

**Supplemental Material S1.** Subgroup regression analysis: Patient Outcomes – FEES findings.

**Patient Outcome: Nasogastric tube duration**

Risk factor	Univariate models		Final multivariable model	
	IRR (95% CI)	<i>p</i>	IRR (95% CI)	<i>p</i>
NZSS total	1.15 (1.06, 1.25)	.001		<i>R</i> = .31, <i>p</i> < .001
Urge to clear	1.00 (0.92, 1.09)	.978		
Peak expiratory force	0.85 (0.74, 0.96)	.012		
Swallow/min	0.37 (0.19, 0.72)	.003		
Laryngeal adductor reflex	0.74 (0.45, 1.21)	.225		
Pharyngeal squeeze	0.69 (0.43, 1.12)	.131		
Vocal fold paralysis	1.15 (0.73, 1.81)	.540		
Mucosal changes	2.24 (1.48, 3.38)	< .001	2.50 (1.45, 4.31)	.001
PAS - max	1.10 (1.02, 1.18)	.013		
PAS tsp fluid subscale	1.11 (1.04, 1.20)	.003		
PAS continuous fluid subscale	1.06 (0.99, 1.15)	.117		
PAS puree subscale	1.06 (0.92, 1.23)	.400		

*Note.* IRR = incidence rate ratio.

## Patient Outcome: IDDS functional score

Risk Factor:	Univariate models			Final multivariable model		rho	p
	B (95% CI)	p	R <sup>2</sup>	B (95%CI)	p		
NZSS total	-0.28 (-0.44, -0.13)	< .001	.062			-.207	.003
Urge to clear	-0.08 (-0.23, 0.08)	.324	.006			-.005	.951
Peak expiratory force	0.34 (0.13, 0.54)	.001	.065			.281	< .001
Swallow/min	1.85 (0.81, 2.89)	.001	.061	1.85 (0.81, 2.89)	< .001	.226	.002
Laryngeal adductor reflex	0.61 (-0.26, 1.47)	.169	.012			.099	.212
Pharyngeal squeeze	2.11 (1.35, 2.88)	< .001	.149	1.44 (0.73, 2.16)	< .001	.333	< .001
Vocal fold paralysis	0.43 (-0.41, 1.27)	.310	.005			.063	.381
Mucosal changes	-0.02 (-0.81, 0.76)	.954	.000			.004	.959
PAS - max	-0.32 (-0.45, -0.18)	< .001	.102			-.291	< .001
PAS tsp fluid subscale	-0.29 (-0.43, -0.16)	< .001	.085			-.228	.001
PAS cont. fluid subscale	-0.26 (-0.40, -0.13)	< .001	.082			-.257	< .001
PAS puree subscale	-0.07 (-0.32, 0.18)	.575	.002			-.057	.438

### Patient Outcome: Chest infection

Risk Factor:	Univariate models		Final multivariable model	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
NZSS total	1.25 (1.11, 1.40)	< .001	1.21 (1.05, 1.40)	<i>R</i> = .26, < .001
Urge to clear	1.13 (1.01, 1.25)	.032		
Peak expiratory force	0.91 (0.78, 1.06)	.211		
Swallow/min	0.33 (0.15, 0.76)	.009	0.32 (0.12, 0.88)	.027
Laryngeal adductor reflex	0.78 (0.42, 1.43)	.416		
Pharyngeal squeeze	0.75 (0.43, 1.34)	.334		
Vocal fold paralysis	0.88 (0.50, 1.56)	.670		
Mucosal changes	1.53 (0.89, 2.62)	.125		
PAS - max	1.08 (0.98, 1.20)	.106		
PAS tsp fluid subscale	1.08 (0.98, 1.19)	.106		
PAS cont. fluid subscale	1.10 (0.99, 1.22)	.063		
PAS puree subscale	1.08 (0.91, 1.28)	.385		

Note. OR = odds ratio.

**Patient Outcome: Died in admission**

Risk Factor:	Univariate models		Final multivariable model	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
NZSS total	1.10 (0.91, 1.32)	.326		$R = .07$ , $p = .29$
Urge to clear	1.04 (0.86, 1.25)	.696		
Peak expiratory force	0.88 (0.66, 1.16)	.347		
Swallow/min	0.41 (0.10, 1.73)	.223		
Laryngeal adductor reflex	0.42 (0.16, 1.08)	.071		
Pharyngeal squeeze	0.82 (0.31, 2.13)	.680		
Vocal fold paralysis	1.64 (0.67, 4.05)	.281		
Mucosal changes	0.44 (0.18, 1.07)	.070		
PAS - max	1.08 (0.91, 1.28)	.356		
PAS tsp fluid subscale	1.12 (0.96, 1.31)	.162		
PAS cont. fluid subscale	1.17 (0.96, 1.42)	.113		
PAS puree subscale	1.14 (0.90, 1.44)	.273		

Note. OR = odds ratio.

### Patient Outcome: Discharged with nasogastric tube

Risk Factor:	Univariate models		Final multivariable model	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
NZSS total	1.22 (1.07, 1.39)	.004		<i>R</i> = .20, <i>p</i> = .003
Urge to clear	1.05 (0.93, 1.18)	.452		
Peak expiratory force	0.80 (0.66, 0.98)	.031		
Swallow/min	0.12 (0.04, 0.36)	< .001	0.13 (0.04, 0.40)	< .001
Laryngeal adductor reflex	0.56 (0.28, 1.10)	.090		
Pharyngeal squeeze	0.32 (0.16, 0.66)	.002		
Vocal fold paralysis	0.70 (0.35, 1.39)	.302		
Mucosal changes	2.64 (1.34, 5.21)	.005	2.77 (1.35, 5.68)	.005
PAS - max	1.23 (1.08, 1.39)	.001		
PAS tsp fluid subscale	1.26 (1.13, 1.41)	< .001		
PAS cont. fluid subscale	1.16 (1.02, 1.32)	.022		
PAS puree subscale	1.21 (1.00, 1.45)	.046		

Note. OR = odds ratio.