Failure to wake

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Royal College of Physicians - November 2017
From inability to let alone; from too much zeal for the new and contempt for what is old; from putting knowledge before wisdom; and science before art, and cleverness before common sense; from treating patients as cases; and from making cure of the disease more appressive than the endurance of same, Good Lord deliver us.

Sir Robert Hutchison
Failure to wake

- **Failure to wean**
  - persistent and prolonged weakness
  - focal deficit
  - Movement disorder

- **Failure to wake (to normal level of consciousness)**
  - After anaesthetic or sedation
  - After critical illness (± sedation)
Failure to wake

• **What state is the patient in?**
• **Why is the patient in that state?**

• **Patient unresponsive**
  - Coma
  - Unresponsive wakefulness
  - Minimally responsive
Failure to wake

• What state is the patient in?
• Why is the patient in that state?

• Encephalopathy / Delirium
• Mimic states
  ➢ Locked-in
  ➢ Psychogenic coma
  ➢ Eyes closed wakefulness
  ➢ Extensive paralysis (neuromuscular)
  ➢ Aphasia
Failure to wake after surgery or critical illness

Assessing the patient

- History
- Examination
  - Resuscitation & emergency treatment
  - Medical assessment
  - Establish level of consciousness
  - Identify brainstem activity
  - Search for lateralisation
- Communication with patient – Anxiety, Locked in, Vegetative
- Communication with relatives
Failure to wake after surgery or critical illness

- Prolonged effects of anaesthetic or sedation
- Medication contributing to continuing confusion and / or encephalopathy
- Complication or consequence of prolonged sedation / obtundation / ITU care
  - Sepsis
  - Metabolic
  - Nutritional
  - Therapeutic hypothermia
- Neurological cause
  - Primary event
  - Arisen as a consequence of critical illness or surgery
  - Arisen as an intercurrent event
Failure to wake after surgery or critical illness

- Stroke
- Hypoxic Ischaemic brain injury (HIBI)
- Epilepsy
- Infection / Parainfectious
- Autoimmune
- Inflammatory / Demyelinating
- Movement disorder
- Tumour
- Toxic / Nutritional
- Neuromuscular
- Other
  - Haematological
  - Organ failure
Failure to Wake

Sepsis

• Systemic Inflammatory Response Syndrome (SIRS)
• Severe Sepsis
• Refractory Shock
• Multiple Organ failure
• Adult Respiratory Distress Syndrome (ARDS)
• Septic encephalopathy
Failure to Wake

**Medication**

- **Dose and Duration of treatment**
- **Co-existing factors** Renal, hepatic impairment, sepsis, ileus
- **Metabolic** Elevated $K^+$, $Mg^+$. Low $PO_4$
- **Agent** Sedation, Anaesthetic agent
  - Neuromuscular blocking drugs
  - Inotropes, Steroids
  - Antibiotics
  - Other treatment
The Intensive Care Consult

Metabolic Encephalopathy

- Uraemic
- Hepatic
- Pancreatic
- Hyperpyrexia / Hyperthermia
- Hypoglycaemia / Hyperglycaemia
- Hyponatraemia / Hypernatraemia
- Ammonia
- Endocrine – Addison, Hypopituitary, Thyroid storm
Metabolic & Endocrine Encephalopathy

Hepatic encephalopathy (manganese deposits)

Pituitary lesions
Intracerebral haemorrhage secondary to tPA treatment
Failure to wake – brainstem stroke
Failure to wake – subarachnoid haemorrhage
Failure to wake – venous infarction
Failure to wake – Artery of Persheron
Fat Embolism Syndrome

Failure to wake – Unusual embolism
Fat Embolism Syndrome

Failure to wake – Unusual embolism
Failure to wake – Other causes of stroke
Failure to wake - Hypoxic Ischaemic Brain Injury
Failure to wake – Status epilepticus
Non-convulsive complex partial status epilepticus.

Post-anoxic lateralised myoclonic status in a 54-year-old comatose man.
Failure to wake – infections (HIV)

Toxoplasmosis

Cryptococcus

Aspergilloma

CD8 encephalitis
Failure to wake – Abscess
Failure to wake – Tuberculous meningitis
Failure to wake – Parainfectious demyelination

Acute disseminated encephalomyelitis (ADEM)
Failure to wake – Acute haemorrhagic leukoencephalopathy

Shiva Kumar R., and Abraham Kuruvilla Neurology
2009;73:e98

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Failure to wake –
Autoimmune Encephalopathy – Limbic Encephalitis

- Paraneoplastic
  - Hu, CV1,2, Ma2, AMPAR, Amphyphysin
- Non-Paraneoplastic –
  - VGKC, LGI1, CASPR2, NMDA, GAD, Glycine, IGLON5, GABA_B,
- Corticosteroid responsive encephalopathy with thyroid autoimmunity
- Seronegative autoimmune encephalopathy
Failure to wake

Limbic encephalitis

Steroid responsive encephalopathy with thyroid autoimmunity

Limbic encephalitis
Failure to wake – Brainstem Encephalitis

- Acute, Coma
- Cranial nerves - Eye movement, Bulbar, Respiratory
- Pyramidal
- Cerebellar ataxia

Causes
  - Paraneoplastic
  - Bickerstaff
  - MFS
  - Infective – Viral, Campylobacter, Mycoplasma, Listeria, Borrelia,
  - Inflammatory – MS, ADEM, Behcet’s, Sarcoidosis
  - Vasculitis – SLE
  - Autoimmune – IGLON5
Failure to wake – Posterior Reversible Encephalopathy

CLINICAL FEATURES

• No prodrome, onset few hours.
• Peak at 12-48hrs. Usually resolves over 1/52
• Headache, Nausea
• Altered mental state
• Seizures - GTCS / focal; Status epilepticus; Convulsive / Non-convulsive
• Disturbed vision - Blurred, neglect, hallucinations, HH, cortical blindness
• Focal signs (rare) - Brainstem / hemiparesis

• Blood pressure - Usually elevated, systolic 170-190 but can be normal
Failure to wake - Toxic Encephalopathy
Failure to wake - Central Pontine and Extrapontine Myelinolysis
Failure to wake – Metabolic & Nutritional
Failure to wake – Neuromuscular Disease

Mitochondrial Porphyrria
Myotonic dystrophy
Diaphragm paresis
The Intensive Care Consult

It’s OK to say:

• I don’t know
• Its too early to tell
• It may be your treatment
• You need to get a full history
• You need to get an MRI
• You need to order an EEG / EMG
• You need to do a CSF