

Table 1:

Eight-point penetration-aspiration scale, designed for video-fluoroscopy swallow studies and adapted for clinical assessment.

Category	Score	Description (radiological)	Description (clinical)
No penetration or aspiration	1	Contrast does not enter the airway	No aspiration
Penetration	2	Contrast enters the airway, remains above vocal folds, no residue	
	3	Contrast remains above vocal folds, visible residue remains	
	4	Contrast contacts vocal folds, no residue	
	5	Contrast contacts vocal folds, visible residue remains	
Aspiration	6	Contrast passes glottis, no sub-glottic residue visible	Overt aspiration
	7	Contrast passes glottis, visible sub-glottic residue despite patient's response	
	8	Contrast passes glottis, visible sub-glottic residue, absent patient response	Suspected silent aspiration

Table 2:

Aspiration status according to videofluoroscopy swallow study per patient, according to organ systems and medical diagnoses. The little letter a indicates percentages of categories for the entire group, not mutually exclusive. Little letter b indicates the percentage of categories (demographics/ organ systems/ medical diagnoses) represented in each of the three aspiration modes (no aspiration, overt aspiration and silent aspiration); e.g. out of 67 children that did not aspirate, 32 (48%) had neurological abnormalities, 41 (61%) GI abnormalities, etc. The little letter c indicates percentage of aspiration status relative to category; e.g. 32 out of 68 (47%) of all children with neurological problems did not aspirate, 5 (7%) and 31 (46%) showed overt and silent aspirations respectively.

Category	Total		No aspiration			Overt aspiration			Silent aspiration		
	n=113	% ^a	n=67	% ^b	% ^c	n=9	% ^b	% ^c	n=37	% ^b	% ^c
Demographics											
Age ≤1	22	20%	11	16%	50%	1	11%	5%	10	27%	45%
Age >1	91	80%	56	84%	61%	8	89%	9%	27	73%	30%
Male	67	61%	43	64%	63%	6	67%	10%	18	49%	27%
Female	46	39%	24	36%	53%	3	33%	6%	19	51%	41%
Organ System											
Neurology	68	68%	32	48%	47%	5	56%	7%	31	84%	46%
GI	73	64%	41	61%	56%	7	78%	9%	25	68%	35%
Cardiopulmonary	98	87%	55	82%	56%	7	78%	7%	36	97%	37%
Genetic	36	32%	19	28%	53%	1	11%	3%	16	43%	44%
Structural	18	16%	15	22%	83%	0	0%	0%	3	8%	17%
Medical Diagnoses											
Down's Syndrome	14	12%	7	10%	50%	1	11%	7%	6	16%	43%
CP	21	19%	6	9%	29%	4	44%	19%	11	30%	52%
Dev delay	37	32%	18	26%	49%	5	56%	13%	14	37%	38%
Congenital heart ds	42	37%	24	15%	57%	3	33%	7%	15	41%	36%
Preterm <37 weeks	16	14%	10	69%	63%	1	11%	6%	5	14%	31%
Aspiration lung ds	87	78%	46	3%	53%	6	67%	7%	35	95%	40%
BPD	3	3%	2		67%	0	0%	0%	1	3%	33%

GI= gastro-intestinal; CP= cerebral palsy; Dev delay= developmental delay; BPD= broncho-pulmonary dysplasia.

^a Percentage of total group

^b Percentage of category relative to aspiration status

^c Percentage of aspiration status relative to category

Table 3:

Predictive value of clinical feeding evaluation for video-fluoroscopic swallow study outcome

	All Aspirations	Overt Aspiration	Silent Aspiration	No aspiration
Sensitivity	71%	56%	77%	78%
Specificity	84%	72%	75%	78%
PPV	78%	15%	35%	71%
NPV	78%	95%	95%	84%

Table 4:

Logistic regression model describing the relationship between medical diagnoses and the presence of aspiration (combined overt and silent), according to VFSS.

Medical diagnoses	OR	95% CI	p value	AOR	95% CI	p value
CP	9.8*	2.2 – 42.8	0.002	10.21*	2.27 – 45.95	0.002
Aspiration lung disease	3.2*	1.4 – 12.4	0.009	3.3*	1.82 – 12.7	0.008
Developmental delay	1.8	0.6 – 4.9	0.3	1.64	0.58 – 4.65	0.351
Congenital heart disease	1.7	0.5 – 5.7	0.4	1.61	0.47 – 5.53	0.444
Preterm <37 weeks	0.2	0.04 – 1.5	0.1	0.24	0.04 – 1.41	0.115
Down's Syndrome	0.8	0.2 - 3.9	0.7	0.77	0.15 – 3.88	0.755
BPD	0.6	0.02 – 14.6	0.7	0.59	0.23 – 14.9	0.741

OR= odds ratio; CI= confidence interval; AOR= age adjusted odds ratio; CP= cerebral palsy; BPD= broncho-pulmonary dysplasia.

*= Significant at $p < 0.05$

Table 5:

Clinical outcomes 1 year pre vs 1 year post VFSS, per patient (n=113). Values displayed as mean (SD).

Outcome	Year Pre VFSS	Year Post VFSS	p-value
Total no of admissions	3.42 (3.42)	2.33 (2.59)	<0.001
No of urgent admissions	2.05 (2.1)	1.12 (1.05)	<0.001
Total days of admission	20.92 (13.66)	9.78 (7.54)	<0.001
Respiratory admissions	1.54 (0.87)	0.97 (0.66)	0.04
Intensive care admissions	0.28 (0.18)	0.19 (0.09)	N/S
Total community visits	14.64 (9.65)	16.49 (10.46)	N/S
Respiratory community visits	2.44 (2.27)	2.3 (2.02)	N/S
Emergency room visits	3.69 (3.24)	3.12 (2.86)	N/S
Antibiotic courses	2.88 (2.56)	1.8 (0.89)	<0.001