

Online-supplement Table 2 . Sample characteristics at baseline

Stratification by aspiration risk				
Total sample (n=72)	Safe swallow (n=39)	Unsafe swallow (n=33)	p-value ^a	
Age (years)	64.6 (14.4)	59.9 (14.0)	70.2 (13.1)	0.0022
Males	42 (58%) ^b	23 (59%) ^b	19 (58%) ^b	0.905
NIHSS score (median, IQR) ^c	8 (5, 12)	6 (5, 10)	9 (7, 14)	0.0002
Pre-morbid NEADL score (median, IQR) ^d	60 (46, 63)	60 (54, 63)	57 (35, 63)	0.203
Stroke Type				
Ischemic	65 (90%)	38 (97%)	27 (82%)	0.089
Haemorrhagic	7 (10%)	1 (3%)	6 (18%)	0.089
Stroke Side				
Left	26 (36%)	16 (41%)	10 (30%)	0.393
Right	45 (62%)	22 (56%)	23 (70%)	0.393
Bilateral	1 (1%)	1 (3%)	-	0.393
Stroke Site				

Cortical	33 (46%)	17 (44%)	16 (48%)	0.578
Subcortical	31 (43%)	19 (49%)	12 (36%)	0.578
Brainstem/cerebellar	8 (11%)	3 (8%)	5 (15%)	0.578
Current smoker	18 (25%)	10 (26%)	8 (24%)	0.891
<hr/>				
Forced spirometry				
FVC (L)	2.2 (1.0)	2.6 (0.9)	1.8 (1.0)	0.0008
FEV ₁ (L)	1.8 (0.8)	2.0 (0.8)	1.5 (0.8)	0.0071
FEV ₁ /FVC ratio	0.82 (0.14)	0.79 (0.14)	0.85 (0.14)	0.0743
PEF (L/min)	240 (138)	274 (146)	199 (118)	0.0070
<hr/>				
Maximal mouth pressures				
PEmax (cmH ₂ O)	59 (34)	71 (35)	40.5 (25)	0.0005
PImax (cmH ₂ O)	43 (29)	53 (30)	31 (23)	0.0013
<hr/>				
Maximal voluntary cough				

PCF (L/min)	465 (258)	535 (262)	383 (230)	0.011
PIF (L/min)	134 (73)	146 (80)	119 (61)	0.109
CVE (L)	1.3 (0.7)	1.5 (0.7)	1.1 (0.7)	0.042
CVI (L)	1.6 (0.8)	1.8 (0.7)	1.3 (0.8)	0.011
CVAC (L/s/s)	166 (113)	194 (119)	134 (99)	0.024
GCT (s)	0.24 (0.2)	0.26 (0.2)	0.21 (0.1)	0.223

Capsaicin-induced

involuntary cough

PCF (L/min)	283 (114)	303 (110)	260 (116)	0.126
PIF (L/min)	88 (44)	98 (51)	77 (32)	0.046
CVE (L)	0.7 (0.4)	0.7 (0.4)	0.6 (0.3)	0.406
CVI (L)	1.2 (0.6)	1.3 (0.7)	1.0 (0.5)	0.024
CVAC (L/s/s)	114 (50)	124 (49)	102 (50)	0.073
GCT (s)	0.20 (0.1)	0.19 (0.1)	0.22 (0.1)	0.345

Pneumonia within 4 weeks of baseline assessment	13 (18%)	2 (5%)	11 (33%)	0.004
---	----------	--------	----------	-------

Figures are mean (SD) and frequency (%), unless stated otherwise

^aIndependent samples t-test or Mann-Whitney U test for continuous data, Chi squared or Fisher's exact test for categorical data (5% alpha, 80% power)

^bPercentages are percentages of column totals

^cNIHSS, National Institutes of Health Stroke Scale: score range 0-34, higher score indicates more severe stroke, score <5 predicts favourable clinical outcome

^dNEADL, Nottingham Extended Activities of Daily Living questionnaire: score range 0-66, higher score indicates greater independence in activities of daily living

CVAC, cough volume acceleration; CVE, cough volume expired; CVI, cough volume inspired; FVC, forced vital capacity; FEV₁, forced expiratory volume in one second; GCT, glottis compression time; PCF, cough flow; PEF, peak expiratory flow; PEmax, maximal expiratory mouth pressure; PIF, peak inspiratory flow; PI_{max}, maximal inspiratory mouth pressure

Online-supplement Table 3. Logistic regression and goodness-of-fit tests: outcome pneumonia and predictor PCF of voluntary cough at baseline in 33 patients with unsafe swallow

```
. logistic RegPneu4Weeks VCPEFRbaseline if Swallowsafety1safe2unsafe==2
Logistic regression
Number of obs = 33
LR chi2(1) = 7.24
Prob > chi2 = 0.0071
Pseudo R2 = 0.1723
Log likelihood = -17.386481
```

RegPneu4We~s	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
VCPEFRbase~e	.9936175	.0030242	-2.10	0.035	.9877078 .9995626

```
: logit
Logistic regression
Number of obs = 33
LR chi2(1) = 7.24
Prob > chi2 = 0.0071
Pseudo R2 = 0.1723
Log likelihood = -17.386481
```

RegPneu4We~s	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
VCPEFRbase~e	-.0064029	.0030437	-2.10	0.035	-.0123684 -.0004375
_cons	1.413704	.9745368	1.45	0.147	-.4963532 3.323761

```
: estat gof
Logistic model for RegPneu4Weeks, goodness-of-fit test
    number of observations = 33
    number of covariate patterns = 33
        Pearson chi2(31) = 29.47
        Prob > chi2 = 0.5447

: estat gof, group(10)
Logistic model for RegPneu4Weeks, goodness-of-fit test
    (Table collapsed on quantiles of estimated probabilities)

    number of observations = 33
    number of groups = 10
    Hosmer-Lemeshow chi2(8) = 1.96
    Prob > chi2 = 0.9823
```

Online-supplement Table 4. Logistic regression and goodness-of-fit tests: outcome pneumonia and predictor PCF of reflex cough at baseline in 33 patients with unsafe swallow

. logistic RegPneu4Weeks RCPEFRbaseline if Swallowsafety1safe2unsafe==2

Logistic regression
 Number of obs = 33
 LR chi2(1) = 0.53
 Prob > chi2 = 0.4663
 Pseudo R2 = 0.0126
 Log likelihood = -20.739546

RegPneu4We~s	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
RCPEFRbase~e	.9977293	.0031731	-0.71	0.475	.9915294 1.003968

. logit

Logistic regression
 Number of obs = 33
 LR chi2(1) = 0.53
 Prob > chi2 = 0.4663
 Pseudo R2 = 0.0126
 Log likelihood = -20.739546

RegPneu4We~s	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
RCPEFRbase~e	-.0022733	.0031804	-0.71	0.475	-.0085067 .0039602
_cons	-.1326467	.8517719	-0.16	0.876	-1.802089 1.536795

. estat gof

Logistic model for RegPneu4Weeks, goodness-of-fit test

number of observations = 33
 number of covariate patterns = 33
 Pearson chi2(31) = 32.78
 Prob > chi2 = 0.3798

. estat gof, group(10)

Logistic model for RegPneu4Weeks, goodness-of-fit test

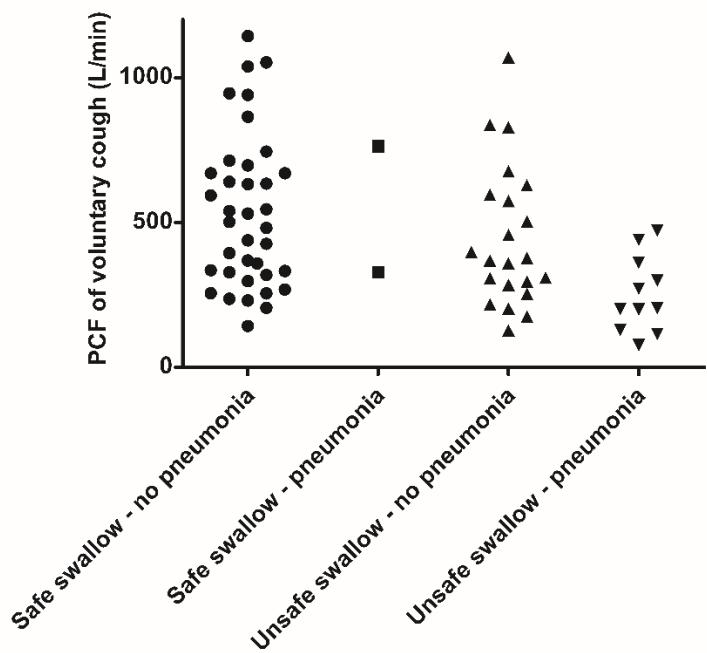
(Table collapsed on quantiles of estimated probabilities)

number of observations = 33
 number of groups = 10
 Hosmer-Lemeshow chi2(8) = 7.25
 Prob > chi2 = 0.5097

Online-supplement Table 5. Odds ratio: outcome pneumonia (cases) and risk factor voluntary PCF \leq 400 L/min (exposed) in 33 patients with unsafe swallow

. cc RegPneu4weeks Cat2_400_VCPEFR if Swallowsafety1safe2unsafe==2			
	Exposed	Unexposed	Proportion Exposed
Cases Controls	9 13	2 9	0.8182 0.5909
Total	22	11	0.6667
		Point estimate [95% Conf. Interval]	
Odds ratio Attr. frac. ex. Attr. frac. pop	3.115385 .6790123 .5555556	.4543444 -1.200974	35.24562 (exact) .9716277 (exact)
chi2(1) = 1.70 Pr>chi2 = 0.1917			

Online-supplement Figure 1. Peak cough flow (PCF) of maximal voluntary cough according to swallow safety and pneumonia status (each data point represents one patient, n=72)



Online-supplement Figure 2. Peak cough flow (PCF) of reflex cough according to swallow safety and pneumonia status (each data point represents one patient, n=69)

