

Outcome Measure	Pediatric Glasgow Coma Scale (PGSC)
Sensitivity to Change	Yes
Population	Paediatrics
Domain	Global Outcome
Type of Measure	Objective measure of coma
ICF-Code/s	b1-b8
Description	<p>The Glasgow Coma Scale (GCS) is clinician-administered scoring system, designed to assess depth and duration of impaired consciousness and coma arising from any medical condition. The Paediatric Glasgow Coma Scale (also known as Paediatric Glasgow Coma Score or simply PGCS) is the equivalent of the Glasgow Coma Scale (GCS) used to assess the mental state of child patients. As many of the assessments for an adult patient would not be appropriate for infant, the Glasgow Coma Scale was modified slightly to form the PGCS. As with the GCS, the PGCS comprises three tests: <u>eye</u>, <u>verbal</u> and <u>motor</u> responses. The three values separately as well as their sum are considered. The lowest possible PGCS (the sum) is 3 (deep coma or death) whilst the highest is 15 (fully awake and aware person).</p> <p>The PGCS examines hierarchical levels of functioning in three domains: Eye opening, Verbal response and Motor response. There are four levels of eye opening, ranging from the lowest level, no eye opening, not even in response to pain, through to the highest level, spontaneous eye opening. Five levels of Verbal response range from no verbal response, not even in response to pain, through to alertness, babbles, coos, words or sentences to usual ability. Six level of Motor response range from no motor response, not even in response to pain, through to obeying commands.</p> <p>Best eye response: (E)</p> <ol style="list-style-type: none"> 4. Eyes opening spontaneously 3. Eye opening to speech 2. Eye opening to pain 1. No eye opening or response <p>Best verbal response: (V)</p> <ol style="list-style-type: none"> 5. Smiles, oriented to sounds, follows objects, interacts. 4. Cries but consolable, inappropriate interactions.

	<p>3. Inconsistently inconsolable, moaning.</p> <p>2. Inconsolable, agitated.</p> <p>1. No verbal response.</p> <p>Best motor responses: (M)</p> <p>6. Infant moves spontaneously or purposefully</p> <p>5. Infant withdraws from touch</p> <p>4. Infant withdraws from pain</p> <p>3. Abnormal flexion to pain for an infant (decorticate response)</p> <p>2. Extension to pain (decerebrate response)</p> <p>1. No motor response</p> <p>Any combined score of less than eight represents a significant risk of mortality.</p> <p>The PGCS is commonly used in emergency medical services.</p>												
<p>Properties</p>	<p>PURPOSE</p> <p>The Paediatric Glasgow Coma Scale (PGCS) was created for children too young to talk, adjusting motor and verbal response criteria in relation to developmental stages from babies < 6 months of age to age 5 years.</p> <p>SCORING</p> <p>If a child is unable to speak as a result of damage to the speech centers of the brain (dysphasia), then a 'D' should be placed in the appropriate space on the assessment tool (Appleton and Gibbs 1998; Shah 1999).</p> <p>If a child has a tracheostomy or an endotracheal tube in situ, a 'T' should be marked in the appropriate space on the assessment tool (Aucken and Crawford 1999 ; Fischer and Matthieson, 2001). CHECK!! Page 35 (Tate, 2010).</p> <p>SCORE INTERPRETATION</p> <table border="0"> <tr> <td colspan="3">Eye Opening</td> </tr> <tr> <td>Score</td> <td>Age 1 Year or Older</td> <td>Age 0-1 Year</td> </tr> <tr> <td>4</td> <td>Spontaneously</td> <td>Spontaneously</td> </tr> <tr> <td>3</td> <td>To verbal command</td> <td>To shout</td> </tr> </table>	Eye Opening			Score	Age 1 Year or Older	Age 0-1 Year	4	Spontaneously	Spontaneously	3	To verbal command	To shout
Eye Opening													
Score	Age 1 Year or Older	Age 0-1 Year											
4	Spontaneously	Spontaneously											
3	To verbal command	To shout											

2	To pain	To pain
1	No response	No response
Best Motor Response		
Score	Age 1 Year or Older	Age 0-1 Year
6	Obeys command	
5	Localizes pain	Localizes pain
4	Flexion withdrawal	Flexion withdrawal
3	Flexion abnormal (decorticate)	Flexion abnormal (decorticate)
2	Extension (decerebrate)	Extension (decerebrate)
1	No response	No response

Best Verbal Response			
Score	Age >5 Years	Age 2-5 Years	Age 0-2 Years
5	Oriented and converses	Appropriate words	Cries appropriately
4	Disoriented and converses	Inappropriate words	Cries
3	Inappr words; cries	Screams	Inappr cry/scream
2	Incomprehensible sounds	Grunts	Grunts
1	No response	No response	No response

Score 13–15: May indicate mild dysfunction, although a person with no neurologic disabilities would receive a GCS of 15.

Score 9–12: May indicate moderate dysfunction.

Score 3–8: Is indicative of severe dysfunction.

Patients who are intubated are unable to speak, and their verbal score cannot be assessed. They are evaluated only based on eye opening and motor scores, and the suffix T is added to their score to indicate intubation. In intubated patients, the maximum GCS score is 10T and the minimum score is 2T. The GCS is often used to help define the severity of TBI. Mild head injuries are generally defined as those associated with a GCS score of 13-15, and moderate head injuries are those associated with a GCS score of 9-12. A GCS score of 8 or less defines a severe head injury. These definitions are not rigid and should be considered as a general guide to the level of injury.

PSYCHOMETRIC PROPERTIES

According to a study published in 2005, using the PGCS for children under 2 years of age compared favourably to using the standard GCS for older kids. It was especially accurate for babies and toddlers who needed acute intervention. The authors of this study (James F. Homes MD, MPH and

	colleagues from the University of California Davis School of Medicine) investigated the accuracy of the paediatric scale by studying children with TBIs from infancy through 18 years. The children were divided into two groups: (1) those 2 years and younger, and (2) those older than 2. The authors assigned the PGCS score to the younger group and the standard GCS to the older kids. The GCS is based on a 15-point scale for estimating and categorising the outcomes of brain injury on the basis of overall social capability or dependence on others. Patients with scores of 3 to 8 are considered to have a severe brain injury.
Advantages	<ol style="list-style-type: none"> 1) Theoretically useful in pre-linguistic age groups, mostly < 3 years. 2) Administration is very quick – a matter of a few minutes.
Disadvantages	<ol style="list-style-type: none"> 1) PGCS is rarely used (clinically or in research), as the shortened form of the GCS is considered more useful. 2) There are no verbal items. 3) Limited psychometric support.
Additional Information	-
Reviewers	Vicki Anderson Cathy Catroppa

References

Appleton R, Gibbs J (1998) Epilepsy in Childhood and Adolescence (2nd edition). London, Martin Dunitz Ltd.

Shah S (1999) Neurological assessment (RCN Continuing Education). Nursing Standard 13(22): 49-56.

Aucken, S., Crawford, B. (1998) Neurological assessment. In: Guerrero, D. (ed) Neuro-Oncology for Nurses. London: Whurr Publishers.

Fischer J, Mathieson C (2001) The history of the Glasgow Coma Scale: implications for practice. Crit Care Nurs Q 23 (4):52-8.