

APPLICATION ATTESTATION FORM (AAF) STS 2019

STS Reference ID: 2019-07013
Name of the Student: REEVA NADKARNI
Name of the Guide: DR. JAISHREE GHANEKAR
Name of Medical/Dental College: MGM Medical College,
Kamothe
Title of the STS Proposal: A Comparative Study between
Glasgow Coma Scale and S.V.N. Coma Scale



Certificate to be signed by the Student

I certify that I am an MBBS/BDS student and am here by providing true information in the online application form for STS 2019 best to my knowledge. I am submitting only one application for STS 2019. In the event any information is found to be false, my studentship may be cancelled. I also certify that the research proposal is an original work prepared under the guidance of my Guide. I confirm that I have not committed 'plagiarism' in preparing this proposal. I understand that after evaluation of my proposal, I may or may not be selected and I shall abide by the decision of ICMR.

If selected, I shall follow all instructions provided on ICMR website for carrying out the research, preparation and submission of STS report. I also understand that if I am unable to complete my project & submit the report before the last date, no certificate or stipend will be awarded to me. I have gone through all the Instructions and Terms & Conditions for STS 2019 provided on ICMR website and will abide by them.

Signature of Student: Reevanadkarni Name of the Student: REEVA NADKARNI
Date: 21-1-19

Certificate to be signed by the Guide

I agree to accept the applicant Mr. Ms. REEVA NADKARNI studying in MBBS/BDS-I II III/IV (tick appropriate). I certify that he/she is not an intern or student of other courses and I will offer him/her all facilities and guidance for carrying out STS research. I also certify that the proposal is an original submission prepared by the student under my guidance. I confirm that neither me and nor my student have committed 'plagiarism' in preparing this proposal. I am forwarding only one STS 2019 student application. If my student is selected, I shall provide required facilities to enable early completion of research work, so that the report is submitted before the last date.

Signature of Guide: Chanehan Name: DR JAISHREE GHANEKAR
Designation: MOD MEDICINE
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Attested By

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Signature of Head of Department
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DR JAISHREE GHANEKAR
(Name in Block letters with seal)



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Signature of Head of Medical/Dental College
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Fill form completely & check it before submission.

A COMPARITIVE STUDY BETWEEN GLASGOW COMA SCALE AND S.V.N. COMA SCALE

Introduction:

Head injury is a common injury which, if not treated properly can cause death. Since all vital functions are controlled by the brain, head injury, which can cause altered functioning of the brain can in turn can cause death. Concussion is a clinical syndrome characterized by the immediate and transient alteration in brain function, including alteration of mental status and level of consciousness, resulting from mechanical force trauma []. All functions, including consciousness, can return to normal, gradually or rapidly. The level of loss of consciousness is a valuable indication of the severity of the brain injury. Unfortunately, it is loosely described, even by the medical professionals.

Glasgow university hospital created a Coma Scale (Appendix I) to describe the level of loss of consciousness. This scale is used in most countries to record LOC. It describes 3 different responses of the body namely eye movements (divided into 4 grades), sensory response (divided into 5 grades) and motor response (divided into 6 grades). A total of 15 indicates full conscious while the total of 3 is deep coma. However, it has been found that GCS recording done by nurses, resident doctors and seniors doctors varied quite perceptibly in the same patient, on the same day and thus reducing the credibility of this record []. It was not intended to be used in emergency medicine or trauma. The authors of the GCS, Teasdale and Jennet, have stated 'We have never recommended using the GCS alone, either as a means of monitoring comas or to assess the severity of brain damage or predict outcome.'. []

Another index, hereon called the S.V.N. Coma Scale (Appendix II), combines the various responses into a comprehensive "total response" which grades the patients into 4 basic grades—a) fully conscious, b) responds to Verbal stimuli c) responds to Painful stimuli and d) not responding at all. Each one is further divided into different sub-grades as per the degree of response. If this classification is found to be a better prognostic tool and to be more reliable it would be a great help in defining the prognosis of head-injury patients. It also defines advised treatment response at various critical grades.

Therefore, this study is undertaken to evaluate the reliability and usefulness of this S.V.N. Coma Scale in comparison with the Glasgow Coma Scale.

Objectives

This study aims to prove the predictive validity and inter-rater reliability of the S.V.N. Coma Scale. Also, we will be comparing it to the GCS, which is currently widely used as a scale to grade LOC.

A. To check the inter-rater reliability of GCS compared to S.V.N. Coma Scale.

Determine the degree of error among different raters when scoring the same patient at a similar stage and thus determine which scale has better inter-rater reliability.

B. To check the predictive validity of GCS compared to S.V.N. Coma Scale.

To determine the accuracy of the prognosis (as per the patients lowest score on the scales) by comparing it to their actual clinical outcome. This will help determine which of the 2 scales has a better predictive validity.

Methodology -

Inclusion criteria

1. All cases with altered consciousness.
2. All cases presenting after head injury to MGM Hospital, Kamothe.

Exclusion criteria

1. Altered sensorium other than head injury.
2. Pre-existing conditions which could cause altered cognition.

Sample size = 30

A.1. To check Inter-rater reliability of GCS

Consistency of GCS score given to the same patient by multiple scorers

1. GCS on file by resident
2. GCS score given by rater 1
3. GCS score given by rater 2

Inter-rater reliability = $\frac{\text{No of times the scores given by raters was the same}}{\text{Total number of patients scored}}$

A.2. To check Inter-rater reliability of S.V.N. Coma Scale

Consistency of S.V.N. score given to the same patient by multiple scorers

1. S.V.N. Coma Scale score given by rater 1
2. S.V.N. Coma Scale score given by rater 2
3. S.V.N. Coma Scale score given by rater 3

Inter-rater reliability = $\frac{\text{No of times the scores given by raters was the same}}{\text{Total number of patients scored}}$

Compare the inter-rater reliability of the two scales.

*All raters will be given a 2 day seminar on how to determine the LOC of a patient by both GCS and S.V.N. Coma Scale.

B.1. To check the predictive validity of GCS

Patient to be scored by GCS within 18 hours post presenting to ED. For patients admitted for 2 weeks or less GCS scoring to be done every alternate day until discharge. For admissions longer than 2 weeks GCS scoring to get done every alternate day for the first 2 weeks and then at discharge. Compare the patients status on discharge with the outcome predicted for the patient by their lowest score on the GCS .

This can be achieved by comparing the number of patients that were predicted to survive by the GCS with the actual number of patients who survived.

B.2. To check the predictive validity of S.V.N. Coma Scale

Patient to be scored by S.V.N. Coma Scale within 18 hours post presenting to ED. For patients admitted for 2 weeks or less S.V.N. Coma Scale scoring to be done every alternate day until discharge. For admissions longer than 2 weeks S.V.N. Coma Scale scoring to be done every alternate day for the first 2 weeks and then at discharge.

Compare the patients status on discharge with the outcome predicted for the patient by their lowest score on the S.V.N. Coma Scale.

This can be achieved by comparing the number of patients that were predicted to survive by the S.V.N. Coma Scale with the actual number of patients who survived.

Implications:

The implications of this study are to establish the reliability and predictive value of the S.V.N. Coma Scale and thus promote a widespread use of the scale. The S.V.N. Coma Scale has the proposed benefits of being able to judge finer differences in the patient's day-to-day condition. It is easy to comprehend and provides a good assessment of the clinical state. It would thus be a useful scale to implement.

References:

GLASGOW COMA SCALE : Do it this way

GCS

Institute of Neurological Sciences NHS Greater Glasgow and Clyde



CHECK

For factors interfering with communication, ability to respond and other injuries



OBSERVE

Eye opening, content of speech and movements of right and left sides



STIMULATE

Sound: spoken or shouted request
Physical: Pressure on finger tip, trapezius or supraorbital notch



RATE

Assign according to highest response observed

Eye opening

Criterion	Observed	Rating	Score
Open before stimulus	✓	Spontaneous	4
After spoken or shouted request	✓	To sound	3
After finger tip stimulus	✓	To pressure	2
No opening at any time, no interfering factor	✓	None	1
Closed by local factor	✓	Non testable	NT

Verbal response

Criterion	Observed	Rating	Score
Correctly gives name, place and date	✓	Orientated	5
Not orientated but communication coherently	✓	Confused	4
Intelligible single words	✓	Words	3
Only moans / groans	✓	Sounds	2
No audible response, no interfering factor	✓	None	1
Factor interfering with communication	✓	Non testable	NT

Best motor response

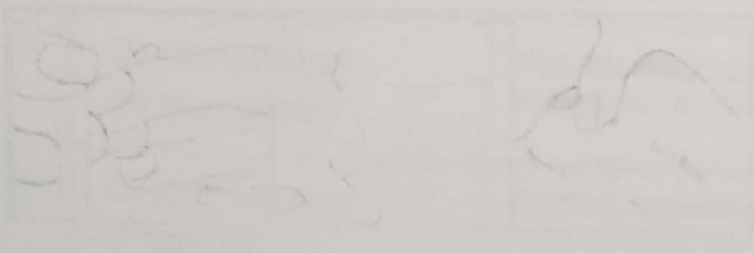
Criterion	Observed	Rating	Score
Obey 2-part request	✓	Obeys commands	6
Brings hand above clavicle to stimulus on head/neck	✓	Localising	5
Bends arm at elbow rapidly but features not predominantly abnormal	✓	Normal flexion	4
Bends arm at elbow, features clearly predominantly abnormal	✓	Abnormal flexion	3
Extends arm at elbow	✓	Extension	2
No movement in arms / legs, no interfering factor	✓	None	1
Paralysed or other limiting factor	✓	Non testable	NT

Sites For Physical Stimulation

Finger tip pressure

Trapezius Pinch

Supraorbital notch

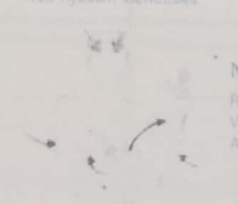


Features of Flexion Responses

Modified with permission from Van Der Naalt 2004
Ned Tijdschr Geneesk

Abnormal Flexion

Slow Stereotyped
Arm across chest
Forearm rotates
Thumb clenched
Leg extends



Normal flexion

Rapid
Variable
Arm away from body

L.O.C.	TERMINOLOGY	DESCRIPTION	GLASGOW COMA SCALE
I	Fully Conscious	Alert, Well Oriented in Time & Space Relevant in speech, Responds properly	15
II	State of Confusion - Response to Verbal Stimuli		14 to 8
IIa	Mild Confusion	Speaks properly but orientation partially lost - occasionally irrelevant. Not oriented fully in Time & Space	14
IIb	Moderate Confusion	Speaks a few words or short sentences, often irrelevant, but obeys verbal commands	12 to 13
IIc	Rowdy Confusion	Rowdy, irritable, shouts, becomes aggressive or curls up when approached.	11 to 12
Below this the Patient is Serious Tube Feeding = Must, Consider Intubation			
IIId	Severe Confusion	Hardly utters a word but responds to simple commands e.g. "Open the eyes", "Show your tongue" "look here" etc.	8 to 10
III	Semi - Conscious Response to Painful Stimuli		7 to 4
IIIa	Semi Conscious (purposive)	Purposive response to painful Stimuli moving away from or trying to remove the painful stimuli	6 to 7
Very Serious - Intubation or Tracheostomy = Must			
IIIb	Semi Conscious (non-purposive)	Non-purposive response to painful stimuli. Wincing, grimacing or irregular movement of body but non purposive	5
Below this Patient is Critical - Tertiary Care or Leave Alone			
IIIc	Semi Conscious (decerebrating)	Responds to painful by hyper-extension, severe pronation or extended rigidity	4
IV	Unconscious - No response to Any Stimuli		3
IVa	Unconscious (Hypertonic)	Hypertonic, hyper-thermic, tachypnic, extension rigidity	3
IVb	Unconscious (Flaccid)	Flaccid, slow breathing with apnaeic spells	3

Name:

Age:

Sex:

Address:

Contact info:

Socio-economic status:

Chief complaints /Presenting condition/ History of injury:

Level of consciousness

GCS 1:

GCS 2:

GCS 3:

No. of times reading was identical among 3 raters:

S.V.N. Coma Scale 1:

S.V.N. Coma Scale 2:

S.V.N. Coma Scale 3:

No. of times rating was identical among 3 raters:

General condition

TPR:

° BP:

Associated injuries:

Investigations:

Treatment given

Respiratory:

Feeding:

Urine + Stools:

Medicine:

Surgery:

Follow up: (head injury onwards)

Prognosis by GCS:

Prognosis by S.V.N. Coma Scale:

Clinical outcome of patient:

Prognosis correctly predicted by GCS

Prognosis correctly predicted by S.V.N. Coma Scale

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