APPENDIX A

Qualitative assessment protocol for swallowing

Name: ____________________________ Date: ____________________________
Hospital No: ____________________
Age/Sex: ____________________________
Primary diagnosis: ____________________
Secondary diagnosis: ____________________

General history:

Language and cognition:

Is the individual cooperative? Yes/No/Partial
Is the individual well oriented? Yes/No/Partial
Is the individual able to follow instructions? Yes/No/Partial
What are the individuals’ difficulties with verbal expression?

Oral feeds:

What are the individuals’ current difficulties with eating and/or drinking?
When did these difficulties begin?
Has the individual lost weight after that? Yes/No
If yes, how much weight has he/she lost in last one month?
What is his/her present weight?
Does the individual have pain during swallowing? Yes/No
Does the individual complaint of dryness in the mouth? Yes/No
Does the individual appreciate taste while eating? Yes/No
Does the individual appreciate temperature while eating? Yes/No

Consistency:

Does he/she have the same food (type or consistency) like others in the family? Yes/No/Somewhat

If no specify the modifications made
What consistency of food is he/she comfortable/safe with-- (regular liquid/thickened liquid/soft food/regular food)?

**Quantity and frequency of eating:**

How is the individuals’ appetite? Reduced/Normal/Excessive

Does he/she prefer piecemeal in a day? Yes/No

If Yes, How many times does she consume meals in a day?

**Utensils:**

Does he/she use specialized utensils while taking food? Yes/No

If yes, specify the type of specialized utensils

**Posture:**

How is the individual positioned while eating/drinking? Normal/ Modified

If modified, describe

**Time:**

Does he/she match others in the family for the feeding time? Yes/No/prolonged

**Dependency:**

Does the individual self feed? Yes/No

Does the individual use any non oral feeding methods? Yes/No

If yes, what is the type of non-oral feeding?

What is the duration of non-oral feeding?

Is the individual ventilator dependent? Yes/ No

If yes, what is the reason for ventilation?

How long was the individual on ventilation?

Is the individual on Tracheostomy tube? Yes/ No

If yes, what is the reason for tracheotomy?
When was the tube placed?

What is the type of tracheostomy tube?

Is there requirement of suctioning? Yes/No

If yes, how frequent is it done?

_Social eating:_

Does the individual eat with others in the family? Yes/No

Does the individual prefer to eat with Television/Book? Yes/No

Does the individual manage himself/herself in mealtime gatherings? Yes/No
SUBSCALE 1: ASSESSMENT OF STRUCTURE

Observations: Observe the articulators at rest for structural abnormalities.

Lips: Symmetry/asymmetry, deviations to the left/right, tremor, fasciculations, cleft lip

Tongue: Symmetry/asymmetry, deviations to the left/right, tremor, fasciculations, cleft, microglossia, macroglossia, scarring, any surgical reconstruction

Soft palate: Symmetry/asymmetry, deviations to the right/left, cleft of the soft palate, short soft palate

Jaw: Symmetry/asymmetry, deviations to the right/left, cleft, micrognathia, macrognathia, prognathia, retrognathia, trismus

Teeth: Dental caries, teeth cavity, missing teeth, supernumerary teeth, under bite, over bite, open bite, cross bite

Cheeks: Cleft

Any other: Look out for any other features interfering with swallowing

SUBSCALE 2: ASSESSMENT OF FUNCTION

2A. SENSORY ASSESSMENT

<table>
<thead>
<tr>
<th>Crania l nerve (CN)</th>
<th>Sl.No</th>
<th>Structure</th>
<th>Instructions</th>
<th>Normal</th>
<th>Impaired</th>
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<tr>
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<td>Upper right cheeks</td>
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<td>28</td>
<td></td>
<td>Touch with deep pressure</td>
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<td>Upper left cheeks</td>
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<td>Touch with deep pressure</td>
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<td>31</td>
<td>Lower left cheeks</td>
<td>Light touch</td>
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<td>32</td>
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<td>Touch with deep pressure</td>
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<td>Right anterior 2/3rd of the tongue</td>
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<td>Touch with deep pressure</td>
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<td>Left anterior 2/3rd of the tongue</td>
<td>Light touch</td>
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<td>36</td>
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<td>Touch with deep pressure</td>
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<tr>
<td>37</td>
<td>Tip of the tongue</td>
<td>Light touch</td>
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<td>Touch with deep pressure</td>
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<td>Left hard palate</td>
<td>Light touch</td>
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<td>40</td>
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<td>Touch with deep pressure</td>
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<tr>
<td>Structure</td>
<td>Cranial Nerve</td>
<td>Tasks</td>
<td>Instructions</td>
<td></td>
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<td>--------------</td>
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<tr>
<td>Soft palate</td>
<td>Light touch</td>
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<tr>
<td>Upper incisor teeth</td>
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<tr>
<td>Lower incisor teeth</td>
<td>Light tough</td>
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<tr>
<td>Posterior 1/3rd of the tongue</td>
<td>Light touch</td>
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Total

2B. MOTOR ASSESSMENT

<table>
<thead>
<tr>
<th>Structure</th>
<th>Cranial Nerve</th>
<th>Tasks</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lips</td>
<td>VII</td>
<td>Protrusion</td>
<td>Pucker your lips</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retraction</td>
<td>Pretend a broad smile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alternating tasks</td>
<td>Alternate these protrusion and retraction postures rapidly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lip strength</td>
<td>Hold the spoon with the lips while the spoon is being pulled out</td>
</tr>
<tr>
<td>Tongue</td>
<td>XII</td>
<td>Protrusion</td>
<td>Extend the tongue out of the mouth as far forward as possible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retraction</td>
<td>Retract the tongue as far backward as possible</td>
</tr>
<tr>
<td>Lateral</td>
<td></td>
<td>a) Touch the right corner of the lips with the tongue</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Touch the left corner of the lips with the tongue</td>
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<td></td>
<td></td>
<td>c) Alternate these lateral movements as fast as possible</td>
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<tr>
<td></td>
<td></td>
<td>d) Touch right side of the cheek from inside with the tongue</td>
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<tr>
<td></td>
<td></td>
<td>e) Touch left side of the cheek from inside with the tongue</td>
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<tr>
<td></td>
<td></td>
<td>f) Alternate these lateral movements as fast as possible</td>
<td></td>
</tr>
<tr>
<td>Anterior elevation</td>
<td>Raise the tongue tip to the alveolar ridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posterior</td>
<td></td>
<td>Raise the back of the tongue to the</td>
<td></td>
</tr>
<tr>
<td>Soft Palate</td>
<td>X</td>
<td>Elevation</td>
<td>Say /a/ repeatedly with an interval of 1 seconds</td>
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<td>------------</td>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Jaw</td>
<td>V</td>
<td>Mouth opening &amp; closing</td>
<td>Open the mouth widely and close the mouth</td>
</tr>
<tr>
<td>Left</td>
<td></td>
<td>Move the jaw to the left side</td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td></td>
<td>Move the jaw to the right side</td>
<td></td>
</tr>
<tr>
<td>Strength</td>
<td></td>
<td>Open the mouth while the jaw is being pushed up.</td>
<td></td>
</tr>
<tr>
<td>Cheeks</td>
<td>VII</td>
<td>puff the cheeks</td>
<td>Puff the cheeks on right side</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Puff the cheeks on left side</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Puff the cheeks on both the sides</td>
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<tr>
<td>Pharynx</td>
<td>IX</td>
<td>Pharyngeal wall movement</td>
<td>Swallow while the tongue is protruded out</td>
</tr>
<tr>
<td>Larynx*</td>
<td>X</td>
<td>Voluntary cough</td>
<td>Cough as strongly as possible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Voice</td>
<td>Turn the head towards right and say /a/ continuously for 3 sec</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turn the head towards left and say /a/ continuously for 3 sec</td>
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<td></td>
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<td></td>
<td>Keep the head in the centre and say /a/ continuously for 3 sec</td>
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</tbody>
</table>

*If the client is tracheostomized, ask him to inhale, close the stoma and perform the tasks*
# SUBSCALE 3: ASSESSMENT OF PHASES OF SWALLOWING

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Observations</th>
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</thead>
<tbody>
<tr>
<td>Dry swallow</td>
<td>Pretend a swallow</td>
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<tr>
<td>Thick Liquid*</td>
<td>Swallow 5ml of thick liquid</td>
<td>Lip seal</td>
<td></td>
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<tr>
<td></td>
<td>Swallow 10 ml of thick liquid</td>
<td>Managing secretions (loss from the mouth i.e., drooling)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Nasal regurgitation</td>
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<tr>
<td></td>
<td></td>
<td>Oral transit</td>
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<td></td>
<td></td>
<td>Laryngeal elevation</td>
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<td></td>
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<td></td>
<td></td>
<td>Post swallow voice</td>
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<td></td>
<td></td>
<td>Cough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Liquid *</td>
<td>Swallow 5ml of thin liquid</td>
<td>Lip seal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swallow 10 ml of thin liquid</td>
<td>Managing secretions (loss from the mouth i.e., drooling)</td>
<td></td>
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<tr>
<td></td>
<td>Swallow 90 ml of liquid (To be evaluated only on the safe swallow of 5 and 10 ml of liquid)</td>
<td>Nasal regurgitation</td>
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<td></td>
<td></td>
<td>Oral transit</td>
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<td></td>
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<td>Laryngeal elevation</td>
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<td>Cough</td>
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<td></td>
<td></td>
<td>Post swallow voice</td>
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<td></td>
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<tr>
<td>Solid *</td>
<td>Eat 5 grams of rice flakes</td>
<td>Lip seal</td>
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<td></td>
<td>Bolus preparation</td>
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<tr>
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<td></td>
<td>Nasal regurgitation</td>
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<td></td>
<td>Oral transit</td>
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<td></td>
<td>Laryngeal elevation</td>
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<td>Food residue in anterior sulcus</td>
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<td>Food residue in lateral sulcus</td>
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<td>Food residue spread throughout the oral cavity</td>
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<td>Cough</td>
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<td></td>
<td>Post swallow voice</td>
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<td></td>
<td></td>
<td>Piecemeal deglutition</td>
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</table>

*If the client is tracheostomized, solids/thick liquids/thin liquids should be mixed with beetroot juice/carrot juice and observe the above mentioned parameters

| Total score |   |   |   |
### SUBSCALE 4: TOLERANCE OF CONSISTENCIES

<table>
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<th>Oral phase tolerance of consistencies</th>
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<tr>
<td><strong>Thick liquids</strong></td>
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<tr>
<td><strong>Thin liquids</strong></td>
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<thead>
<tr>
<th>Pharyngeal phase tolerance of consistencies</th>
<th>Tolerates</th>
<th>Remarks</th>
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</thead>
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<td></td>
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<tr>
<td><strong>Thick liquids</strong></td>
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<tr>
<td><strong>Thin liquids</strong></td>
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**Descriptive diagnosis:**

**Recommendations:**
APPENDIX B
ADMINISTRATION AND SCORING GUIDELINES

Testing clinician should ensure that the individual is in most comfortable position and is alert. If trial swallows are to be administered, upright/semiupright position with adequate bodily alignment is recommended. Testing and scoring should begin after reading the “Instruction for clinician and scoring guidelines” section. All the scores from different subscales are added and a composite total score is arrived at. This composite score would be compared with the normative data available across the age and gender and the interpretation would be given. In addition, the clinician can recommend further instrumental evaluations if needed and also to allocate a diet recommendation.

Instructions for Clinicians and Scoring Guidelines:
Initially a detailed case history needs to be obtained with the relevant medical and surgical details.

Subscale 1: Assessment of structure.
Observations: Observe the articulators at rest for structural abnormalities and these observations are not scored.

Lips: Look out for the symmetry, deviations to the left/right, tremor, fasciculations, or cleft lip.

Symmetry of lips: Both the sides of lips as mirror images of each other
Tremor: The rhythmic, involuntary, oscillatory movement of the lips
Lip fasciculations: A small, local, involuntary muscle contraction or the twitching of the muscle fibers of the lips
Cleft lip: A slit or an opening on the lips either unilaterally or bilaterally in the upper and/or the lower lips

Tongue: Look out for the symmetry, deviations to the left/right, tremor, fasciculations, microglossia, macroglossia, scarring, or any surgical reconstruction.

Symmetry of tongue: Both the sides of tongue as mirror images of each other
Tongue tremor: The rhythmic, involuntary, oscillatory movement of the tongue

Tongue fasciculations: A small, local, involuntary muscle contraction or the twitching of the muscle fibers of the lips

Microglossia: An abnormally small tongue

Macroglossia: An abnormally large tongue

Tongue scarring: A mark on the tongue following wound healing or any surgical reconstruction

Surgical reconstruction: Any surgical reconstruction done for the tongue

Palate: Look out for symmetry, deviations to the right/left, cleft of the soft palate, short soft palate, or high arched palate.

Symmetry of palate: Both the sides of the soft palate as being mirror images of each other

Cleft of the palate: A slit or an opening on the palate either unilaterally or bilaterally on the hard and/or the soft palate

Short soft palate: An abnormally small soft palate

High arched palate: A palate which has an unusually high arch

Jaw: Look out for the symmetry, deviations to the right/left, cleft, micrognathia, macrognathia, prognathia, retrognathia or trismus.

Symmetry of jaw: Both the sides of the jaw as being mirror images of each other

Cleft of the jaw: A slit or an opening on the jaw either unilaterally or bilaterally

Micrognathia: An abnormally small jaw

Macrognathia: An abnormally large jaw

Prognathia: The jaw projecting forward to a marked degree with respect to frontal plane of the face

Retrognathia: The jaw receding backwards to a marked degree with respect to frontal plane of the face

Teeth: Look out for dental caries, teeth cavity, missing teeth, supernumerary teeth, under bite, over bite, open bite or cross bite.
Dental caries/tooth cavity: A destructive process causing decalcification of the tooth enamel, leading to continued destruction of enamel and dentin and, cavitation of tooth

Missing teeth: An absence of some teeth in the oral cavity

Supernumerary teeth: The presence of extra teeth in the oral cavity

Underbite: A malocclusion in which the lower teeth overlap the upper teeth.

Overbite: The extension of the upper incisor teeth over the lower ones

Open bite: The occlusion in which certain opposing teeth fail to come together when the jaws are closed; usually confined to anterior teeth

Cross bite: An abnormal relation of one or more teeth of one arch to the opposing tooth or teeth of the other arch, caused by deviation of tooth position or abnormal jaw position

Cheeks: Look out for the cleft if any

Cleft of the cheeks: A slit or an opening on the cheeks either unilaterally or bilaterally

Any other: Look out for any other features interfering with swallowing.

Subscale 2: Assessment of Function

Subscale 2a: Sensory assessment

Sensory assessment of articulators is done by having the individuals close his/her eyes and express the presence or absence of sensation.

Instructions for the clinicians:

1. Clinician wears gloves on his hands for testing the sensation for the items ranging from 1-32
2. Clinician uses dental ball burnisher to test the sensation ranging from 33-48.
3. Clinician touches the target articulator as indicated on the test item in the manner specified.

Scoring:

Score 0: Within functional limits- the individual indicates verbally that the sensation was felt on the respective articulator.
Score 1: Impaired- the individual does not indicate sensation on the respective articulator.

**Subscale 2b: Motor Assessment**

Motor assessment is done by having the individuals perform the commands related to oro motor functions.

*Instructions for the clinicians:*

1. Clinician instructs the individuals to perform the oromotor related commands.
2. If the individuals are unable to perform the commands, have him/her perform through imitation.

**Scoring:**

Score 0: Within functional limits  
Score 1: Mild to moderate impairment  
Score 3: Severe impairment

**Lips**

*Protrusion:* Have the client pucker the lips. If the individual is not able to pucker by imitation, try having him say /u/.

- Score 0: Symmetrical, full protrusion of the lips  
- Score 1: Drooping unilaterally or bilaterally with the partial movement of the lips  
- Score 2: No movement of the lips

*Retraction:* Have the individual pretend smiling. If the individual is unable to do this by imitation, have him say /i/.

- Score 0: Able to retract the lips horizontally for 1 cm  
- Score 1: Able to retract the lips horizontally for less than 1 cm  
- Score 2: Not able to retract the lips; No movement of the lips observed

*Alternating tasks (rapid protrusion and retraction):* Have the individual rapidly alternate these protrusion-retraction or /u/-/i/ postures rapidly. If the individual is unable to do so, have him/her perform through imitation.
Score 0: Three repetitions of alternate protrusion and retraction or /u/-/i/ postures in one second
Score 1: 1-2 repetitions of alternate protrusion and retraction or /u/-/i/ postures in one second
Score 2: Not able to alternate these two tasks

*Lip strength:* Have the individual press and hold the spoon placed horizontally in their mouth with lips as hard as possible when the clinician tries to remove it.
Score 0: A firm grasp on the spoon by the lips while the clinician tries to remove the spoon
Score 1: Able to hold the spoon with the lips but unable to hold the spoon while the clinician tries to remove it
Score 2: Unable to hold the spoon

*Tongue*

*Protrusion:* Have the individual extend the tongue out of the mouth as far forward as possible. If the individual is unable to do so, have him/her perform through imitation.
Score 0: A fully extended midline tongue protrusion for atleast 2 seconds
Score 1: Mild protrusion of the tongue with or without deviation to the right or left or inability to keep the tongue protruded for 2 seconds
Score 2: Restricted tongue movement

*Retraction:* Have the individual retract the tongue as far backward as possible. If the individual is unable to do so, have him/her perform through imitation.
Score 0: Maximum retraction of the tongue into the oral cavity. Tongue tip may curl up when retracted. It should move posteriorly in the oral cavity behind the lower front teeth
Score 1: Mild retraction of the tongue
Score 2: Restricted tongue movement
**Lateral movements (a):** Have the individual touch right corner of the lips with the tongue. If the individual is unable to do so, have him/her perform through imitation.

- **Score 0:** Maximum contact of the tongue tip to the right corner of the lips
- **Score 1:** Able to move the tongue but unable to touch the right corner of the lips
- **Score 2:** Restricted tongue movement

**Lateral movements (b):** Have the individual touch left corner of the lips with the tongue. If the individual is unable to do so, have him/her perform through imitation.

- **Score 0:** Maximum contact of the tongue tip to the left corner of the lips
- **Score 1:** Able to move the tongue but unable to touch the left corner of the lips
- **Score 2:** Restricted tongue movement

**Lateral movements (c):** Have the individual alternate these lateral movements as fast as possible.

- **Score 0:** Maximum of at least 2-3 repetitions of steady and even corner to corner movement of the tongue per second
- **Score 1:** Able to make single repetition of corner to corner movement of the tongue
- **Score 2:** Restricted tongue movement

**Lateral movements (d):** Have the individual touch right side of the cheek from inside with the tongue. If the individual is unable to do so, have him/her perform through imitation.

- **Score 0:** Maximum contact of the tongue tip to the right side of the cheeks
- **Score 1:** Able to move the tongue but unable to touch the right side of the cheeks
- **Score 2:** Restricted tongue movement
Lateral movements (e): Have the individual touch left side of the cheek from inside with the tongue. If the individual is unable to do so, have him/her perform through imitation

Score 0: Maximum contact of the tongue tip to the left side of the cheeks
Score 1: Able to move the tongue but unable to touch the left side of the cheeks
Score 2: Restricted tongue movement

Lateral movements (f): Have the individual alternate these lateral movements as fast as possible.

Score 0: Maximum of at least 2-3 repetitions of steady and even corner to corner movement of the tongue per second
Score 1: Able to make single repetition of corner to corner movement of the tongue
Score 2: Restricted tongue movement

Anterior elevation (a): Have the individual raise the tongue tip to alveolar ridge. If the individual is unable to do so, have him/her say /t/ through imitation.

Score 0: Able to raise the tongue tip to alveolar ridge
Score 1: Able to raise the tongue tip but unable to touch the alveolar ridge
Score 2: Restricted tongue movement

Anterior elevation (b): Have the individual rapidly alternate /t/ posture. If the individual is unable to do so, have him/her say through imitation.

Score 0: Maximum of at-least 2-3 repetitions of rapidly alternating /t/ posture per second
Score 1: Able to make single repetition of corner to corner movement of the tongue per second
Score 2: Restricted tongue movement
Posterior elevation (a): Have the individual raise the back of the tongue to the palate. If the individual is unable to do so, have him/her say /k/ through imitation.
   Score 0: Able to raise the back of the tongue in /k/ position
   Score 1: Able to raise the back of the tongue but unable to touch the palate
   Score 2: Restricted tongue movement

Posterior elevation (b): Have the individual rapidly alternate /k/ posture. If the individual is unable to do so, have him/her say /k/ through imitation.
   Score 0: Maximum of at least 2-3 repetitions of rapidly alternating /k/ posture per second
   Score 1: Able to make single repetition of corner to corner movement of the tongue
   Score 2: Restricted tongue movement

Tongue strength: Have the individual push the tongue against the tongue depressor placed on the surface of the tongue. The clinician should apply gradual resistive force with the tongue depressor against the tip of the tongue.
   Score 0: Able to overcome the resistance against the tongue depressor
   Score 1: Partial ability to overcome the resistance offered by the tongue depressor on the tongue tip
   Score 2: Unable to overcome the resistance offered by the tongue depressor on the tongue tip

Tongue sweep on the upper teeth: Have the individual sweep their tongue on the upper teeth. If the individual is unable to do so, have him/her perform through imitation.
   Score 0: Able to sweep the tongue on the upper teeth
   Score 1: Partial sweep of the tongue on the upper teeth
   Score 2: Restricted tongue movement
Tongue sweep on the lower teeth: Have the individual sweep their tongue on the lower teeth. If the individual is unable to do so, have him/her perform through imitation.

Score 0: Able to sweep the tongue on the lower teeth
Score 1: Partial sweep of the tongue on the lower teeth
Score 2: Restricted tongue movement

Soft Palate

Elevation: Have the individual repeat /a/ several times with the interval of 1 second and observe for the elevation and retraction of the palate during the above mentioned tasks. If the individual is unable to do so, have him/her perform through imitation.

Score 0: Able to elevate and retract the palate appropriately
Score 1: Weak / inconsistently maintained movement
Score 2: Restricted soft palate movement

Jaw

Mouth opening and closing: Have the individual open the mouth widely and close. If the individual is unable to do so, have him/her perform through imitation.

Score 0: Able to open the mouth for 2 cm and close it appropriately
Score 1: Partial opening/ closing of the mouth
Score 2: Restricted opening of the mouth

Jaw to the right: Have the individual move the jaw to the right. If the individual is unable to do so, have him/her perform through imitation.

Score 0: Able to move the jaw to the right side
Score 1: Partial movement of the jaw to the right
Score 2: Restricted movement of the jaw

Jaw to the left: Have the individual move the jaw to the left. If the individual is unable to do so, have him/her perform through imitation.

Score 0: Able to move the jaw to the left side
Score 1: Partial movement of the jaw to the left
Score 2: Restricted movement of the jaw

_Jaw strength:_ Have the individual open the mouth against the resistance offered by the clinician under the jaw.

- Score 0: Able to overcome the resistance offered by the clinician
- Score 1: Partial ability to overcome the resistance offered by the clinician
- Score 2: Unable to overcome the resistance offered by clinician

**Cheeks**

_Puff the cheeks on the right:_ Have the individual puff on the right side of cheeks. If the individual is unable to do so, have him/her perform through imitation.

- Score 0: Able to puff the cheeks on the right side and maintain for 5 seconds
- Score 1: Able to puff but unable to maintain for 5 seconds
- Score 2: Unable to puff

_Puff the cheeks on the left:_ Have the individual puff on the left side of cheeks. If the individual is unable to do so, have him/her perform through imitation.

- Score 0: Able to puff the cheeks on the left side and maintain for 5 seconds
- Score 1: Able to puff but unable to maintain for 5 seconds
- Score 2: Unable to puff

_Puff the cheeks on both the sides:_ Have the individual puff on both the sides of cheeks. If the individual is unable to do so, have him/her perform through imitation.

- Score 0: Able to puff the cheeks on both the sides and maintain for 5 seconds
- Score 1: Able to puff but unable to maintain for 5 seconds
- Score 2: Unable to puff

**Pharynx**

_Anterior pharyngeal wall movement:_ Have the individual to swallow with the tongue protruded. If the individual is unable to do so, have him/her perform through imitation.
Score 0: Able to swallow with tongue protruded
Score 1: Able to swallow with tongue protruded with great difficulty in initiating the swallow
Score 2: Unable to swallow with tongue protruded

*Larynx*

*Voluntary cough:* Have the individual to cough strong and observe for the strength of the cough.
  
  Score 0: Strong cough
  Score 1: Weak and mushy cough
  Score 2: No cough

*Voice:* Have the individual sustain /a/ for 3 seconds when the head is turned towards right and observe for the quality of voice.
  
  Score 0: Normal voice quality
  Score 1: Mild to moderate huskiness in the voice
  Score 2: Wet and gurgly voice quality

*Voice:* Have the individual sustain /a/ for 3 seconds when the head is turned towards left and observe for the quality of voice.
  
  Score 0: Normal voice quality
  Score 1: Mild to moderate huskiness in the voice
  Score 2: Wet and gurgly voice quality

*Voice:* Have the individual sustain /a/ for 3 seconds when the head is in center and observe for the quality of voice.
  
  Score 0: Normal voice quality
  Score 1: Mild to moderate huskiness in the voice
  Score 2: Wet and gurgly voice quality

*If the client is tracheostomized with the cuffed tracheostomy tube, deflate the cuff and ask the individual to inhale through the tube, close it and perform the above mentioned tasks. (Perform suctioning before and after deflating the cuff).
Subscale 3: Assessment of phases of swallowing

**General instructions:**

Trial feeds should be employed only if the individual fulfils the following criterias.

1. Testing should be initiated when the individual is alert, sitting in an upright position with the well aligned body and preferably hungry.

2. Testing should begin with a dry swallow. If the clinician observes laryngeal elevation clearly with a score of 0, then the testing should proceed with the trial feeds consisting of thick liquids. Otherwise, testing should be discontinued.

3. If the individual passes thick liquids with no cough, then the testing should proceed with thin liquids and solids.

4. If the individual coughs on thick liquids, then the testing should be terminated. No further trial feeds with thin liquids and solids would be given.

5. The above mentioned protocol should be followed for individuals with neurogenic dysphagia. However, for mechanical dysphagia, testing should begin with dry swallow, thin liquids and then proceed towards thick liquids and solids.

**Scoring:**

Score 0: Within functional limits  
Score 1: Mild to moderate impairment  
Score 3: Severe impairment

**Dry swallow:** Have the individual pretend swallowing and observe for the laryngeal elevation  

Score 0: Laryngeal elevation is clearly observed  
Score 1: Delayed laryngeal elevation  
Score 2: No laryngeal elevation

**Thick liquids**: Trial feeds with thick liquid would begin if the laryngeal elevation is clearly observed on dry swallow. Have the individual drink 5ml of thick liquid (4 gms of rice flakes mixed with 20 ml of water) and observe if the swallow is safe. If the swallow is safe, have the individual drink 10ml of thick liquid and observe the
following and score the responses. If the swallow is unsafe with 5ml of thick liquid, testing should be stopped and not scored.

*Lip seal:* Observe the individual for the lip seal during the liquid swallow.
- Score 0: Able to seal the lips during swallow
- Score 1: Incomplete closure or limited movement of lips
- Score 2: No closure of the lips

*Managing secretions:* Observe for the drooling/food residue in the oral cavity.
- Score 0: Able to swallow the liquid
- Score 1: Dribbling observed with the minimal loss of liquid from the mouth/minimal residue observed in the oral cavity after the swallow
- Score 2: Complete loss of liquid out of the mouth

*Oral transit:* Have the individual perform 5ml of thick liquid swallow while the clinician positions his/her hand, with the fingers spread as per the manual palpation method (Fore finger under the chin, middle finger above the thyroid notch, ring finger on the thyroid notch and little finger below the thyroid notch). Compare the time elapsed between the initiation of lingual movement until the initiation of hyoid and laryngeal movement.
- Score 0: Initiation of lingual movement and the laryngeal rise triggered rapidly within 1 second
- Score 1: Initiation of lingual movement and the laryngeal rise delayed by 1 and 5 seconds
- Score 2: No movement observed / delay greater than 5 seconds

*Nasal regurgitation:* Observe for the presence of nasal regurgitation.
- Score 0: No nasal regurgitation
- Score 1: Wet nasal floor
- Score 2: Nasal regurgitation

*Laryngeal elevation:* Observe for the laryngeal elevation.
- Score 0: Clear laryngeal elevation
- Score 1: Delayed laryngeal elevation
Score 2: No laryngeal elevation

**Cough:** Observe for the cough as the individual swallows.

- Score 0: No cough
- Score 1: Clearing of the throat after each swallow
- Score 2: Immediate cough

**Post swallow voice:** Observe for the post swallow wet and gurgly voice quality.

- Score 0: Normal voice quality
- Score 1: Slight huskiness in the voice
- Score 2: Wet and gurgly voice quality

**Thin liquids**: Trial feeds with thin liquids (water) would begin if the swallow is safe on dry swallow and 10 ml of thick liquids. First, have the individual drink 5ml of water and observe if the swallow is safe. If the swallow is safe, have the individual drink 10ml of water and look for the same. If the swallow is safe on 5ml and 10ml, have the individual drink 90ml of water and observe the following and score the responses. If the swallow is unsafe with either 5ml only or with 10ml of water, testing should be terminated and not scored.

**Lip seal:** Observe the individual for the lip seal during the liquid swallow.

- Score 0: Able to seal the lips during swallow
- Score 1: Incomplete closure or limited movement of lips
- Score 2: No closure of the lips

**Managing secretions:** Observe for the drooling.

- Score 0: Able to swallow the liquid
- Score 1: Dribbling observed with the minimal loss of liquid from the mouth/minimal residue observed in the oral cavity after the swallow
- Score 2: Complete loss of liquid out of the mouth

**Oral transit:** Have the individual perform 5ml of thin liquid swallow while the clinician positions his/her hand, with the fingers spread as per the manual
palpation method (Fore finger under the chin, middle finger above the thyroid notch, ring finger on the thyroid notch and little finger below the thyroid notch). Compare the time elapsed between the initiation of lingual movement until the initiation of hyoid and laryngeal movement.

Score 0: Initiation of lingual movement and the laryngeal rise triggered rapidly within 1 second
Score 1: Initiation of lingual movement and the laryngeal rise delayed by 1 and 5 seconds
Score 2: No movement observed / delay greater than 5 seconds

_Nasal regurgitation:_ Observe for the presence of nasal regurgitation.

Score 0: No nasal regurgitation
Score 1: Wet nasal floor
Score 2: Nasal regurgitation

_Laryngeal elevation:_ Observe for the laryngeal elevation.

Score 0: Clear laryngeal elevation
Score 1: Delayed laryngeal elevation
Score 2: No laryngeal elevation

_Cough:_ Observe for the cough as the individual swallows.

Score 0: No cough
Score 1: Clearing of the throat after each swallow
Score 2: Immediate cough

_Post swallow voice:_ Observe for the post swallow wet and gurgly voice quality.

Score 0: Normal voice quality
Score 1: Slight huskiness in the voice
Score 2: Wet and gurgly voice quality

**Solid*: Trial feeds with solids would begin if the swallow is safe on dry swallow and 10ml of thick liquids. Have the individual eat 2.5 gms (5 ml) of rice flakes and observe for the following.
**Bolus preparation:** Observe for the ability to form the bolus.

Score 0: Able to form the bolus

Score 1: Lip seal inadequate/minimal chew/tongue thrust bolus projected forward/limited preparation

Score 2: Unable to form the bolus.

**Oral transit:** Have the individual perform solid swallow while the clinician positions his/her hand, with the fingers spread as per the manual palpation method (Fore finger under the chin, middle finger above the thyroid notch, ring finger on the thyroid notch and little finger below the thyroid notch). Compare the time elapsed between the initiation of lingual movement until the initiation of hyoid and laryngeal movement.

Score 0: Initiation of lingual movement and the laryngeal rise triggered rapidly within 1 second

Score 1: Initiation of lingual movement and the laryngeal rise delayed by 1 and 5 seconds

Score 2: No movement observed / delay greater than 5 seconds

**Nasal regurgitation:** Observe for the presence of nasal regurgitation.

Score 0: No nasal regurgitation

Score 1: Wet nasal floor

Score 2: Nasal regurgitation

**Laryngeal elevation:** Observe for the laryngeal elevation.

Score 0: Clear laryngeal elevation

Score 1: Delayed laryngeal elevation

Score 2: No laryngeal elevation

**Food residue:** Observe for the drooling, loss of food particles into the anterior and the lateral sulcus or the food spread throughout the oral cavity.

Score 0: Able to clear the food from the anterior and the lateral sulcus

Score 1: Minimal residue in the anterior and/or lateral sulcus
Score 2: Unable to clear anterior and lateral sulcus. Food spread throughout the oral cavity

**Cough:** Observe for the cough as the individual swallows.
- Score 0: No cough
- Score 1: Clearing of the throat after each swallow
- Score 2: Immediate cough

**Post swallow voice:** Observe for the post swallow wet and gurgly voice quality.
- Score 0: Normal voice quality
- Score 1: Slight huskiness in the voice
- Score 2: Wet and gurgly voice quality

**Piecemeal deglutition:** Observe for the piecemeal deglutition (multiple swallows) through laryngeal elevation.
- Score 0: Able to swallow the bolus in one single attempt i.e., single laryngeal elevation observed
- Score 1: 2-3 laryngeal elevations observed
- Score 2: Multiple swallows evident i.e., more than 3 laryngeal elevations observed

*All these consistencies can be mixed with beetroot/carrot juice if the individual is on tracheostomy tube and observe the above mentioned parameters.*
Qualitative assessment protocol for swallowing
Examiner record form

Name: 
Hospital No: 
Age/Sex: 
Primary diagnosis: 
Secondary diagnosis: 
General history: 

SUBSCALE 1: ASSESSMENT OF STRUCTURE

SUBSCALE 2: ASSESSMENT OF FUNCTION:

<table>
<thead>
<tr>
<th>Assessment parameters</th>
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<td>Sensory assessment</td>
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3. ASSESSMENT OF PHASES OF SWALLOWING

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<td>Dry swallow</td>
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<td>Thick liquid swallow</td>
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<tr>
<td>Thin liquid swallow</td>
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<td>Solids swallow</td>
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<td>Total scores</td>
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4. TOLERANCE OF CONSISTENCIES

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<td>Thin liquids</td>
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Pharyngeal phase tolerance of consistencies

| Solids        |           |
| Thick liquids |           |
| Thin liquids  |           |

Overall total score: 
Summary of swallowing behavior:

Recommendation: