

# Neurogenic Dysphagia

## Systematic Review and Proposal of a Classification System

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Cite as: *Neurology*® 2021;96:e876-e889. doi:10.1212/WNL.00000000000011350

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### Study Question

Can flexible endoscopic evaluation of swallowing (FEES) provide a basis for phenotypically classifying different forms of neurogenic dysphagia?

### What Is Known and What This Paper Adds

The complexity of swallowing as a neuromuscular process suggests that dysphagia can arise from diverse forms of neurophysiologic dysfunction. This study found that FEES results support the existence of diverse etiologies for neurogenic dysphagia and proposes a phenotype-based classification.

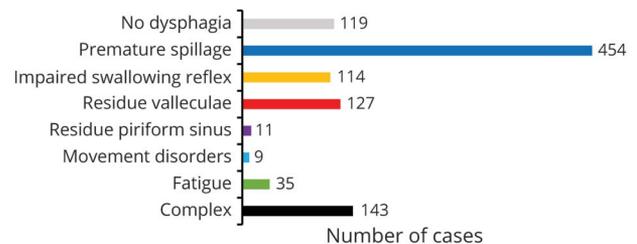
### Methods

For this classification scheme development project, the investigators first conducted a systematic literature review by querying the MEDLINE database for English- or German-language articles published before May 2020 that reported FEES findings from patients with stroke, parkinsonian syndromes, dementia, amyotrophic lateral sclerosis (ALS), myasthenia gravis (MG), or myositis. The interdisciplinary team of neurologists and speech pathologists developed a potential classification scheme for neurogenic dysphagia based on the literature review and review of FEES videos with the neurologic conditions described above. They tested the scheme's validity with an additional 1,012 randomly selected FEES videos of patients with the aforementioned neurologic disorders. The classification scheme was the primary outcome.

### Results and Study Limitations

The literature search yielded 59 useable articles. Based on those articles and review of the initial FEES videos, the investigators developed a classification scheme with 7 different neurogenic dysphagia phenotypes: (1) “premature bolus spillage” and (2) “delayed swallowing reflex,” both of which occur mainly in stroke patients; (3) “predominance of residue

**Figure** Numbers of Patients in the 1,012-Member Validation Group Who had Various Dysphagia Subtypes



in the valleculae,” which is most common in patients with Parkinson disease; (4) “predominance of residue in the piriform sinus,” which occurs only in patients with myositis, motoneuron disease, or brainstem stroke; (5) “pharyngolaryngeal movement disorder,” which occurs in patients with atypical parkinsonian syndromes or stroke; (6) “fatigable swallowing weakness,” which is common in patients with MG; and (7) “complex disorder,” which is a heterogeneous dysphagia pattern that occurs in patients with ALS. Applying this classification to FEES videos in the classification system resulted in interrater reliability with strong agreement ( $\kappa = 0.84$ ). The present study's limitations include a lack of bias risk assessments during the literature review and potential biases in the articles selected for review. The validation cohort comprised patients who underwent FEES for clinical reasons, and this might have caused selection bias. However, the use of numerous studies from diverse institutions favors generalizability.

### Study Funding and Competing Interests

This study received no funding. The authors report no competing interests. Go to [Neurology.org/N](https://www.neurology.org/N) for full disclosures.

*A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The corresponding author(s) of the full-length article and the journal editors edited and approved the final version.*

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*Neurology* 2021;96:e876-e889 Published Online before print December 14, 2020

DOI 10.1212/WNL.0000000000011350

### This information is current as of December 14, 2020

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