NEUROLOGICAL ASSESSMENT
GCS

GCS_PreHosp = GCS prehospital
GCS_FHosp = GCS first hospital
GCS_Adm = GCS admission to study hospital
GCS_PostStab = GCS post stabilization
GCS_ClinB = Best GCS
GCS_ClinW = Worst GCS
GCS_Disch = GCS discharge
GCS_VisitX = GCS visit

1. CDE Variable	GCS_PreHosp = GCS pre-hospital (at scene of accident or during transport) GCS_FHosp = GCS first hospital, before referral to study hospital GCS_Adm = GCS on admission to study hospital GCS_PostStab = GCS after primary stabilization GCS_ClinB = Best GCS during a given time period (daily) GCS_ClinW = Worst GCS over a given time period (daily) GCS_Disch = GCS on discharge study hospital GCS_VisitX = GCS at predefined visit
2. CDE Definition	The Glasgow Coma Scale (GCS) is a standardized instrument for assessing the level of consciousness. It evaluates three aspects of responsiveness: eye opening, motor response, verbal response.
3. Recommended instrument for assessment	Glasgow Coma Scale.
4. Description of measure	Categorical; unique entry. Add date tag for daily assessments.

5. Permissible values	Eye opening
	- none
	- to pain
	- to speech
	- spontaneously
	- untestable
	  - closed to swelling
	  - other
	- unknown
	
	Motor
	- none
	- abnormal extension
	- abnormal flexion
	- flexion withdraw
	- localizes pain
	- obeys command
	- untestable
	  - deep sedation/paralysis
	  - other

	- unknown <u>Verbal</u> - none - incomprehensible sound - inappropriate words - confused - oriented - untestable - tracheostomy/endotracheal tube - other - unknown
6. Classification: Basic / Intermediate / Advanced	Identical format in basic/intermediate/advanced. The time periods at which assessments are performed will depend on the level of detail mandated by protocol.
7. Procedure	Assessment of the level of consciousness by the Glasgow Coma Scale requires detailed clinical observation and assessment. First, observe any spontaneous reaction, next address the patient, observe any eye opening, if there is a verbal response assess whether he/she is oriented or confused and ask him/her to perform simple commands (such as stick your tongue out, open and close your eyes, squeeze and let go of my hand again). Note: a deliberate response should be differentiated from an aspecific reaction or reflex. If the patient does not obey commands, painful stimuli are administered in order to assess responsiveness. Accurate assessment requires a standardized administration of painful stimuli. Recommended are nail bed pressure and supraorbital pressure to test for localising. Localising is considered present if the patient moves his hand towards the painful stimulus (supraorbital) and reaches at least the level of the chin.
8. Comments / Special instructions: In more severely injured patients treated in the intensive care environment, assessment may be more difficult or impossible due to effects of medical sedation and neuromuscular blockade. Short term interruption of sedation may allow a more reliable assessment. The decision whether this is permissible in individual patients should be determined by the treating physician. In cases where assessment is not possible, the bubble 'untestable' should be marked and a further specification for the reason provided. In other patients, assessment of the subscales may be complicated by for example orbital swelling or the presence of a tracheotomy or endotracheal tube. Here also the bubble 'untestable' should be marked. If the assessment has not been performed or the result not retrieved, please mark the bubble 'unknown'. Note: for assessment of the motor component of the GCS the best reaction of the upper extremities should be entered.	
9. Rationale / justification: Assessment of the level of consciousness is the most important component of neurological assessment in patients following TBI. A decrease in the level of consciousness is suspect for progressive intracranial damage and may necessitate emergency diagnostic or therapeutic intervention. The GCS is a strong predictor of outcome in TBI. In more severely injured patients, the motor component has the greatest predictive value whilst the eye and verbal components are more relevant in moderately and mild injured patients.	

10. References:

Teasdale G, Jennett B. Assessment of coma and impaired consciousness. A practical scale. *Lancet.* Jul 1974;2(7872):81-4.

Marmarou A, Lu J, Butcher I, et al. Prognostic value of the Glasgow Coma Scale and pupil reactivity in traumatic brain injury assessed pre-hospital and on enrollment: an IMPACT analysis. *J Neurotrauma*. Feb 2007;24(2):270-80.

Stocchetti N, Pagan F, Calappi E, et al. Inaccurate early assessment of neurological severity in head injury. *J Neurotrauma.* Sep 2004:21(9):1131-40.

Balestreri M, Czosnyka M, Chatfield DA, et al. Predictive value of Glasgow Coma Scale after brain trauma: change in trend over the past ten years. *J Neurol Neurosurg Psychiatry.* Jan 2004;75(1):161-2.

Recommended time for assessment:		
Basic	***Intermediate***	***Advanced***
- Admission - Daily - Discharge - Visit X	- Pre-hospital - First hospital - Admission to study hospital - Daily - Discharge - Visit X	- Pre-hospital - First hospital - Admission to study hospital - Post stabilization - Daily best/worst - Discharge - Visit X