East Suffolk and North Essex NHS Foundation Trust

Multidisciplinary Mortality Review

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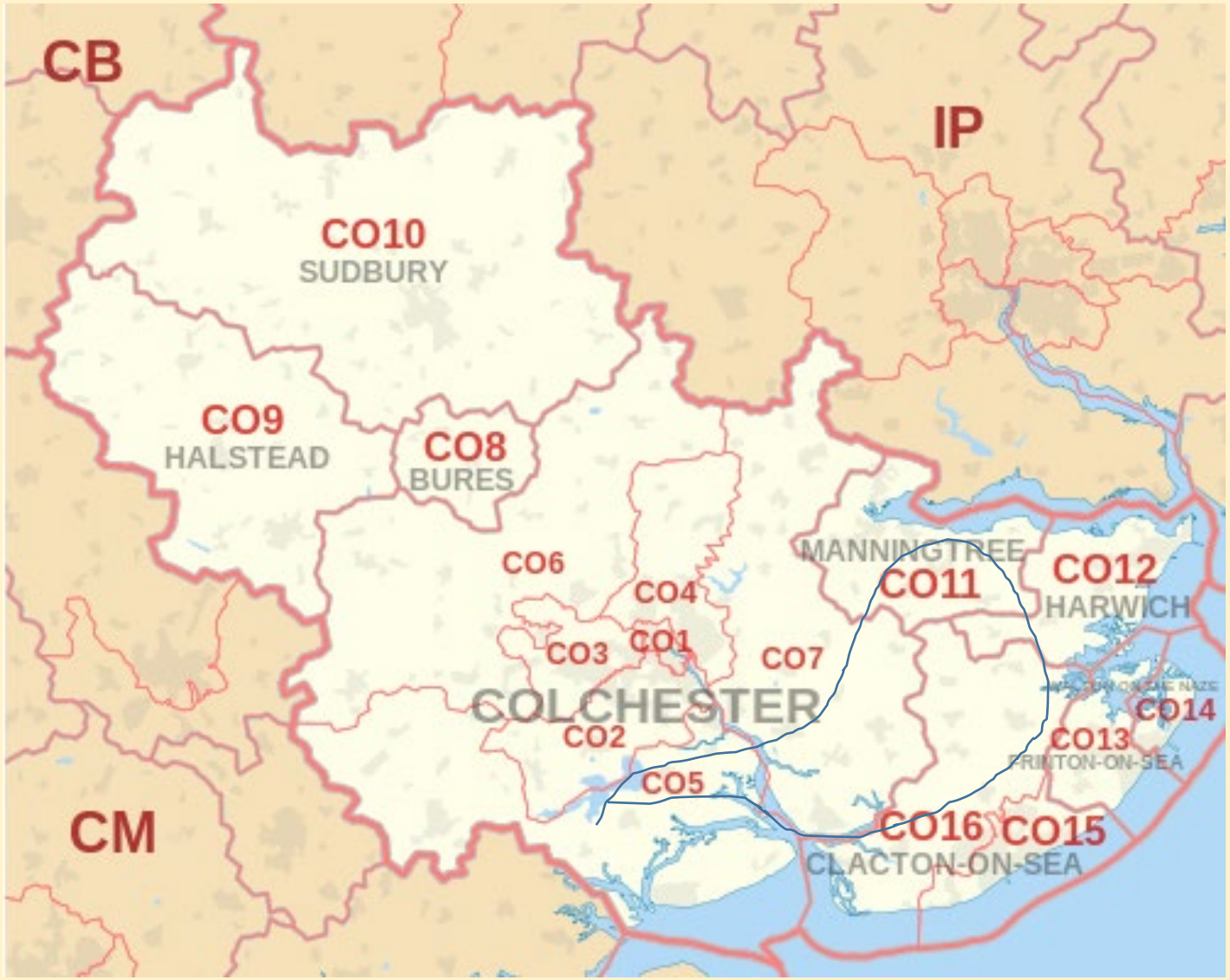
Outline

- **Background**
- **Mortality themes**
- **Areas to focus**
- **MDT mortality review**
- **Impact**

Geography


CB
IP
CO10
SUDBURY
CO9
HALSTEAD
CO8
BURES
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CO7
COLCHESTER
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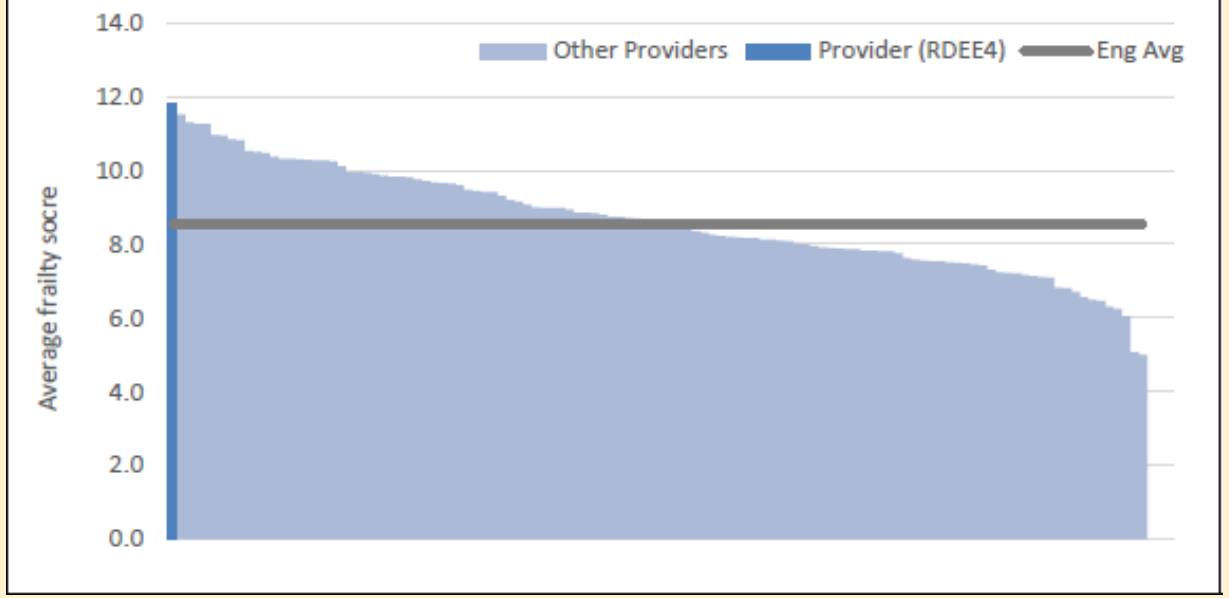
CO5
CM
MANNINGTREE
CO11
CO12
HARWICH
CO14
CO13
FRINTON-ON-SEA
CO16
CO15
CLACTON-ON-SEA

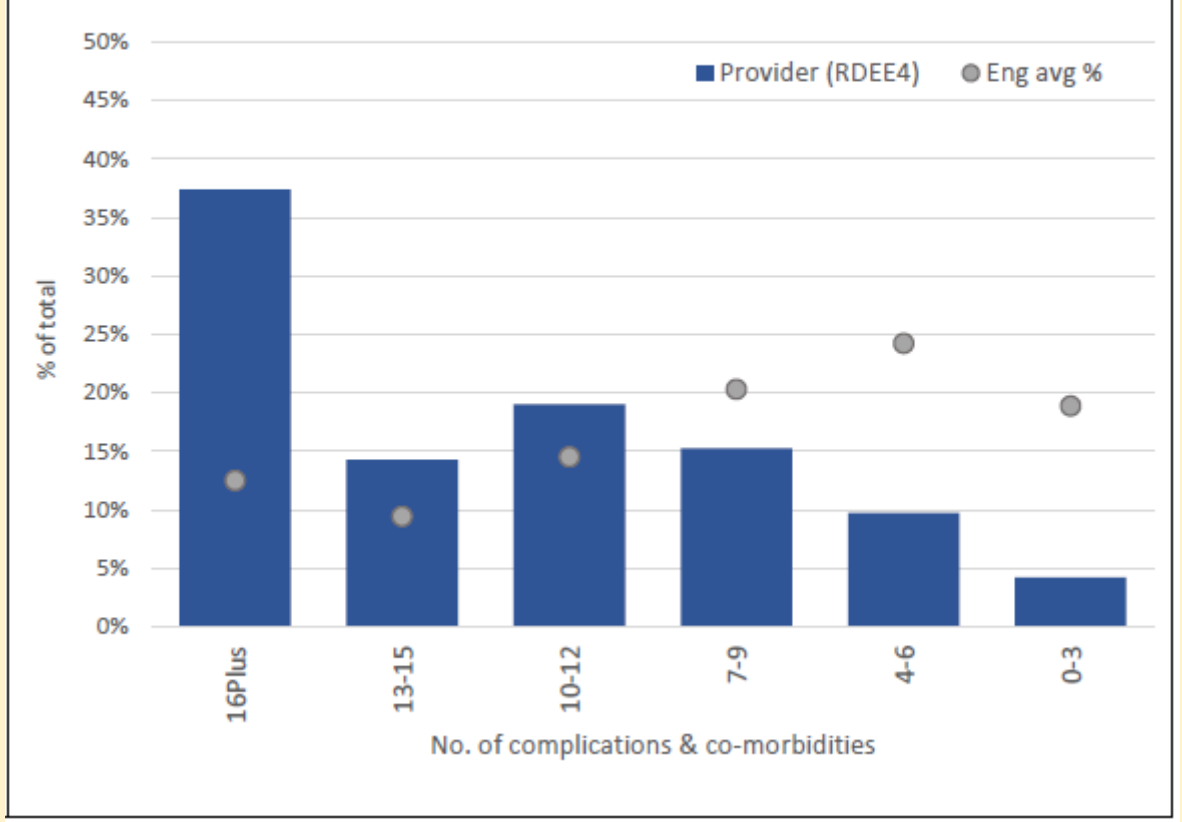
Average frailty score
HES Apr 2017 - Mar 2018



- **One of the most frail population as per prestroke frailty**

Source: GIRFT

Stroke by number of complications and co-morbidities
Source: HES Apr 2017 - Mar 2018

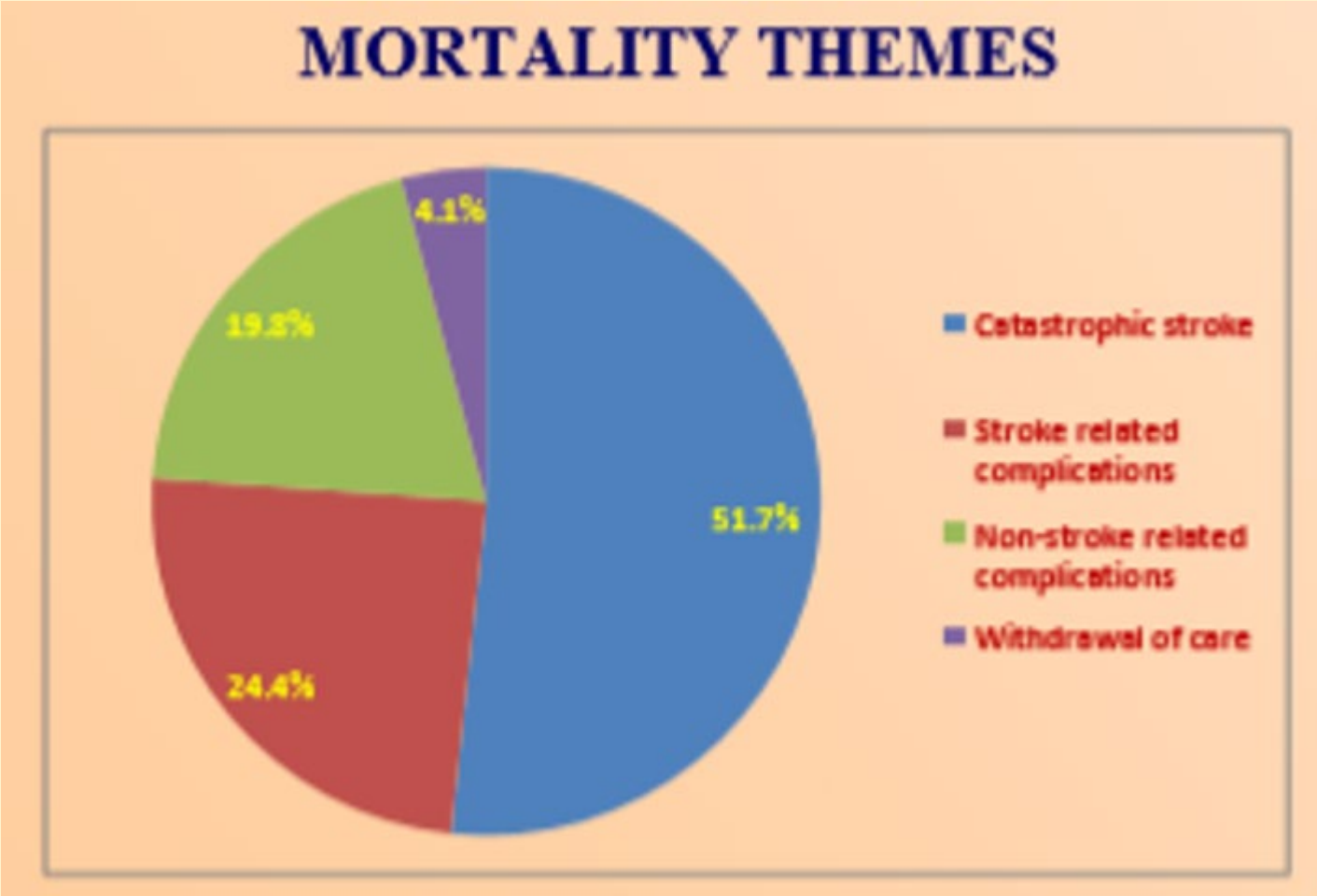


- **A very high proportion of co-morbidities**

Source: GIRFT

Analysis of Mortality

- To evaluate stroke mortality and identify the themes, we carried out an audit of 170 deaths
- We also assessed the association of various factors with mortality



Factors associated with mortality

- **Many observational studies have consistently concluded that pneumonia or development of any medical complications are associated with mortality.**

- **In our multivariate analysis, only Age(p=0.05), AF(P=0.0009), NIHSS(p=<0.0001), Haemorrhagic stroke (p=0.0462) and Pneumonia(p=<0.0001) were strongly associated with death.**

Stroke mortality form:

Name: Age: Hospital number:

Premorbid status:(comorbidity especially dementia, previous stroke, CCF, functional status

Admission details **Date of adm:** **Date of Death:**

Type of stroke

Severity of stroke

When was this patient fed adequately?

<24 hrs. | 24 - 48 hrs. | 48-72 hrs. | >72 hrs. | When?

Consultant review within 24 hrs: Yes/No

Did the patient develop aspiration pneumonia?

Yes | No | If yes? Type of feed:

What was the initial swallow assessment?

Was the patient on trials?

Yes | No | Details:

Did the patient develop DVT or PE?

Yes | No

When was thromboprophylaxis administered?

Not applicable

Did the patient develop sepsis due to UTI?

Yes | No **Catheter?** Yes | No

Did the patient develop fluid overload?

Yes | No **On IVI?** Yes | No

Did the patient develop any other medical complications?

Yes | No | Details:

Was there ceiling of treatment in place?

Yes | No

Comments:(To consider: Hgic transformation, cerebral oedema, comorbidity, expected or not; DNACPR, failure to escalate)

ACTIONS REQUIRED

Is this an expected death? **Yes/No**

NCEPOD grading code (please circle letter)

A – Good practice

B – Room for improvement in clinical care

C – Room for improvement in organisational care

D – Room for improvement in clinical and organisational care

E – Less than satisfactory aspects of clinical or organisational care

How strong is the evidence that the death was preventable (please circle number)?

1 – Definitely not preventable

2 – Slight evidence for preventability

3 – Possibly preventable but not very likely (less than 50:50 but close call)

4 – Probably preventable (more than 50:50 but close call)

5 – Strong evidence for preventability

6 – Definitely preventable

Did the patient develop aspiration pneumonia?

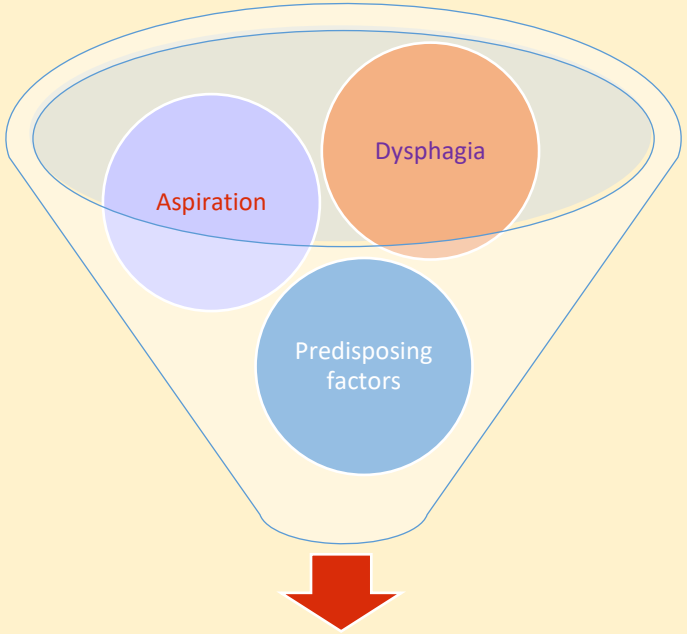
Yes	No	If yes? Type of feed:

What was the initial swallow assessment?

Was the patient on trials?

Yes	No	Details:

Oral bacteria turns from harmless to harmful within 3 days of hospitalisation



Pneumonia

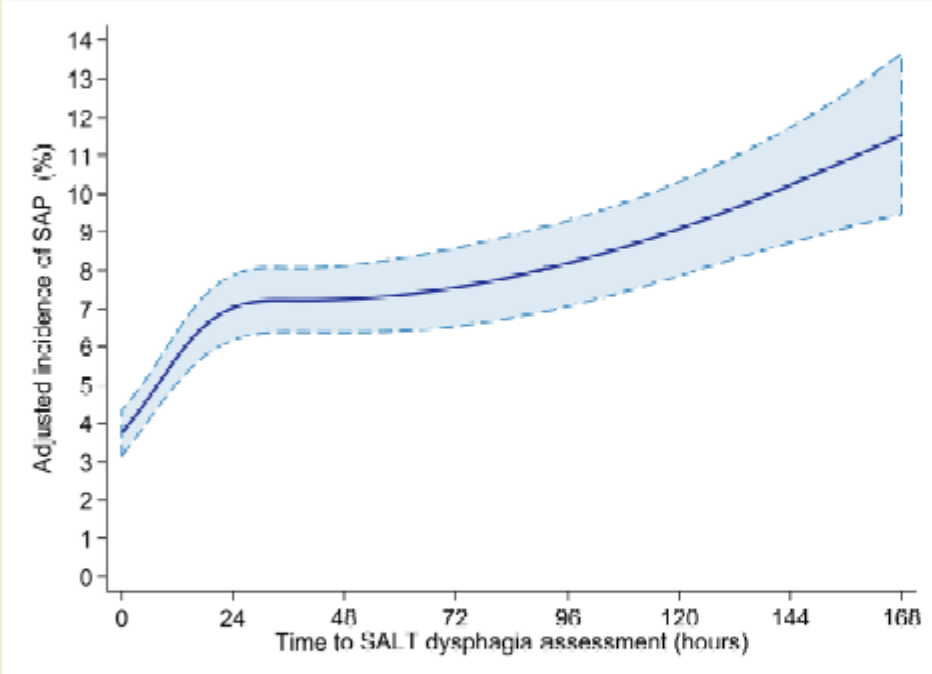
Aspiration

Pneumonia:
Increased mortality/ morbidity
Increased length of stay

Improving assessment of swallowing and SLT service

Timing of swallow assessment

Figure 3: Adjusted incidence of stroke-associated pneumonia (SAP) for increasing time to speech and language therapy assessment



This graph shows that the longer it takes for a swallow assessment to be performed for patients after stroke, the higher the risk is of developing pneumonia

These are the first data from a large multicentre national cohort to show that delays in SALT dysphagia assessment are associated with an increased risk of pneumonia after stroke. Expedited SALT dysphagia screening to avoid such delays might therefore be a strategy to reduce the risk of SAP and warrants further study

Bray et al. Journal of Neurology, Neurosurgery & Psychiatry 2017;88:25-30.

When was this patient fed adequately?

<24 hrs.	24 - 48 hrs.	48-72 hrs.	>72 hrs.	When?	

Improving early nutrition

Nutrition within 24 hrs and everyday for 72 hrs reduce mortality by 54%

Table 3| Association between achievement of care processes and 30 day mortality

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Processes	Univariable (n=36 037)		Multivariable* (n=36 037)		Multivariable*, excluding death or palliative care in first 3 days (n=27 632)	
	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value
Seen by a stroke consultant or associate specialist within 24 hours of admission	0.77 (0.71 to 0.83)	<0.001	0.88 (0.80 to 0.97)	0.009	0.86 (0.78 to 0.96)	0.007
Brain scan within 24 hours of admission	0.89 (0.82 to 0.98)	0.01	0.96 (0.86 to 1.07)	0.49	0.91 (0.81 to 1.04)	0.16
Bundle 1: seen by nurse and one therapist within 24 hours and all relevant therapists within 72 hours	0.82 (0.76 to 0.89)	<0.001	0.90 (0.82 to 0.99)	0.028	0.91 (0.82 to 1.01)	0.089
Bundle 2: nutrition screening and formal swallow assessment within 72 hours where appropriate	0.78 (0.71 to 0.86)	<0.001	0.76 (0.67 to 0.87)	<0.0001	0.83 (0.72 to 0.96)	0.01
Bundle 3: patient's first ward of admission was stroke unit and they arrived there within four hours of hospital admission	0.96 (0.89 to 1.02)	0.19	0.99 (0.90 to 1.08)	0.75	0.95 (0.86 to 1.05)	0.31
Bundle 4: patient given antiplatelet therapy where appropriate and had adequate fluid and nutrition for first 72 hours	0.24 (0.22 to 0.26)	<0.001	0.46 (0.42 to 0.50)	<0.0001	0.55 (0.49 to 0.61)	<0.001

Bray et al. BMJ 2013;346:f2827

Trials

- **Silent aspiration is a major issue**
- **Bedside assessment of swallowing –**
  - **Maximum 83% of correctly identifying dysphagia and 78% correctly identifying no dysphagia.**
- **VF and FEES not easily available.**
- **Swallowing fatigue, coexisting conditions influence the development of pneumonia**
- **Focus should be on careful monitoring of trials and early identification and treatment of pneumonia**

Can we predict Swallowing recovery?

Age

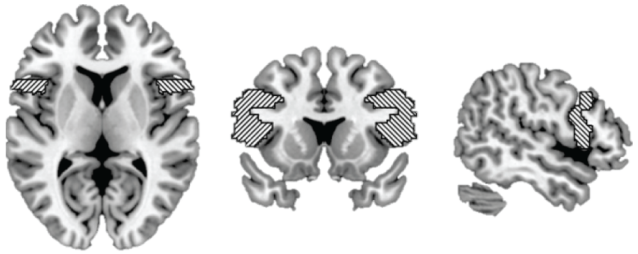
- ☐ 0 pts — Age <70 y
- ☐ 1 pt — Age ≥70 y

NIHSS score at admission

- ☐ 0 pts — NIHSS score ≤5 pts
- ☐ 1 pt — NIHSS score = 6-13 pts
- ☐ 2 pts — NIHSS score ≥14 pts

Stroke location

- ☐ 0 pts — No lesion of the frontal operculum
- ☐ 1 pt — Lesion of the frontal operculum



Initial risk of aspiration

- ☐ 0 pts — Any 2 score = 0-3 pts
- ☐ 1 pt — Any 2 score = 4-5 pts
- ☐ 2 pts — Any 2 score = 6 pts

Any 2 (Daniels et al[22])

- ☐ Dysphonia
- ☐ Dysarthria
- ☐ Abnormal gag reflex
- ☐ Abnormal volitional cough
- ☐ Cough after swallow
- ☐ Voice change after swallow

Initial impairment of oral intake

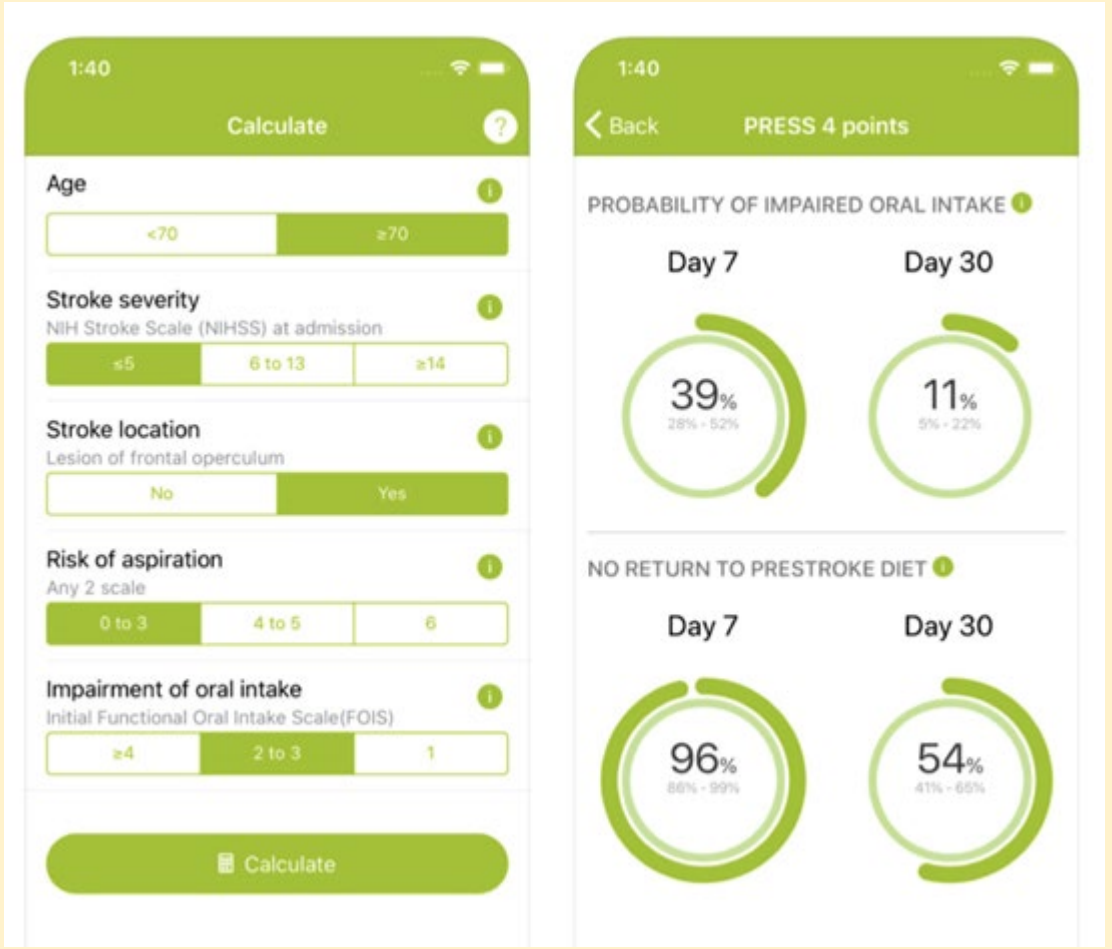
- ☐ 0 pts — FOIS score ≥4
- ☐ 2 pts — FOIS score = 2-3
- ☐ 4 pts — FOIS score = 1

FOIS (Crary et al[18])

- ☐ Level 1: nothing by mouth.
- ☐ Level 2: tube-dependent with minimal attempts of food or liquid.
- ☐ Level 3: tube-dependent with consistent oral intake of food or liquid.
- ☐ Level 4: total oral diet of a single consistency.
- ☐ Level 5: total oral diet with multiple consistencies, but requiring special preparation or compensations.
- ☐ Level 6: total oral diet with multiple consistencies without special preparation, but with specific food limitations.
- ☐ Level 7: total oral diet with no restrictions.

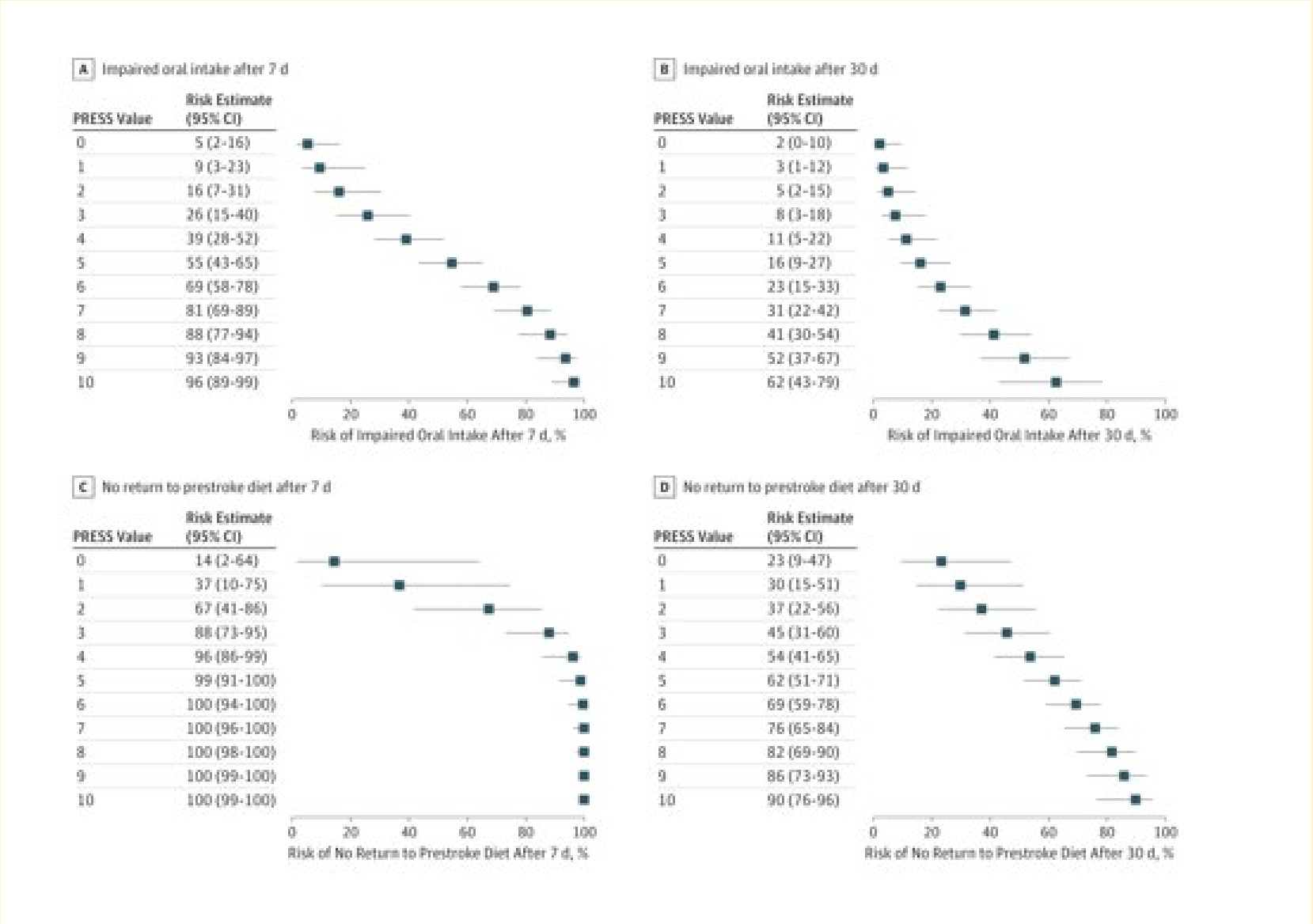
Sum

(0-10 pts)



JAMA Neurol. 2019;76(5):561-570

Prediction Estimates of Swallowing Recovery According to Predictive Swallowing Score (PRESS)



JAMA Neurol. 2019;76(5):561-570

Did the patient develop DVT or PE?

Yes	No

When was thromboprophylaxis administered?

	Not applicable

Did the patient develop sepsis due to UTI?

Yes	No

Catheter?

Yes	No

Did the patient develop fluid overload?

Yes	No

On IVI?

Yes	No

Did the patient develop any other medical complications?

Yes	No	Details:

Was there ceiling of treatment in place?

Yes	No

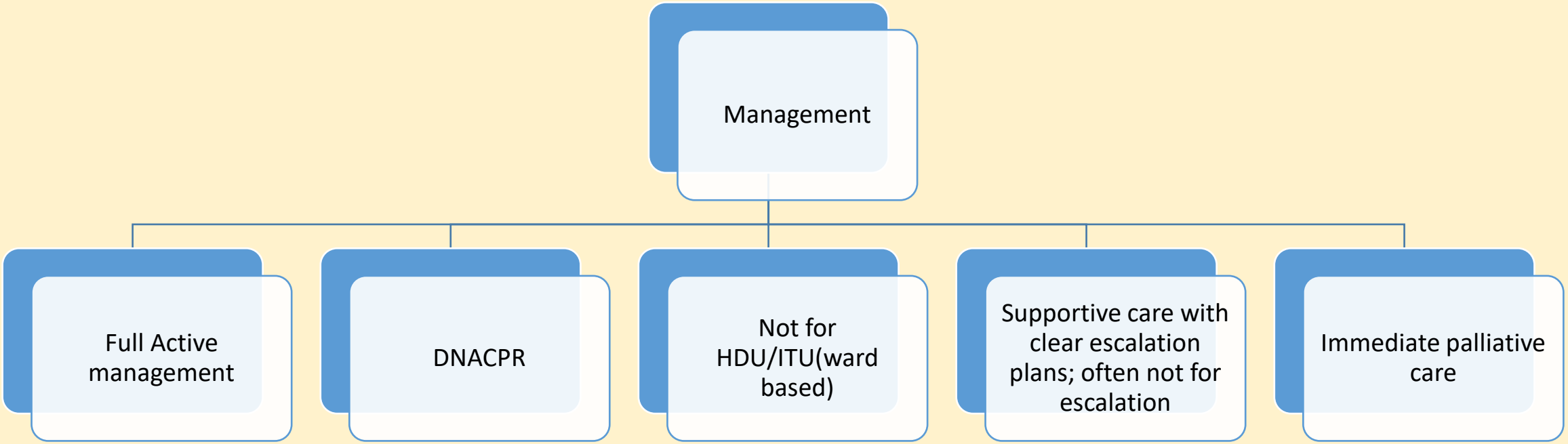
Multidisciplinary mortality review

- **We started MDT mortality review in Early 2013**
- **Attended by all stroke consultants, senior nursing staff, senior therapists etc**
- **Stroke specific form was created**
- **This was much before structured judgement review introduced in 2017**
- **Emphasis on challenge around medical interventions, PEG decisions,prompt senior review, oral care, early identification of silent aspiration, fluid overload, mobilisation, suctioning etc.**

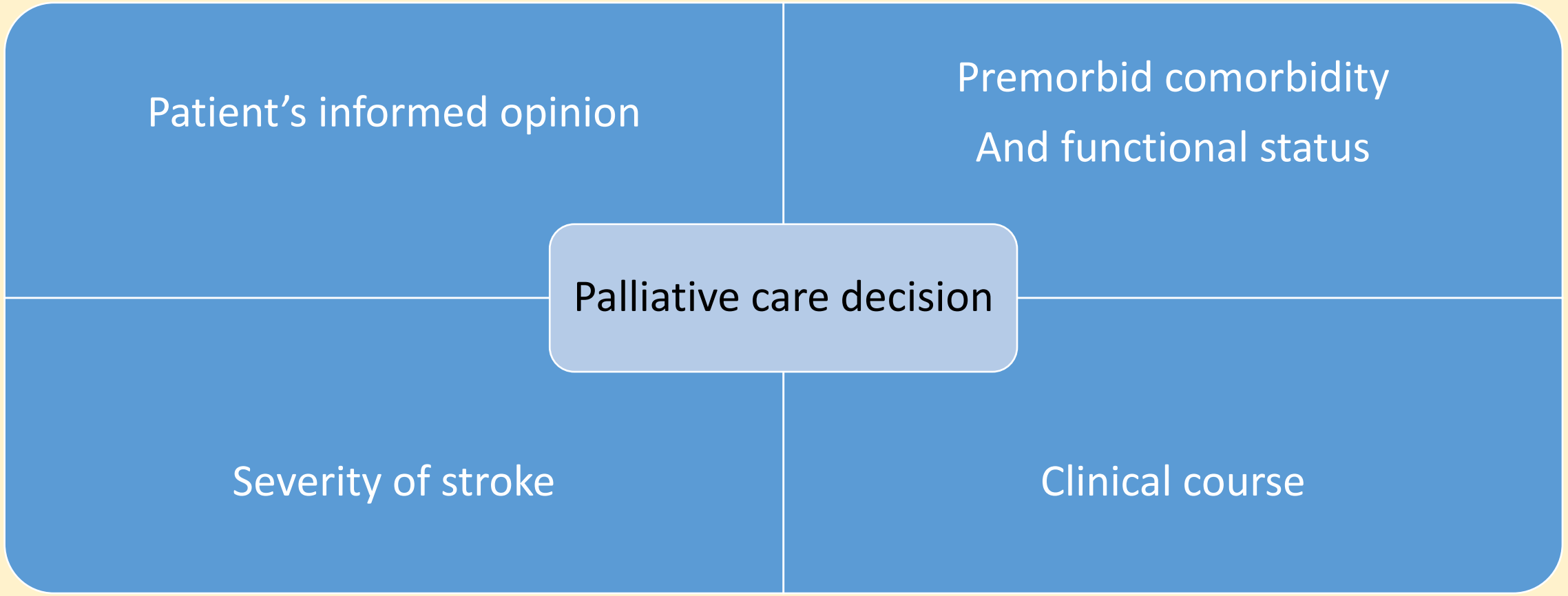
MDT teaching

- **PEG decision making**
  - **Lack of understanding of complexities**
  - **Distress with decisions taken**
- **Series of teaching sessions organised**
- **Regular staff feedback and debrief**

Post stroke management categories



Palliative care – Key elements of decision making



Decision-maker's own view on how he/she would like to be managed if they were in patient's situation has no place in patient's management

SUMMARY OF AREAS TO FOCUS:

- Reducing aspiration pneumonia rates
  - Educating staff about aspiration pneumonia
  - Launch of oral care training and emodule
  - Trials and review
  - Education around Silent aspiration
- Improving assessment of swallowing and SLT service
- Improving early nutrition
- Early mobilisation
- Training of staff around decision making for withdrawal of care
- Multidisciplinary mortality review

Mortality Public Table -SSNAP						
Team name	19-20	17-19	16-17	15-16	14-15	13-14
Basildon University Hospital	1.03	1.18	1.31	0.97	1.14	1.35
Addenbrooke's Hospital	1.09	1.29	1.23	0.91	1.20	1.23
Colchester	**0.79**	**0.95**	**0.82**	**1.04**	**1.10**	**1.28**
Ipswich Hospital	1.15	1.24	1.10	1.21	0.99	1.06
Lister Hospital	1.17	1.22	0.95	1.00	0.94	0.96
James Paget Hospital	1.06	1.29	1.33	1.09	1.28	1.33
Luton and Dunstable Hospital	1.03	1.19	1.16	1.27	1.44	1.45
Broomfield Hospital	1.02	1.11	1.06	1.02	1.44	1.38
Norwich	1.16	1.12	1.11	0.95	0.87	1.14
Peterborough City Hospital	0.81	0.77	0.96	1.11	1.14	1.08
Kings Lynn	0.94	1.03	1.04	1.13	1.14	1.27
Southend Hospital	1.05	1.07	0.92	1.01	1.03	1.48
Watford General Hospital	1.06	1.10	0.98	1.20	1.09	1.47
West Suffolk Hospital	1.01	0.89	0.92	0.80	0.86	1.23

Standardized mortality ratio = Observed deaths divided by expected deaths

Summary

- **Structured stroke specific mortality review improved**
  - **Process and**
  - **Knowledge**
- **MDT staff need to be empowered to make an effective contribution to the process**
- **Is palliative decision and its timing appropriate or not?**
- **Could we have prevented deterioration?**
- **It is vital that staff are educated about decision-making process regarding palliative care decisions.**