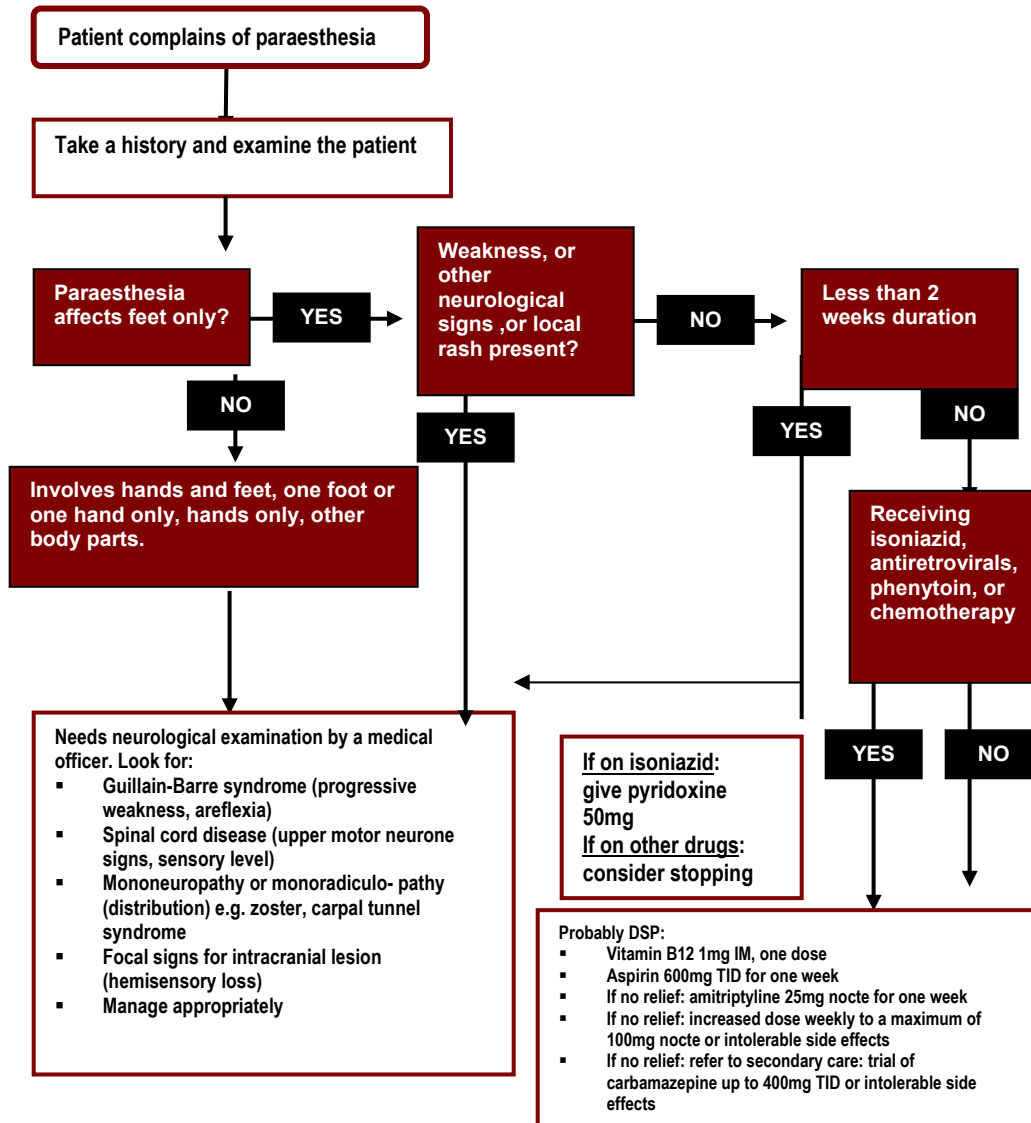
15.4.1 Guidelines for the assessment of weakness in persons with HIV infection



15.5 Peripheral paraesthesia (chiwewe)

A burning sensation involving both feet is typical of the distal symmetrical polyneuropathy (DSP) seen in persons with HIV infection. Simple drug treatments may improve this symptom, but other causes of paraesthesiae need to be excluded. In section 15.5.1 a diagnostic and management plan for peripheral parasthesiae is given.

15.5.1 Guidelines for the assessment of paraesthesia in persons with HIV infection



15.6 Seizures (fits)

Seizures occurring for the first time in persons with HIV infection should be investigated at a tertiary centre for a possible focal cause, if possible by CT

head scan. Recurrent seizures, the first of which occurred more than six months prior to presentation, may be treated as epilepsy (see EDLIZ).

15.7 Involuntary movements

Involuntary movements of different types may occur in persons with HIV infection. It is important to identify the type of involuntary movement and to determine the nature of onset and progression. Involuntary movements include the following. Each symptom should be assessed carefully:

- Tremor - this may be intention, positional or at rest, and may be fine or coarse, symmetrical or asymmetrical
- Chorea - this may be unilateral or bilateral, often it occurs in association with dementia
- Dystonia - this may be focal (blepharospasm, torticollis) or generalised
- Tardive dyskinesia - this may occur in association with phenothiazines administration or may occur without a known precipitating factor

The differential diagnosis of causes is wide, and includes opportunistic infections as well as direct brain involvement by HIV. These patients are best assessed at a tertiary care level, for optimal management.

15.8 Management of neurologic conditions in persons with HIV infection

HIV is both a lymphotropic and a neurotropic virus. Effects on the nervous system by HIV infection may be through the direct effect of the virus on nerve cells and tissue or through the effect of opportunistic infections. Table 15.1 gives a summary of the neurologic manifestations of HIV infection.

Table 15.1 Neurologic manifestations of HIV infection
<p>Directly HIV-related</p> <ul style="list-style-type: none"> ▪ Seroconversion syndromes ▪ Cognitive impairment ▪ Neuropathy: <ul style="list-style-type: none"> ▪ Distal symmetrical polyneuropathy ▪ Acute demyelinating polyneuropathy (Guillain Barre syndrome) ▪ Mononeuropathy ▪ Autonomic polyneuropathy ▪ Myopathy (Polymyositis)
<p>Indirectly HIV-related</p> <ul style="list-style-type: none"> ▪ Opportunistic infections: <ul style="list-style-type: none"> ▪ Meningitis ▪ Toxoplasmosis ▪ Bacterial cerebral abscess ▪ Tuberculoma and spinal TB ▪ Transverse myelitis ▪ Radiculopathy (herpes zoster, CMV) ▪ Progressive multifocal leukoencephalopathy ▪ Pyomyositis ▪ Malignancy (primary CNS lymphoma) ▪ Cerebrovascular disease ▪ Thromboembolic stroke ▪ Intracranial haemorrhage

15.8.1 Management of directly HIV-related conditions

1. Neuropathy

This is most commonly distal symmetrical polyneuropathy (DSP), presenting as “burning feet”. It is important to exclude drugs, such as isoniazid, anticonvulsants, antiretroviral agents and vitamin B12 deficiency as causes. If B12 level assay is not available, three doses of Vitamin B12, 1mg IM on successive days, are given.

In the case of motor signs (any distal weakness out of proportion to the patient’s overall state of health), referral to a tertiary centre to exclude chronic inflammatory demyelinating polyneuropathy (CIDP), which responds to prednisolone, is indicated.

Symptomatic treatment for pain is with amitriptyline, 25mg at night increasing in 25 mg steps every two weeks up to 100mg or until there is adequate pain relief.

If pain persists on 100mg amitriptyline (or the dose is not tolerated), carbamazepine starting at 200 mg daily and increasing by 200mg per week to 400mg TID (if tolerated) may be added.

If pain still persists on the above, oral morphine starting at 20mg qid should be substituted for the carbamazepine and doubled until there is adequate pain relief.

2. Polymyositis and acute polyneuropathy (Guillain-Barre syndrome)

These conditions present in a similar fashion with progressive generalised weakness. Because of the risk of respiratory arrest, both should be managed in hospitals with facilities for intensive care (ventilation). The diagnosis is made by the presence of sensory signs, increased CSF protein and signs of demyelination on nerve conduction studies in the case of polyneuropathy; and by muscle tenderness, increased serum muscle enzymes and EMG as well as muscle biopsy changes in the case of polymyositis.

Both conditions benefit from intensive physiotherapy support, to prevent complications and to increase the rate of recovery. Patients are often kept in hospital for this.

15.8.2 Management of Indirectly HIV-related conditions

1. Meningitis

Table 15. 2 summarises the approach to the management of meningitis in HIV Infected individuals.

Table 15.2: Management of meningitis in HIV-infected individuals		
CSF findings	Likely diagnosis	Treatment
WBC: < 50 (<10 polymorphs) Protein: <100 mg/dl Glucose: > 50% of blood glucose level	Possibly HIV infection only, without other cause of meningitis	Symptomatic
WBC: > 50 (more than 90% lymphocytes) Protein: normal or high Glucose: > 50% of blood glucose level	Most likely viral meningitis. Possibly: partially treated bacterial, cryptococcal or syphilitic meningitis, encephalitis, or seroconversion illness	Symptomatic. Observe in hospital. Repeat lumbar puncture if still symptomatic after one week
WBC: >50 (more than 90% lymphocytes) Protein: Normal or high Glucose: < 50% of blood glucose level	TB meningitis likely. Differential: includes bacterial, cryptococcal meningitis	Start Anti-TB drugs and prednisolone 40 mg daily for two weeks Repeat lumbar puncture after one week
WBC: > 50 (more than 10 polymorphs) Protein: normal or high Glucose normal or low	Bacterial meningitis. Differential includes TB, cryptococcal meningitis	Continue antibacterial drugs. Add anti-TB drugs if no better in 48 hours.
India ink stain shows cryptococci	Cryptococcal meningitis	Amphotericin B and flucytosine or fluconazole if available (see Section 8.3) Otherwise symptomatic only: analgesia and terminal care

2. Toxoplasmosis

Fever and focal neurological signs are indications for referral to a central hospital and CT scan of the head. The differential diagnosis includes cerebral abscess, toxoplasma encephalitis, tuberculoma, and other parasitic infection. If a single focal contrast-enhancing lesion < 2cm in diameter or multiple lesions are present on scan and the patient is known to be HIV infected or is suspected to be HIV-infected on clinical grounds, start treatment for toxoplasmosis:

Treatment of cerebral toxoplasmosis						
Drug	Codes		Adult dose	Route	Frequency	Duration
Pyrimethamine	B	E	50mg	PO	OD	6 weeks
AND						
Sulphadiazine	S	E	2g	PO	QID	6 weeks

- Clindamycin 600mg PO TID PLUS pyrimethamine 50mg PO OD OR cotrimoxazole 1600mg/320mg PO TID may be used. Long-term chemoprophylaxis with cotrimoxazole should be given after the initial 6 weeks of treatment
- If there is no response clinically and on CT scan in two weeks, or if the lesion appears atypical, consider neurosurgical intervention

3. Bacterial cerebral abscess

When this diagnosis of cerebral abscess, is suspected - fever and focal neurological signs - **referral** to a central hospital and CT scan of the head are indicated. If a single, focal, contrast-enhancing lesion > 2cm in diameter is present on CT head scan, or an area suggestive of focal inflammation, start treatment as for bacterial meningitis and consider surgical drainage:

Treatment of cerebral abscess						
Drug	Codes		Adult dose	Route	Frequency	Duration
BenzylPenicillin	C	V	5 million units	IV	QID	2 weeks

AND						
Chloramphenicol	B	V	500mg	IV	QID	2 weeks
OR						
Ceftriaxone	S	N	1g	IV	BID	2 weeks

- Joint neurosurgical and medical monitoring to react to complications (rising intracranial pressure, acute hydrocephalus) is essential.

4. Transverse myelitis

If a patient develops rapidly progressive weakness of both legs, with or without involvement both arms, it is important to rule out spinal cord compression urgently, as surgical intervention within 24 hours of paraplegia may restore neurological function. The hallmark of a spinal cord lesion is a sensory level (loss of sensation below the distribution of a spinal segment, usually on the trunk). All patients with acute onset of bilateral leg weakness require referral to a tertiary centre for evaluation by physicians and/or neurosurgeons.

If spinal cord compression has been excluded, usually by imaging techniques (myelogram or MRI), transverse myelitis is diagnosed clinically. Many different viruses (herpesviruses, CMV, echoviruses), as well as *Cryptococcus neoformans* and *Toxoplasma gondii* may cause transverse myelitis. Lumbar puncture is necessary to exclude treatable causes such as spinal meningitis (commonly tuberculous or cryptococcal), herpes zoster and toxoplasma.

The nursing and rehabilitation management of patients with transverse myelitis depends on their neurological status. About one third remain paraplegic, and these need high levels of care, usually with a period of inpatient management in a rehabilitation unit. The remainder have varying levels of recovery, and benefit from close attention to prevent complications (pressure sores, urinary infections) while still symptomatic.