


# DELIRIUM



**Dr VTR Ntsanwisi**  
**Consultant Psychiatrist**  
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# Definition

- Acute onset of fluctuating cognitive impairment
- Disturbance of consciousness
- Emotional lability, hallucinations or illusions, impulsive, irrational or violent behaviour
- Acute reversible disorder, may become irreversible
- Syndrome, NOT a disease
- Has many causes
- Medical emergency

# Diagnosis

According to etiology:

- Delirium due to general medical condition
- Substance intoxication delirium
- Substance withdrawal delirium
- Delirium NOS

# DSM-IV-TR Diagnostic Criteria

- A. Disturbance of consciousness
  - Reduced awareness of the environment
  - Reduced ability to focus attention
  - Reduced ability to sustain attention
  - Reduced ability to shift attention
- B. Cognitive change not resulting from dementia
- C. Quickly evolving (hours or days) with fluctuations
- D. There is evidence that the disturbance is caused by the direct physiological consequences of a general medical condition or a substance

# Key Features

- Altered consciousness with hyperarousal
- Hypoarousal with agitation or apathy
- Disorientation
- Memory impairment
- Illogical speech
- Perceptual disturbances
- Severe emotional lability
- Reversal of sleep-wake cycle

# Associated Neurological Symptoms

- Inco-ordination
- Dysphasia
- Tremor
- Asterixis
- Ataxia
- Apraxia

# Neuroanatomical – Neurophysiological Basis

- **Neurotransmitters**
  - Acetylcholine
  - Noradrenaline
- **Anatomical areas**
  - Reticular formation in brain stem
  - Dorsal tegmental pathway

# Epidemiology

- 10% of all hospitalised patients
- 20% of patients with burns
- 30% of ICU patients (↑ post-cardiotomy pts)
- 30% of hospitalised AIDS pts
- Very young and elderly pts
- ↑ rate in pts with a hx of brain damage or delirium
- More common in men than women



# Etiology

## CNS Disorder

- Seizure
- TBI
- SAH
- Subdural haematoma
- CVA

## Systemic Illness

- Infection
- Trauma
- Dehydration or volume overload
- Nutritional deficiency - Thiamine, Vit B<sub>12</sub>
- Burns
- Severe pain
- Heat stroke

# Etiology...

## Medications

- Pain medications (pethidine, morphine)
- Antibiotics
- Cardiac medications
- Antihypertensives
- Anticholinergics
- Antineoplastics
- Anaesthesia
- NMS (Dopamine antagonists)
- Serotonin syndrome
- Steroids

## Over the counter medication




- Herbal teas, nutritional supplements

# Etiology...

<b>Endocrine</b>	<ul style="list-style-type: none"><li>• Addisonian crisis</li><li>• Thyroid and parathyroid</li></ul>
<b>Haematological</b>	<ul style="list-style-type: none"><li>• Anaemia, Leukaemia, other blood dyscrasias</li></ul>
<b>Renal</b>	<ul style="list-style-type: none"><li>• Renal failure, uraemia, SIADH</li></ul>
<b>Hepatic</b>	<ul style="list-style-type: none"><li>• Hepatic encephalopathy</li></ul>
<b>Neoplasms</b>	<ul style="list-style-type: none"><li>• Brain tumour, metastasis, para- neoplastic syndrome</li></ul>
<b>Drugs of abuse</b>	<ul style="list-style-type: none"><li>• Intoxication and withdrawal</li></ul>
<b>Toxins</b>	<ul style="list-style-type: none"><li>• Heavy metals and aluminium</li></ul>

# Etiology...

## Metabolic Disorder

- Hypoglycaemia
  - Hyperglycaemia
-   Na<sup>+</sup>, Ca<sup>++</sup>, Mg<sup>++</sup>
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## Cardiac

- CCF
- Arrhythmias
- MI
- Post cardiectomy

## Pulmonary

- COPD, Hypoxia
- Acid base disturbance
- SIADH

# Physical Exam

Parameters	Findings	Clinical Implication
Pulse	Bradycardia	<ul style="list-style-type: none"><li>• ↑ ICP</li><li>• Hypothyroidism</li></ul>
	Tachycardia	<ul style="list-style-type: none"><li>• Hyperthyroidism</li><li>• Infection</li><li>• Heart failure</li></ul>
Temperature	Fever	<ul style="list-style-type: none"><li>• Septicaemia</li><li>• Thyrotoxicosis</li></ul>
Blood pressure	Hypotension	<ul style="list-style-type: none"><li>• Shock</li><li>• Hypothyroidism</li><li>• Addisons's disease</li></ul>
	Hypertension	<ul style="list-style-type: none"><li>• Encephalopathy</li></ul>

# Physical Exam...

Parameters	Findings	Clinical Implication
Respiration	Tachypnea	<ul style="list-style-type: none"><li>• Diabetes</li><li>• Pneumonia</li><li>• CCF</li><li>• Fever</li><li>• Metabolic acidosis</li></ul>
	Shallow breathing	<ul style="list-style-type: none"><li>• Alcohol or other substance intoxication</li></ul>
Carotid vessels	Bruits or ↓ pulse	<ul style="list-style-type: none"><li>• TIA</li></ul>
Scalp and Face	Evidence of trauma	<ul style="list-style-type: none"><li>• Sequelae of head trauma, TBI</li></ul>

# Physical Exam...

Parameters	Findings	Clinical Implication
Eyes	Papilledema	<ul style="list-style-type: none"> <li>• SOL (Tumour, haematoma, abscess)</li> <li>• Hypertensive encephalopathy</li> </ul>
	Pupillary dilatation	<ul style="list-style-type: none"> <li>• Anxiety</li> <li>• Autonomic over activity (e.g. Delirium tremens)</li> </ul>
Mouth	Buccal mucosa or tongue lacerations	<ul style="list-style-type: none"> <li>• Tonic clonic seizures</li> </ul>
Heart	Arrhythmia	<ul style="list-style-type: none"> <li>• AF with thrombi and emboli</li> <li>• ↓ cardiac output (Hypoxia / ischaemia)</li> </ul>
	Cardiomegaly	<ul style="list-style-type: none"> <li>• Hypertensive disease</li> <li>• CCF</li> </ul>

# Physical Exam...

Parameters	Findings	Clinical Implication
Lungs	Congestion	<ul style="list-style-type: none"><li>• Pulmonary oedema</li><li>• Pneumonia</li></ul>
Breath	Alcohol	<ul style="list-style-type: none"><li>• Intoxication / withdrawal delirium</li></ul>
	Ketones	<ul style="list-style-type: none"><li>• Diabetic ketoacidosis</li></ul>
Liver	Enlargement	<ul style="list-style-type: none"><li>• Cirrhosis</li><li>• Hepatic encephalopathy</li></ul>
Neck	Neck stiffness	<ul style="list-style-type: none"><li>• Meningitis, SAH</li></ul>
Thyroid	Enlarged thyroid	<ul style="list-style-type: none"><li>• Hyperthyroidism</li></ul>



# Physical Exam...Nervous System

Parameters	Findings	Clinical Implication
Reflexes	Asymmetry with Babinski's signs	<ul style="list-style-type: none"><li>■ SOL</li><li>■ Cerebrovascular disease</li><li>■ Dementia</li></ul>
	Snout	<ul style="list-style-type: none"><li>■ Frontal mass</li><li>■ Bilateral posterior cerebral artery occlusion</li></ul>
Abducent nerve (6 <sup>th</sup> cranial nerve)	Lateral gaze palsy	<ul style="list-style-type: none"><li>■ ↑ ICP</li></ul>
Hemiparesis / Hemiplegia	Asymmetrical	<ul style="list-style-type: none"><li>■ Mass lesion</li><li>■ Cerebrovascular disease</li></ul>
Autonomic	Hyperactivity	<ul style="list-style-type: none"><li>■ Anxiety</li><li>■ Delirium</li></ul>

# Laboratory Workup

- Blood chemistries – arterial blood gases
- U&E, Creatinine, Glucose
- LFT, TFT
- Syphilis serology, HIV screen
- Urinalysis, urine & blood drug screen
- ECG, EEG
- Chest X-ray, CT scan, MRI
- CSF
- B<sub>12</sub> and Folic acid

# Management

## Principles of Mx:

- History
- Behaviour control
- Physical examination
- Lab investigations
- Specific interventions / Rx underlying cause

# Management...

- Provide physical support - Safety
- Sensory support – prevent ↓ / ↑ over stimulation
- Environmental support – Familiarity (regular sitter)
- Orientation – Calendars, clocks
- Prevention of black patch delirium – post cataract surgery

# Management...

## Pharmacotherapy:

- Haloperidol - Psychosis
- Lorazepam - Agitation, Insomnia
- Quetiapine and Clozapine – Parkinson's disease
- Diazepam / Librium - Alcohol withdrawal

# Delirium v Dementia

Feature	Delirium	Dementia
Onset	Rapid	Slow
Duration	Hours to weeks	Months to years
Attention	Fluctuates	Stable
Memory	Impaired recent and immediate memory	Impaired remote memory
Speech	Incoherent (slow or rapid)	Word finding difficulty
Sleep-wake cycle	Reversal	Fragmented
Thoughts	Disorganized	Impoverished
Awareness	Reduced	Unchanged
Alertness	Hypervigilant or reduced vigilance	Usually normal