Appendix 1. FEES rating scales

Secretion Severity Rating Scale[23]

0 *Normal rating*: Ranges from no visible secretions anywhere in the hypopharynx to some transient secretions visible in the valleculae and pyriform sinuses. These secretions are not bilateral or deeply pooled.
1 Any secretions evident upon entry or following a dry swallow in the protective structures surrounding the laryngeal vestibule that is bilateral or deeply pooled.
2 Any secretions that change from '1' rating to a '3' during observation.
3 *Most severe rating*. Secretions seen in the laryngeal vestibule. Pulmonary secretions are included if they are not cleared by swallowing or coughing.

Airway Protection Scale[23]

1. Laryngeal closure not achieved
2. Transient true fold closure
3. Sustained true fold closure
4. Transient ventricular fold closure
5. Sustained ventricular fold closure

Penetration–Aspiration Scale[24]

1. Material does not enter the airway
2. Material enters the airway, remains above the vocal folds and is ejected from the airway
3. Material enters the airway, remains above the vocal folds and is not ejected from the airway
4. Material enters the airway, contacts the vocal folds and is ejected from the airway
5. Material enters the airway, contacts the vocal folds and is not ejected from the airway
6. Material enters the airway, passes below the vocal folds and is ejected into the larynx or out of the airway
7. Material enters the airway, passes below the vocal folds and is not ejected from the trachea despite effort
8. Material enters the airway, passes below the vocal folds and no effort is made to eject. Silent aspiration.

Therapy outcome measure for voice impairment[25]

0 Severe persistent aphonia. Unable to phonate. Does not phonate.
1 Consistent dysphonia. Occasional phonation. May be dysphonic with aphonic episodes.
2 Moderate dysphonia. Can phonate but frequent episodes of marked vocal impairment occurring.
3 Moderate/mild dysphonia. Less frequent episodes of dysphonia (e.g. occurs some time each day/or slight persistent 'huskiness').
4 Mild dysphonia. Occasional episodes of dysphonia occurring.
5 No dysphonia. Appropriate modal voice consistently used.

ICU Functional Communication Scale (Wallace S, devised for this study)

1 No voice or speech. Mostly ineffective attempts to communicate using alternative means e.g. mouthing words, writing, using charts
2 No voice or speech. Mostly effective attempts to communicate using alternative means e.g. mouthing words, writing, using charts
3 Communicating using voice and speech but disordered due to presence of dysarthria, dysphonia, aphasia or confusion
4 Communicating using normal voice and speech

GRBAS Scale – auditory-perceptual assessment of severity of dysphonia[22]

G: Grade; R: Roughness; B: Breathiness; A: Asthenia; S: Strain

0, 1, 2 or 3 scored for each parameter

Appendix 2. Summary of FEES policy, royal college of speech & language therapists

High risk and vulnerable patient populations

When considering performing a FEES examination, the SLT must always consider possible contraindications. The rationale for performing FEES on an at-risk patient must be clearly outlined in patient records. Failure to demonstrate and record careful consideration of the risks and benefits to the patient in these circumstances prior to proceeding with the FEES examination may constitute a breach of acceptable professional conduct.

Caution should be exercised with the following patient groups as the nature of their disorders may preclude safe assessment. The suitability and safety of FEES should be assessed on an individual basis by the medical team. We recommend that an ENT surgeon or anaesthetist/intensivist is present for these patient groups due to technical scoping challenges and the associated risk of harm to the patient:

- Base of skull/facial fracture
- Severe/life-threatening epistaxis within the last six weeks
- Trauma to nasal cavity secondary to surgery or injury within the last six weeks

- Sino-nasal and anterior skull base tumours/surgery
- Nasopharyngeal stenosis
- Craniofacial anomalies
- Hereditary haemorrhagic telangiectasia

Caution should be exercised when performing nasendoscopy on patients with limited pharyngeal or laryngeal space or significant airway limitation due to the presence of large volume disease such as cancer. In these instances, SLTs should have a low threshold for requesting assistance from a physician competent in endoscopy for FEES e.g. ENT or anaesthetist/intensivist.

We recommend proceeding with caution when carrying out FEES on other high-risk groups. The SLT planning the FEES procedure should consult with the referring medical physician prior to undertaking the FEES examination and request the presence of a medical doctor if deemed necessary for safe practice.

High-risk groups include:

- Severe movement disorders and/or severe agitation
- Vasovagal history
- Cardiac instability
- History of larygospasm

Kelly AM, McLaughlin C, Wallace S, et al. Fibreoptic Endoscopic Evaluation of Swallowing (FEES): the role of speech and language therapy. Royal College of Speech and Language Therapists Position Paper RCSLT, www.rcslt.org/members/publications/publications2/fees_position_paper_300315. (2015, accessed 19 September 2017).