

Acute Non-Traumatic Coma in Childhood

Sam Gwer



So who has Coma

British Man Pleads Guilty After Faking 2 Year Coma to Avoid Court, Cops Say



So who has Coma

Table 1. Coma scales used in the study.

Blantyre coma scale		Glasgow coma scale		Adelaide paediatric coma scale		AVPU	
<i>Eye response</i>							
Directed eye movement	1	Spontaneous	4	Spontaneous	4	Alert	4
Not directed	0	To speech	3	To speech	3	Voice	3
		To pain	2	To pain	2	Pain	2
		None	1	None	1	Unresponsive	1
<i>Best verbal response</i>							
Appropriate cry	2	Oriented	5	Oriented	5		
Inappropriate cry/moan	1	Confused	4	Words	4		
No cry	0	Inappropriate words	3	Vocal sounds	3		
		Incomprehensible sounds	2	Cries	2		
		None	1	None	1		
<i>Best motor response</i>							
Localises pain	2	Obeys	6	Obeys commands	5		
Withdraws from pain	1	Localises	5	Localises pain	4		
No response	0	Withdraws	4	Flexion to pain	3		
		Abnormal flexion	3	Extension to pain	2		
		Extensor response	2	None	1		
		None	1				
Total 0–5		Total 3–15		Total 3–14		Total 1–4	

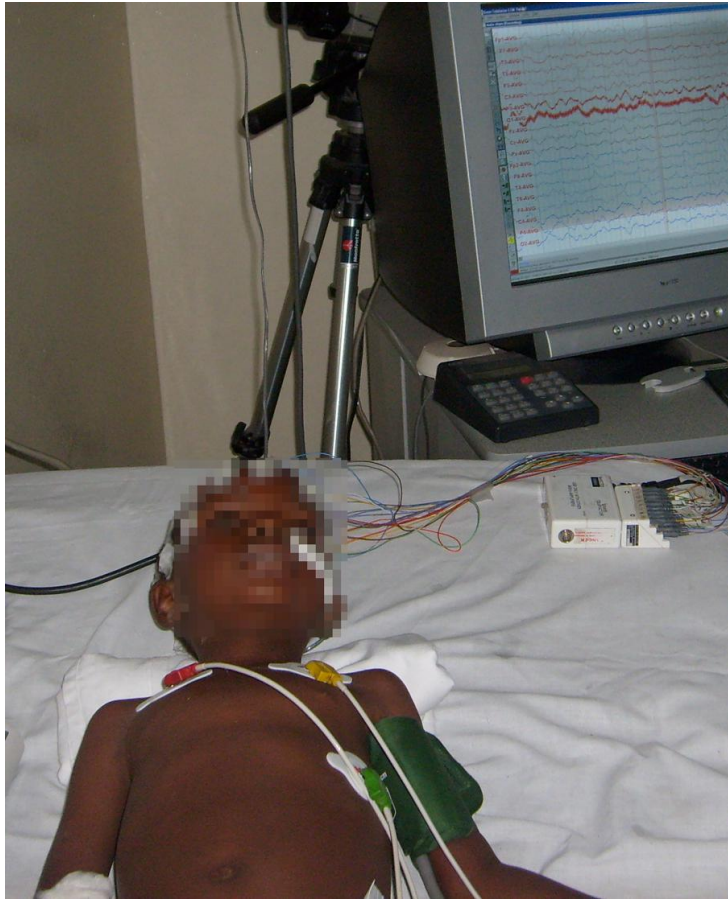
Epidemiology and prognosis of coma in daytime television dramas

David Casarett, Jessica M Fishman, Holly Jo MacMoran, Amy Pickard, David A Asch



89% Recovery Rate, 86% no functional deficit on the day of recovery

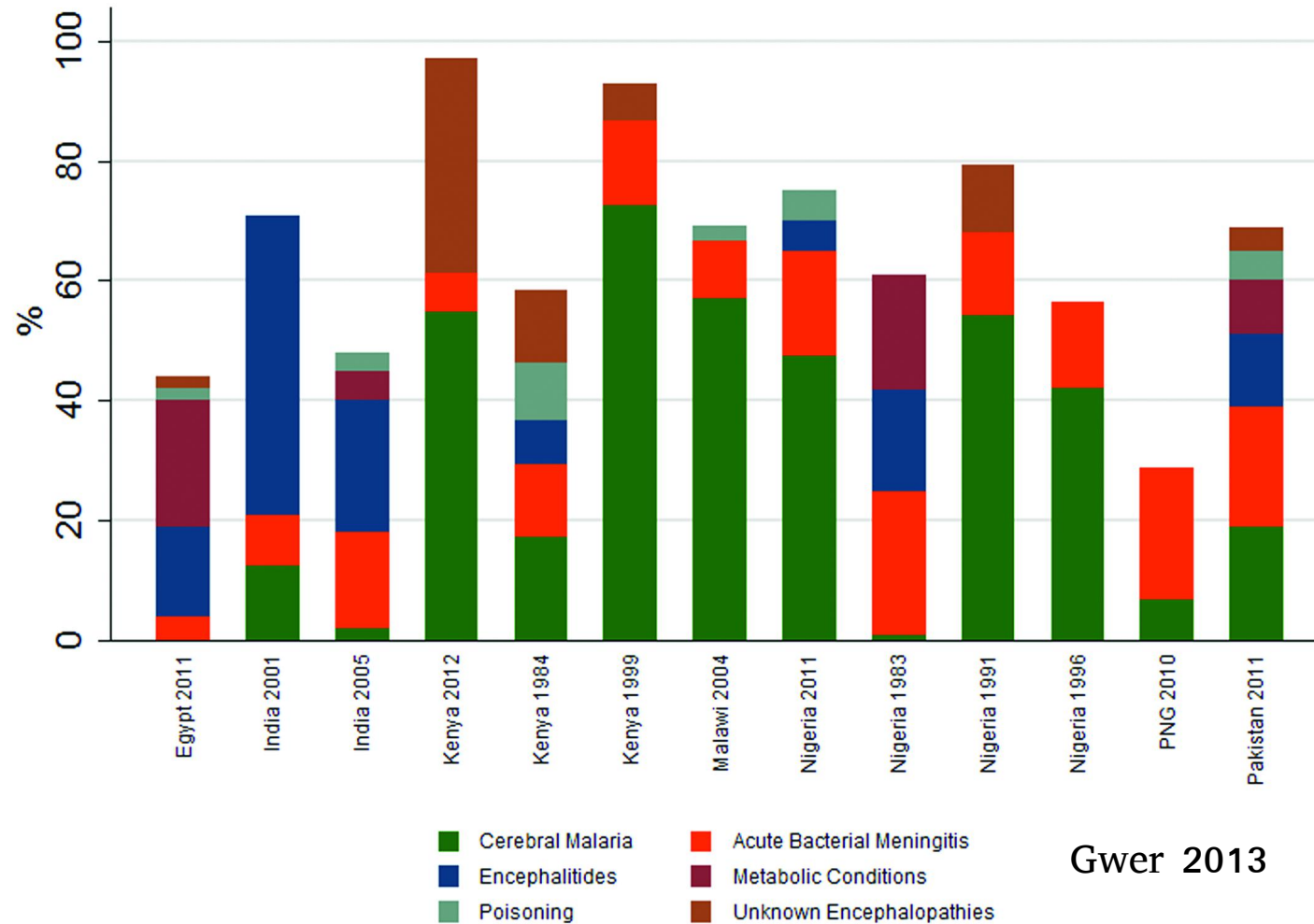
Childhood Acute Non-Traumatic Coma



- Up to 33% case fatality and significant occurrence of Neuro-cognitive sequelae
 - Impaired attention, memory, social functioning
 - Hearing loss
- Acute Bacterial Meningitis, Cerebral Malaria, Viral Encephalitides

Anga 2010, Ibekwe 2011, Fouad 2011, Carter 2003, Kihara 2009, John 2008, Pelkonen 2009

Aetiology of Childhood Acute Non-Traumatic Coma in RPCs



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Aetiology of Childhood Acute Non-Traumatic Coma in RPCs

Horsting et al. *BMC Anesthesiology* (2015) 15:65
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RESEARCH ARTICLE

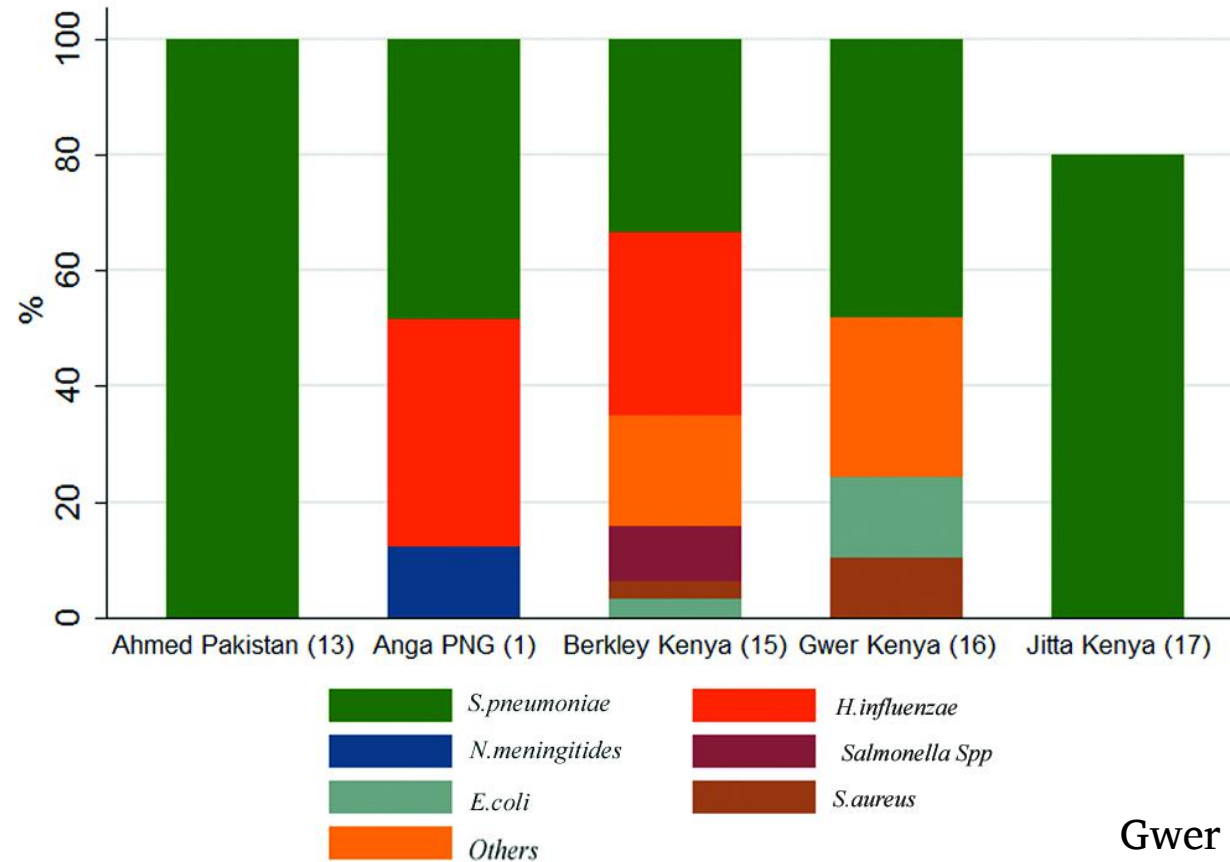
Open Access

The etiology and outcome of non-traumatic coma in critical care: a systematic review

Marlene WB Horsting^{1†}, Mira D Franken^{1†}, Jan Meulenbelt^{1,2}, Wilton A van Klei¹ and Dylan W de Lange^{1,2}

Stroke (6-54%), Post-anoxic coma (3-42%), Poisoning (<1-39%) and Metabolic causes (1-29%)

Bacterial Aetiology



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Viral Aetiology

Viral CNS infections in children from a malaria-endemic area of Malawi: a prospective cohort study

Macpherson Mallewa, Pam Vallely, Brian Faragher, Dan Banda, Paul Klapper, Mavuto Mukaka, Harriet Khoji, Paul Pensulo, Terrie Taylor, Malcolm Molyneux, Tom Solomon

Summary

Background Fever with reduced consciousness is an important cause of hospital admission of children in sub-Saharan Africa, with high mortality. Cerebral malaria, diagnosed when acute *Plasmodium falciparum* infection and coma are recorded with no other apparent reason, is one important cause. We investigated whether viruses could also be an important cause of CNS infection in such patients, and examined the relative contribution of viral pathogens and malaria parasitaemia.

Methods We did a prospective cohort study in Blantyre, Malawi. From March 1, 2002, to Aug 31, 2004, we enrolled children aged between 2 months and 15 years who were admitted to hospital with suspected non-bacterial CNS

Viral Aetiology in 26% (n/N:133/513)
Adenovirus 32%, Mumps 22%, HHV6 12%, Rabies 11%, CMV 9%,
HSV1 6%, Enteroviruses 6%, Others 11%
Viral aetiology in 35% of clinical CM
Dual infection - increases risk of seizures and 38% mortality

Mallewa2013

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Differentiating the pathologies of cerebral malaria by *postmortem* parasite counts

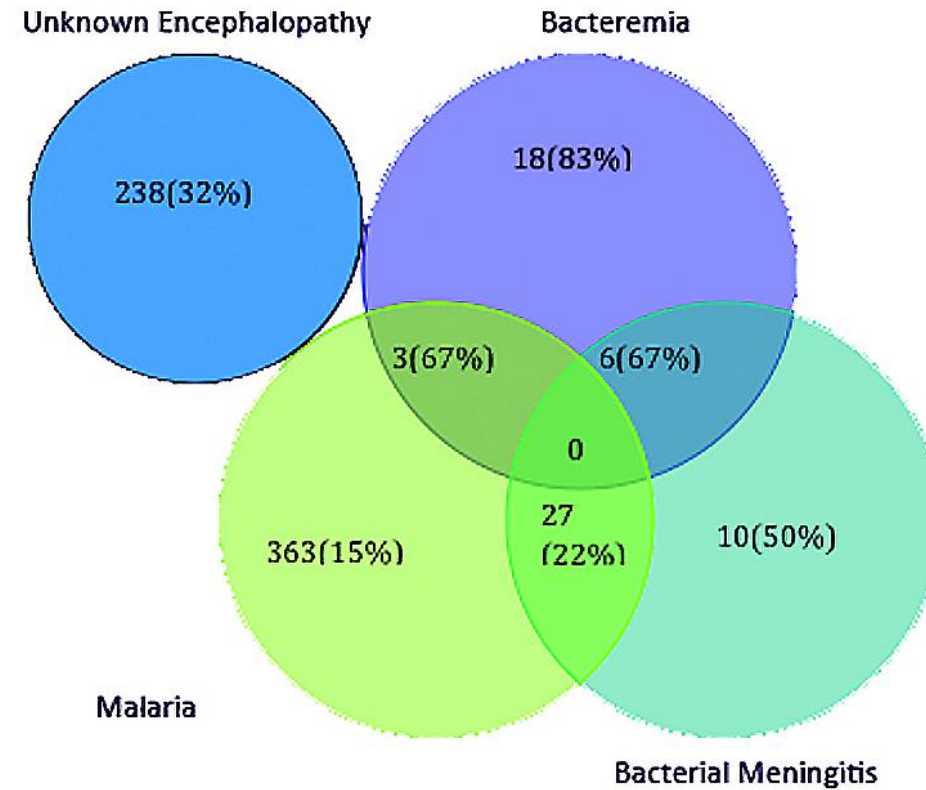
Terrie E Taylor^{1,2}, Wenjiang J Fu^{3,11}, Richard A Carr⁴, Richard O Whitten⁵, Jeffrey G Mueller⁶, Nedson G Fosiko², Susan Lewallen⁷, N George Liomba⁸ & Malcolm E Molyneux^{9,10}

To study the pathogenesis of fatal cerebral malaria, we conducted autopsies in 31 children with this clinical diagnosis. We found that 23% of the children had actually died from other causes. The remaining patients had parasites sequestered in cerebral capillaries, and 75% of those had additional intra- and perivascular pathology. Retinopathy was



Taylor 2004

Aetiology of Childhood Acute Non-Traumatic Coma in RPCs

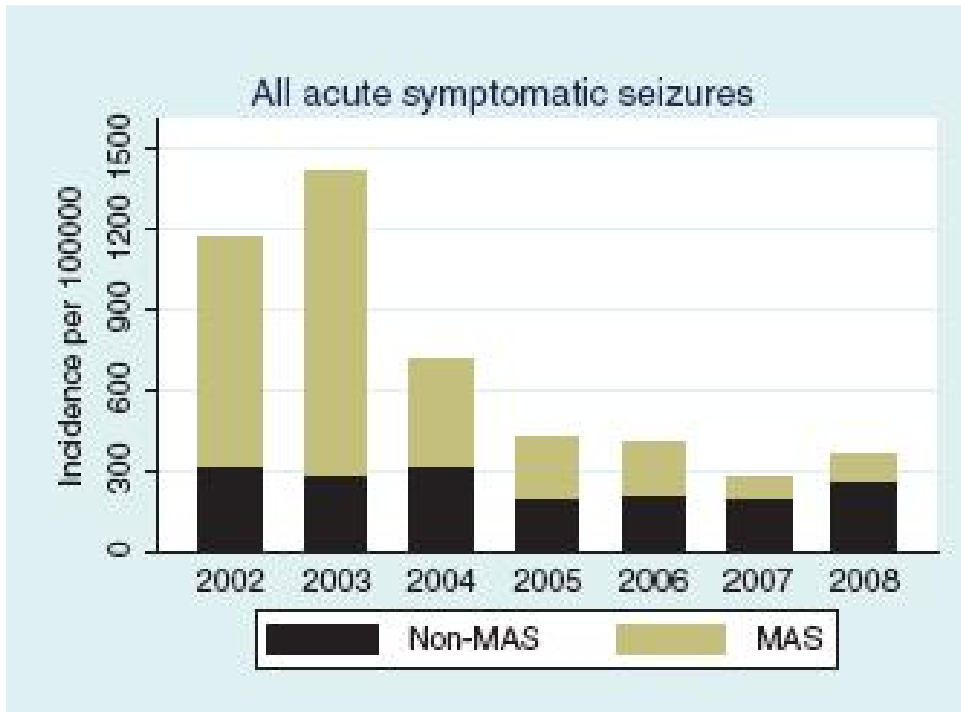


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Risk Factors for Poor Outcome

- Seizures 48hrs after Admission (Seizures within 24 hours of Admission - Good Outcome)
- Features of Raised Intracranial Pressure
- Depth of Coma
- Hypotension
- Breathing Difficulties at Admission
- Bacterial and Viral Aetiology

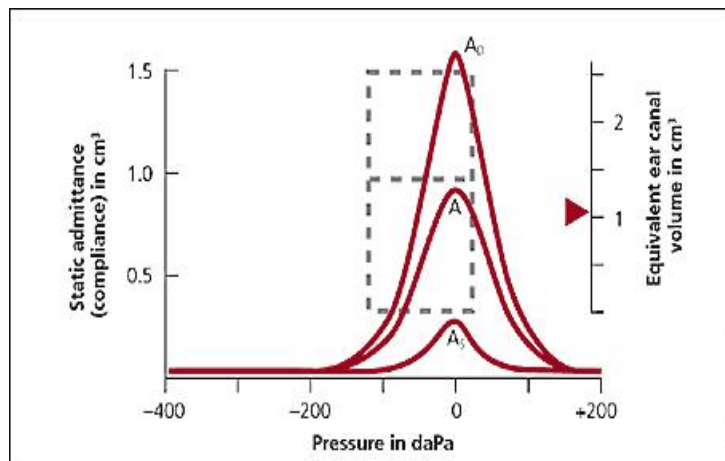
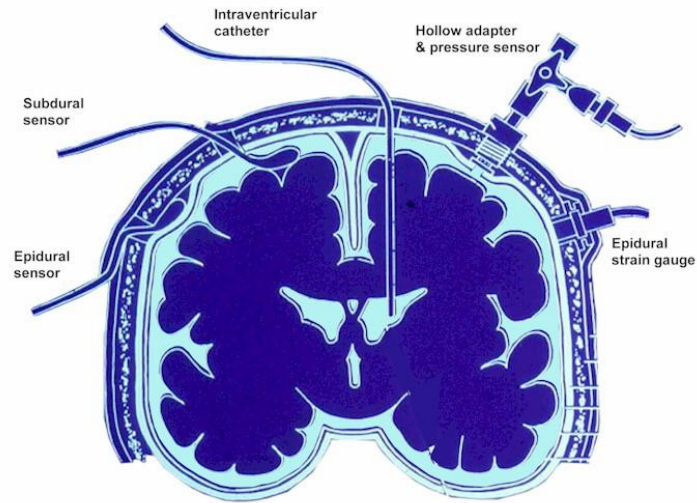
Seizures and Non-Convulsive Seizures



Kariuki 2011

- Clinical observations do not detect 2 out of every 3 observed seizures
- 93% of seizures on EEG can be detected by leads in 1-4 EEG channel leads
- The relationship between electrographic seizures and outcome is not clear
- What is the role of prophylactic anti-epileptic drugs?
 - Fosphenytoin
 - Phenobarbital

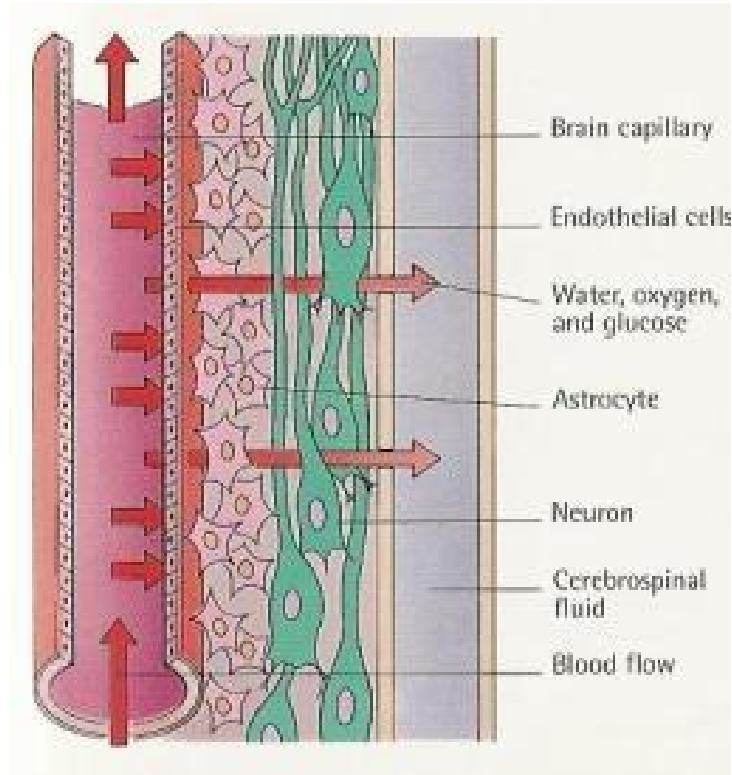
Raised Intracranial Pressure



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- Raised ICP a common complication of non-traumatic encephalopathy
Newton 1997, Kumar 2009
- Intensive monitoring and management of RICP and CPP could improve outcome
Simma 1998, Khanna 2000
- Children with abnormal tympanometry had greater risk of death compared to those without (OR 16.3 95% CI 1.7, 158.5; $P < 0.001$)
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Raised Intracranial Pressure



- Hypertonic Saline useful in acute traumatic and non-traumatic encephalopathy
- Oral glycerol may be useful in children with ABM

Abnormal Movements in Coma

A Upper pontine damage



B Upper midbrain damage



- Seizures
- Posturing
- Shivering and Tremors
- Disordered gesticulation and attacks of orofacial dyskinesia

Other Stories

- Managing status epilepticus
- Mechanical ventilation
- Shock
- Steroids

Opportunities for Greater Elucidation



Aetiology
Co-morbidity
Predisposition - Genetic
and Acquired