NHS

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Strategic Clinical Networks

Stroke Mortality Models

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Dr Foster Alert

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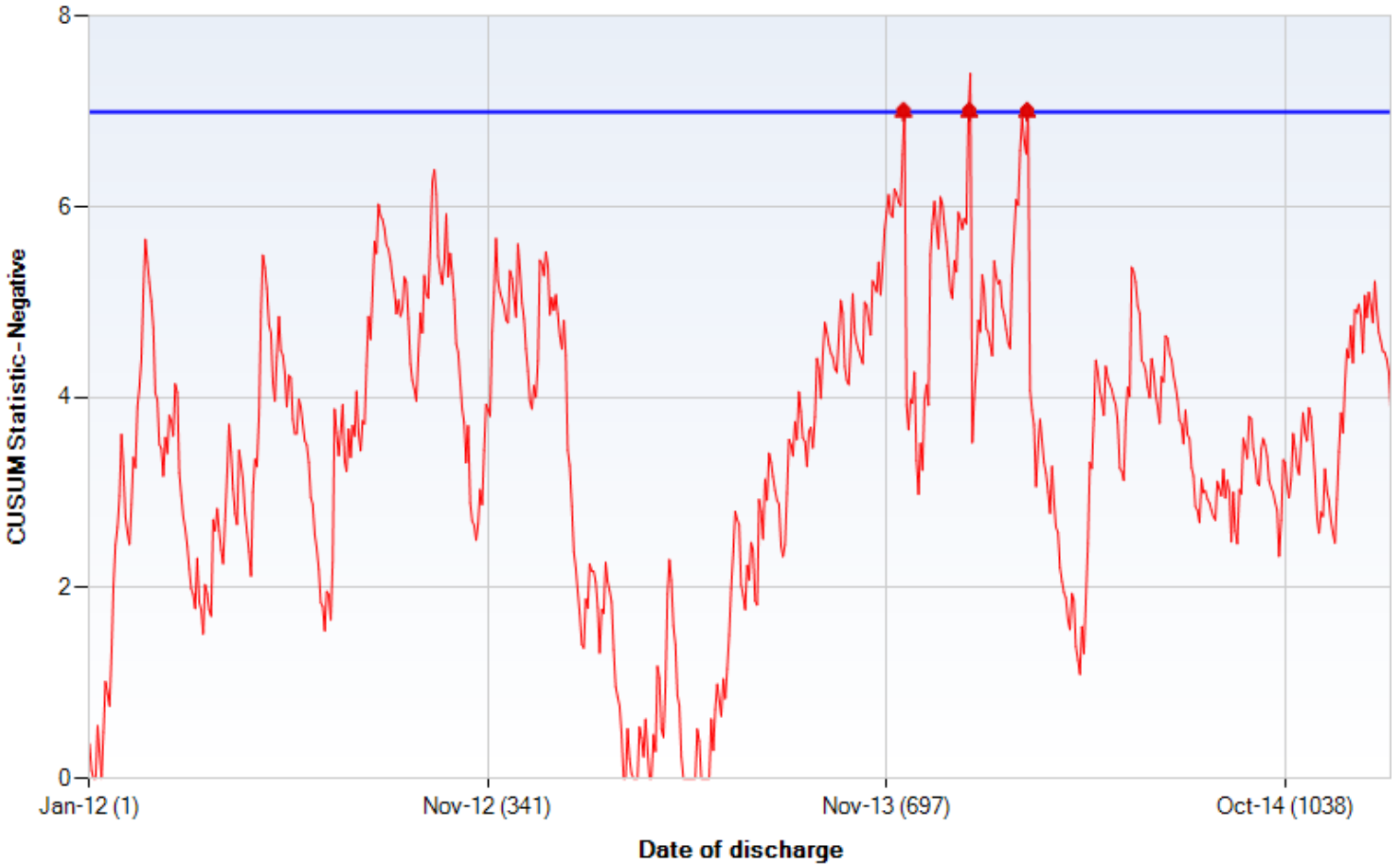

The Sunday Telegraph

2 FOR 1 WESTEND THEATRE TICKETS

Shamed: top hospitals with worst death rates

Daily Mail

£1MILLION TO BE WON
In our X Factor game

HUGE PAY RISES FOR SHAMED HOSPITAL BOSSES

The Observer

Eleven more hospitals at centre of safety scandal

Worst hospitals 'free to go on failing'

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The Daily Telegraph

Thousands more NHS deaths could have been prevented, government adviser says "At least 20,000 hospital deaths could have been prevented if warnings about high mortality rates had been acted on quickly".

HSMR - controversies

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The Telegraph

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13,000 died needlessly at 14 worst NHS trusts

The needless deaths of thousands of NHS patients will be exposed in a report this week.

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Promotions »

Health Most Viewed

'Deaths averted' at hospitals put into special measures

By Smitha Mundasad Health reporter


News › Society › NHS

Hospital needless deaths figure 'misleading'

Dubious but often quoted figure of 13,000 excess deaths at NHS trusts will not die away, says leading healthcare statistician

Sarah Boseley, health editor

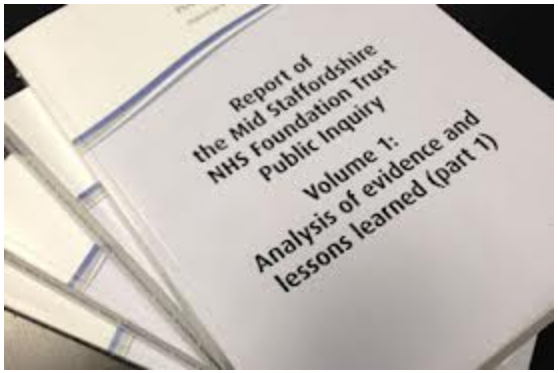
The Guardian, Wednesday 7 August 2013 23.21 BST

Jump to comments (2)

Dr David Spiegelhalter said newspapers and politicians are wrong to think widespread use of the number

The unsubstantiated but widely quoted figure of 13,000 excess deaths at the 14 hospital trusts recently investigated by the Keogh inquiry into mortality rates threatens to become a statistic that will not go away, according to a leading healthcare statistician.

"ZOMBIE STATISTIC"



Stroke Mortality < 75 years

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- ICD Codes 160 – 169
- Southport Mortality August 2012

In < 75 years

26 observed deaths vs 18 expected

- SHMR

144

- 160: Subarachnoid haemorrhage
- 161: Primary Intracerebral haemorrhage
- 162: Non traumatic haemorrhage (SDH , EDH)
- 163: Cerebral Infarction
- 164: Stroke not specified
- 165: Occlusion / stenosis of pre-cerebral arteries
- 166: Occlusion / stenosis of intracerebral arteries
- 167: Other cerebrovascular disease
- 168: Cerebrovascular disease not classified above
- 169: Sequelae of cerebrovascular disease.

dr foster® intelligence

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- Risk Assignment
- Attached to each patient's spell using national dataset and case-mix adjusted for :-
- Derives Standardised Hopsital Mortality Rate. **SHMR**
- 95% confidence limits
- 100 =average,

< 100 = better, > 100 = worse than in England.

- Age
- Sex
- Admission method
- Deprivation
- Diagnosis, Comorbidity (Charlson weighting)
- Admission source
- Emergency admissions in last 12 months
- month /year
- palliative care.

Relies on Coding rules, documentation, definitions of FCEs

Observed / Expected Deaths

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Expected deaths

- 50 patients with 10% risk = 5 expected deaths.

- 10 patients 5% risk, 15 with 12%, 33 with 14%, 5 with 30% and 3 with 70% risk

=

- 0.5 + 1.8 + 4.6 + 1.5 + 2.1

= 10.5 Expected deaths

- 14 deaths observed

= 14 / 10.5 = 133 **SHMR**

- 95% confidence intervals calculated which is influenced by size of sample size.

Actions

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Methods

- Review all deaths
- Ensure accurate coding + Charlson co-morbiity
- Clinical review of HAP cases C+M consultant leads
- Dr Foster review
- Review diagnosis of Aspiration Pneumonia
- NG placement
- SSNAP mortality data

Hogan Scale

Definition	Score
Definitely not preventable	1
Slight evidence for preventability	2
Possibly preventable but less than 50%	3
Probably preventable more than 50%	4
Strong evidence for preventability	5
Definitely preventable	6

Stroke Scales

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Iscore: A risk score to predict Death early after hospitalisation for an Acute ischaemic stroke.

- NIHSS, Age, sex, Sub-type, AF, CCF, MI , smoker, cancer, dialysis, BM > 7.5 mmol/l

Saposnik et al Circulation February 2011

ICH score

- GCS, Age > 80, ICH vol > 30. Intraventricular haemorrhage, Infratentorial origin.

Hemphill et al Stroke 2001 32(4) 891-897

SOAR Score

- Age, Stroke type (IS vs PICH), Oxford classification, Pre-morbid Rankin.

Myint et al Int J Stroke 2013

SSNAP

- Model A : Age, AF, ICH, NIHSS
- Model B: Age, AF, ICH, NIHSS LoC

Bray B et al Stroke 2014; 45: 3374-3380.

SSNAP Mortality Tool

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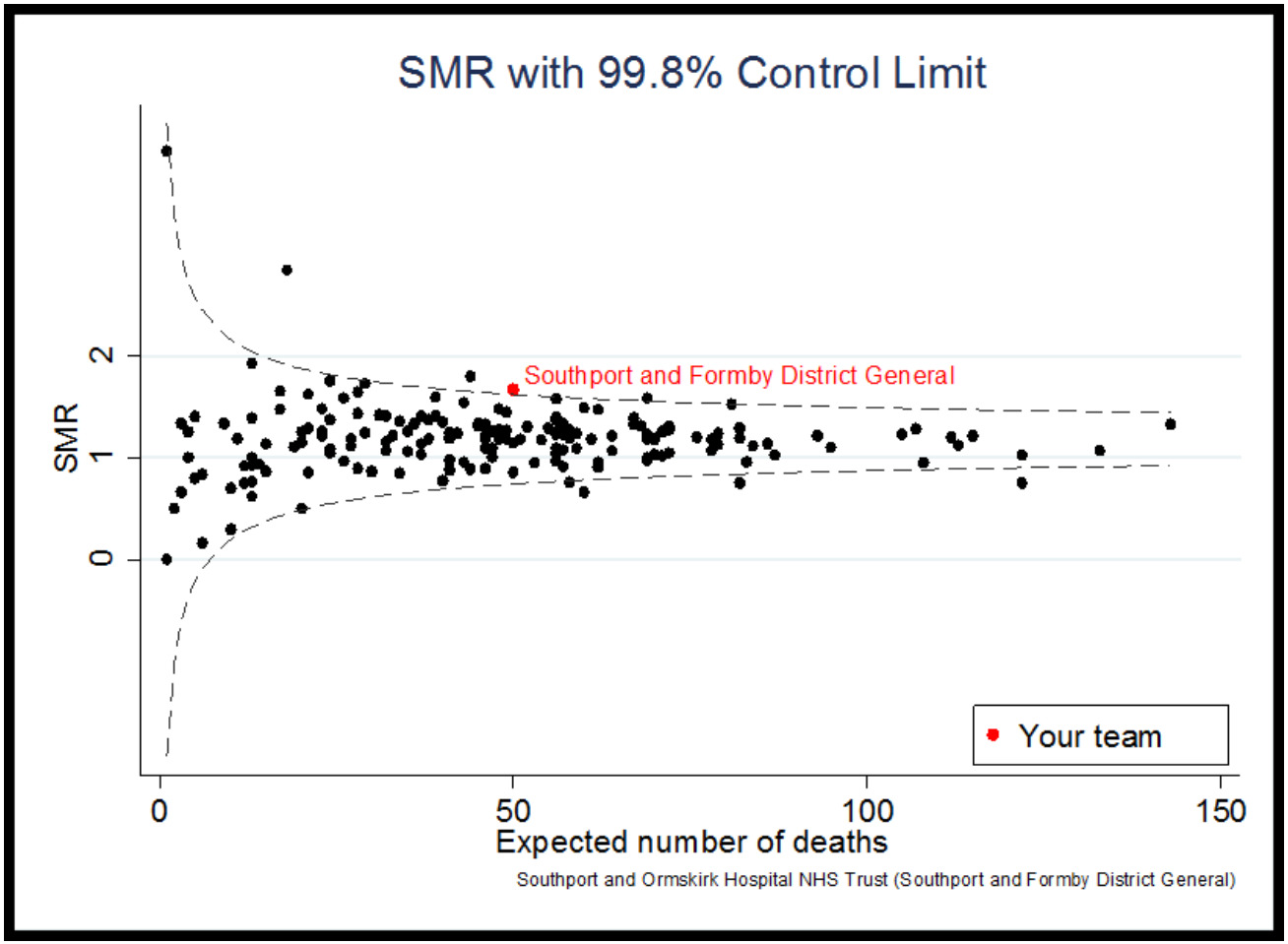

Annual Casemix Breakdown (April 2013 - March 2014)

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- **In this cohort, your team's casemix was generally atypical compared to the national casemix:**
- Of the 5 categories (age, AF, stroke type, stroke severity, and level of consciousness) your team had:
- **0 categories with generally large standardised differences,**
- **4 categories with generally moderate differences,**
- **1 category with a generally small standardised difference compared to the national.**
- Age **moderate** *Your patients are approximately similar to the national*
- AF **moderate** *Slightly more of your patients are admitted with AF*
- Stroke type **small** *The stroke type breakdown of your patients is similar to the national*
- Stroke severity **moderate** *Your patients' strokes are typically more severe at arrival*
- Level of consciousness **moderate** *More of your patients are conscious at arrival*

Action

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- Prospective collection of data June 14 for coding accuracy and to understand HSMR
- RCP review – service redesign, catalyst for change.

Dr Foster HSMR

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Mean Charlson Score June 14 – date All = 9.4

Alive = 8.58 Deaths = 12.9

Stroke data
June 2014 – February 2015

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Casemix	National	2013-2014 Southport	June 2014–2015
Age > 80 yrs	39.9 %	42.1 %	49.3%
Presence of AF	20.7%	25 %	29.85% (27.25)
On anticoagulant / NB	38.3 % / 12.3%	35.9 % / 6.5 %	30% / 11.25%
Stroke Type			
Ischaemic Stroke	87.7%	85.3 %	84.3%
Cerebral Haemorrhage	10.8 %	13.6 %	15.7%
Severity (NIHSS LoC)			
0	83%	79.6 %	81.3 %
1	10.1%	12.8 %	8.2 %
2	4 %	3.5 %	6.3 %
3	3 %	4.1 %	4.1 %
Crude Mortality	15.3%	23 %	19.4%

Stroke Prognostic models

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Stroke Prognostic Tool	Observed	Expected	SMR
Iscore / ICH	52	52.49	99.1
SOAR	52	50.23	103.5
Model A + Model B (18.3% no NIHSS)	52	41.3	126
Model A + Model B (missed AF)	52	41.6	125.1
Model B	52	43.9	118.4
Model B (Missed AF)	52	44.2	117.6

(Model A + B may need correction factor x 1.18)

Stroke Types - Mortality

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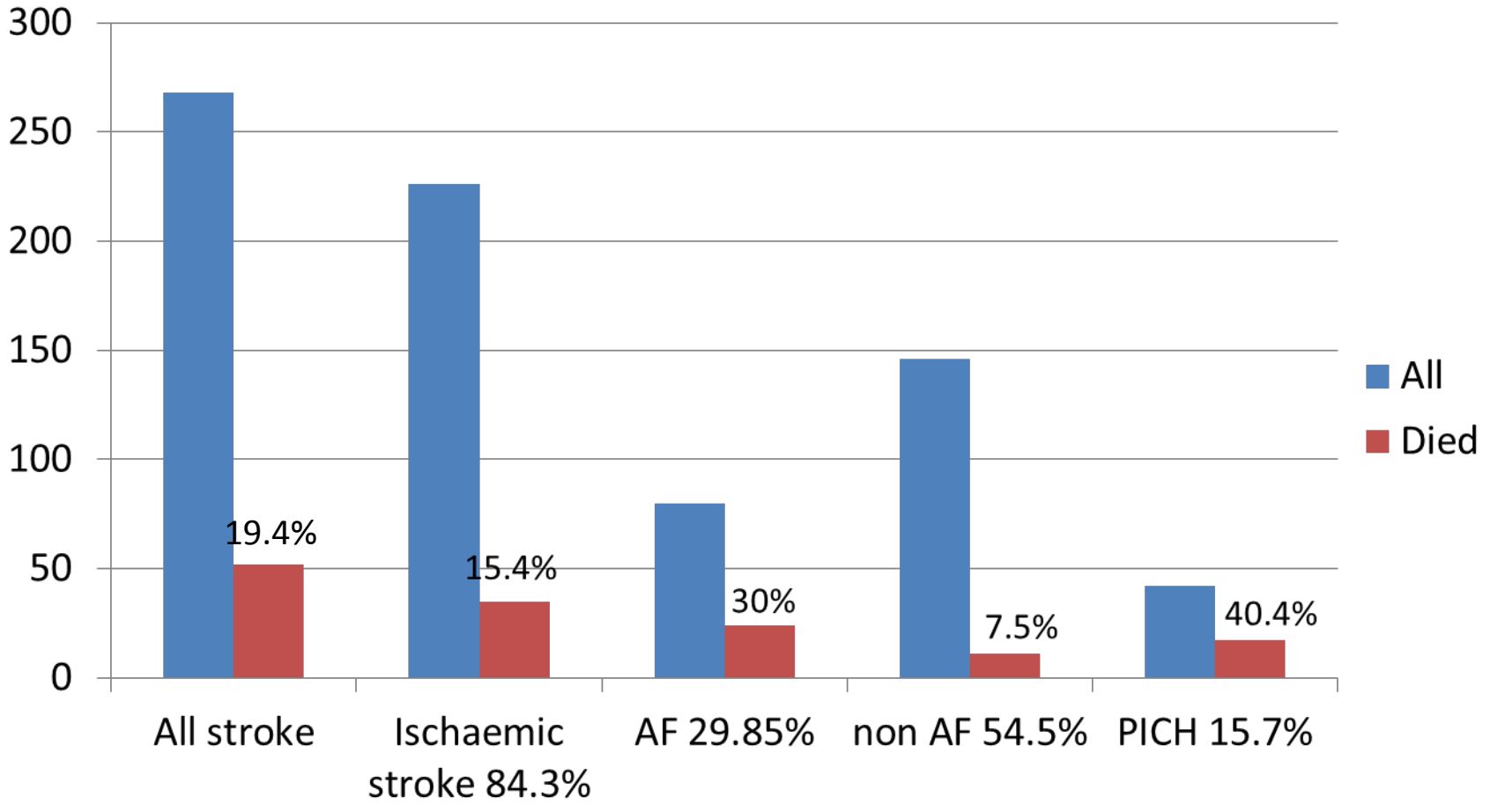

Charlson Index – co-morbidity

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Stroke Type	Charslon Index mean
Ischaemic stroke	9.6
IS - deaths	14.2
Ischaemic stroke - AF	12.4
AF- deaths	15.3
Ischaemic stroke -non AF	8.1
Non AF - deaths	13.1
Intracerebral Haemorrhage	8.3
PICH - deaths	10.3

Hogan Scale

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Hogan Scale	Clinical review
1	44
2	6
3	1
4	1
5	0
6	0

Atrial Fibrillation

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- 80 / 268 patients in AF (29.85%)
- 58/80 > 80 yrs (72.5%) cf non AF ischaemic strokes 51/146 (34.9%).
- 24/80 (30%) anti-coagulated 9/80 (11.25%) clinical decision not to anti-coagulate.
- 20/24 (83.3%) deaths > 80 yrs
- 11/146 (7.5%) non AF ischaemic strokes died 9/11 (81.8%) > 80 years

Atrial Fibrillation

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CCGs

- England Prevalence 1.6% expected 2.4%
- West Lancashire CCG prevalence 1.8% expected 2.7%
- Southport and Formby CCG prevalence 2.2% expected 3.4% (S+F has 3rd oldest CCG pop Eng + Wales).

West Lancashire CCG

- Register maintenance 100%, Stroke risk assessed CHADS 2 97.82%, CHADS 2 > 1 on anticoagulation 45.9%, (exception 18.24%) intervention = 64.1%

Southport and Formby CCG

- Register maintenance 100%, Stroke risk assessed CHADS 2 96.66 %, CHADS 2 > 1 on anticoagulation 44.9%, (exception 19.14%) intervention = 64.0%

Intra-cerebral Haemorrhage

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- 17/ 42 ICHs died
- 23 /42 (54.7%) > 80 years 11/17 (64.7%) deaths > 80 years

Stroke model	ICH Score	SOAR	SSNAP Model A	SSNAP Model B
SMR	81.4	110.3	112.5	106.7

My Learning Points

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- Important Smoke screen to be further investigated and acted upon.
- Anxiety for patients, public and staff.
- Review of mortality and avoidable mortality.
- Importance of review of whole service + support from outside professional experts
- But multiple external agencies involved (CQC, TDA, networks, RCP, Dr Foster, CCGs) and therefore time demands on clinicians.
- Importance of Coding and validation/ accuracy of data entry especially if non-clinicians entering data
- Importance of case-mix.
- Importance of Atrial Fibrillation in our Health economy and population strategy re anti-coagulation.
- Accuracy and validity of stroke prognostic models and hence public and CCG interpretation.
- Need for informed debate re narrative and reasons for high SMRs.
- Pressures from trust board, CCGs,etc