East and North Hertfordshire NHS
NHS Trust

Agenda Item: 11b

TRUST BOARD MEETING - November 2013
MORTALITY UPDATE

PURPOSE	To inform the Trust of matters escalated from the Clinical Governance Strategy Committee and Patient Safety Committee; together with an update on mortality
PREVIOUSLY CONSIDERED BY	Clinical Governance Strategy Committee, Patient Safety Committee and RAQC in November 2013.
Objective(s) to which issue relates *	☑ 1. To continuously improve the quality of our services in order to provide the best care and optimise health outcomes for each and every individual accessing the Trust's services ☐ 2. To excel at customer service, achieving outstanding levels of communication and patient, carer and GP satisfaction ☑ 3. To provide and support the best standards of integrated care for the elderly and those with long term conditions by developing key partnerships and services ☑ 4. To consolidate services and enhance local access to specialist services in order to deliver high quality, safe, seamless, innovative and integrated services which are sustainable ☐ 5. To support the continued development of the Mount Vernon Cancer Centre and provision of leading local and tertiary cancer services ☐ 6. To improve our staff engagement and organisational culture to be amongst the best nationally
Risk Issues (Quality, safety, financial, HR, legal issues, equality issues)	As identified in the report
Healthcare/ National Policy (includes CQC/Monitor)	CQC Compliance
CRR/Board Assurance Framework *	☐ **Corporate Risk Register** ☑ **BAF**

ACTION REQUIRED *

For approval	☐	For decision	☐
For discussion	☑	For information	☐

DIRECTOR:	Medical Director
PRESENTED BY:	Medical Director
AUTHOR:	Head of Quality and Patient Safety / Clinical Improvement Lead / Senior Information & Research Analyst / Director of Medical Education
DATE:	November 2013

We put our patients first We work as a team We value everybody We are open and honest
We strive for excellence and continuous improvement

1. MORTALITY UPDATE

1.1 Introduction

Regular monitoring of mortality rates is a key indicator in assessing improved outcomes for patients and for evaluating the effects of the implemented redesign of clinical pathways. These pathway changes are occurring due to Trust-wide and community initiatives and as a result of the *Our Changing Hospitals* programme. Reducing mortality remains a Trust improvement priority for 2013/14.

1.2 Mortality indicators.

There are 3 main types of mortality indicator. Crude mortality is a simple analysis of the percentage of patients who died against the number of admissions to hospital and makes no adjustment for complexity. Hospital standardised mortality ratio (SHMI) is the measure used by Dr Foster. It includes case-mix adjustment for 8 variables (*inc.* age, other conditions and palliative care coding). Standardised Hospital Mortality Index (SHMI) is case-mix adjusted for just 5 variables. It does not make an adjustment for palliative care and, importantly, includes deaths in the community up to 30 days after discharge.

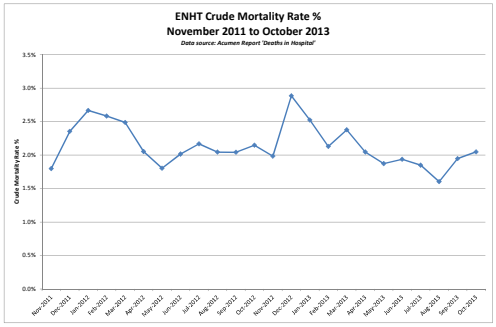
Crude mortality is available within one day following the end of the month, HSMR is 3 months in arrears and SHMI 7-9 months in arrears.

1.3 Crude Mortality

Crude mortality is most useful in monitoring the performance of a defined clinical unit where the case-mix is expected to remain stable over time. It is less useful for comparing the performance of clinical units with differing case-mix. Nationally there is an inexorable trend to greater case complexity due to multiple co-morbidities so crude mortality could remain unchanged when other mortality indicators go down. There is a significant seasonal variation in crude mortality.

The Trust's crude mortality rate for the year to date (April to October 2013) is 1.9%. The crude mortality has improved substantially since December 2012 although has risen slightly in the last two months, reflecting seasonal variation.

Figure 1: Crude Mortality Rate % from Nov 2011 to Oct 2013



1.4 Hospital Standardised Mortality Ratio (HSMR)

The Trust's position for the first quarter of 2013/14 is 5th out of the 17 acute trusts (excluding the cardiac Papworth Hospital) in the East of England (Figure 1) and better than expected at 86.4 (against the 2012/13 data benchmark).

Figure 2: HSMR (April to August 2013) East of England

			Deaths		Relative Risk		
Peer (SHA)	Spells	Superspells	Obs.	Exp.	HSMR	Low	High
Indpendent Sector Activity (not LSC)	6,787	6,786	0	0.2	0		
Papworth Hospital NHS Foundation Trust	6,039	5,228	46	84.3	54.6	40.0	72.8
West Suffolk NHS Foundation Trust	8,048	7,939	311	383.8	81.0	72.3	90.6
Cambridge University Hospitals NHS Foundation Trust	19,287	18,977	473	573.0	82.6	75.3	90.3
The Princess Alexandra Hospital NHS Trust	8,685	8,657	316	377.6	83.7	74.7	93.5
Hinchingbrooke Health Care NHS Trust	5,412	5,357	170	199.8	85.1	72.8	98.9
East and North Hertfordshire NHS Trust	**11,929**	**11,841**	**499**	**577.7**	**86.4**	**79.0**	**94.3**
Colchester Hospital University NHS Foundation Trust	12,966	12,885	472	535.7	88.1	80.3	96.4
Peterborough and Stamford Hospitals NHS Foundation Trust	11,458	11,414	460	514.0	89.5	81.5	98.1
Luton and Dunstable University Hospital NHS Foundation Trust	9,988	9,926	346	379.3	91.2	81.9	101.4
Southend University Hospital NHS Foundation Trust	14,103	14,051	467	511.6	91.3	83.2	100.0
Ipswich Hospital NHS Trust	12,231	12,194	446	485.6	91.8	83.5	100.8
Bedford Hospital NHS Trust	6,377	6,267	291	313.0	93.0	82.6	104.3
Basildon and Thurrock University Hospitals NHS Foundation Trust	10,651	10,239	492	520.2	94.6	86.4	103.3
West Hertfordshire Hospitals NHS Trust	11,469	11,400	453	474.9	95.4	86.8	104.6
Norfolk and Norwich University Hospitals NHS Foundation Trust	25,426	25,163	826	861.1	95.9	89.5	102.7
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	10,390	10,313	422	414.9	101.7	92.2	111.9
James Paget University Hospitals NHS Foundation Trust	6,466	6,369	349	333.5	104.6	93.9	116.2
Mid Essex Hospital Services NHS Trust	10,845	10,745	438	416.7	105.1	95.5	115.4
NHS Community Trusts	1,806	1,032	107	75.6	141.5		
ALL	**210,363**	**206,783**	**7,384**	**8,033.9**	**91.9**	**89.8**	**94.0**

1.4.1 HSMR Trends for Trust and Divisions September 2011 to August 2013

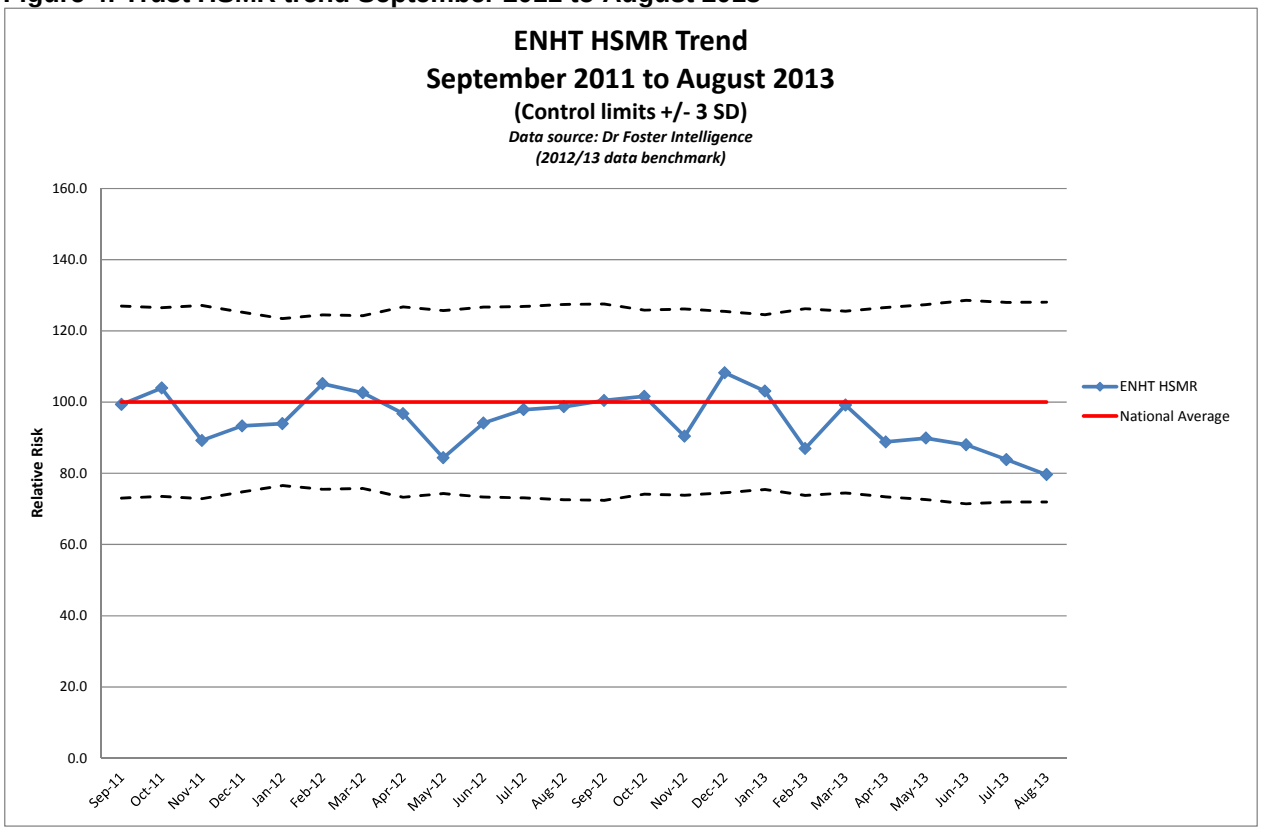
All centralised services continue to show strong performance with Surgery, Women & Children's and Cancer alerting green for the latest rolling year. Medicine is 101.8 for the latest rolling year thus still red although has shown good performance alerting green each month since April. Whilst current actions should produce small improvements in mortality in the Medicine division, I do not envisage that significant improvements will occur before full centralisation in late 2014.

Figure 3: Monthly Trust and Divisional HSMR April to August 2013

	April 2013	May 2013	June 2013	July 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	HSMR RY
Trust	88.1	89.7	88.0	83.9	79.6								**93.8**
Medicine	94.2	92.8	89.0	93.1	85.9								**101.8**
Surgery	91.6	87.7	100.9	82.8	84.1								**86.0**
Women & Children	0.0	253.9	0.0	0.0	0.0								**77.1**
Cancer	51.1	75.0	77.1	51.3	57.4								**65.2**

The following 5 charts show the HSMR trends for the Trust and the Divisions from September 2011 to August 2013.

Figure 4: Trust HSMR trend September 2011 to August 2013



Performance within the Divisions shows a predictable month on month variability.

Figure 5: Medicine Division HSMR trend

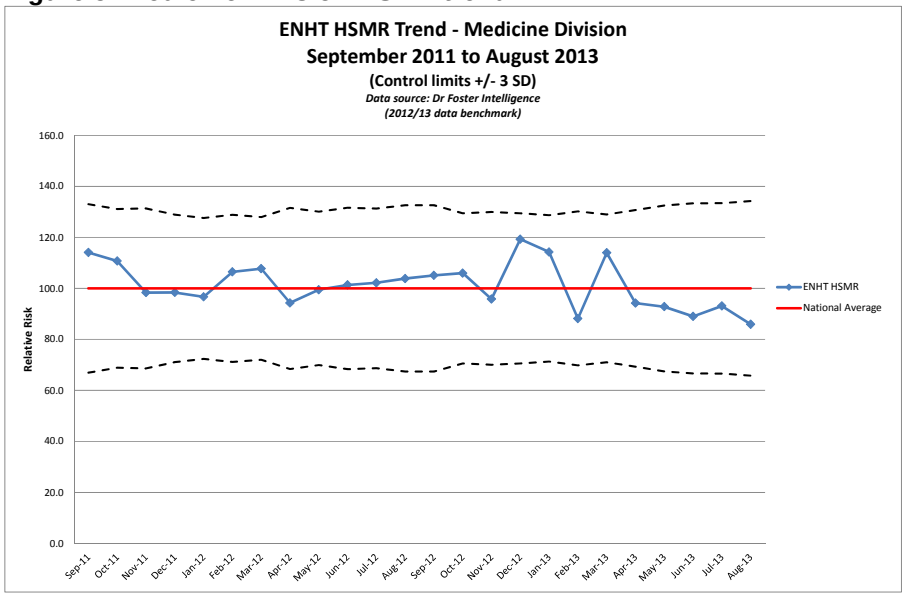


Figure 6: Surgery Division HSMR trend

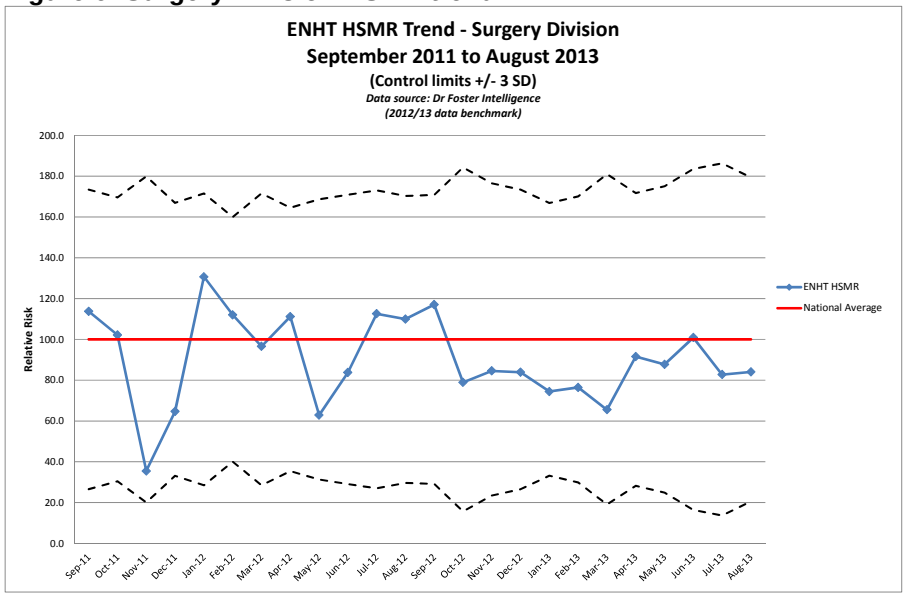


Figure 7: Women's & Children's Division HSMR trend

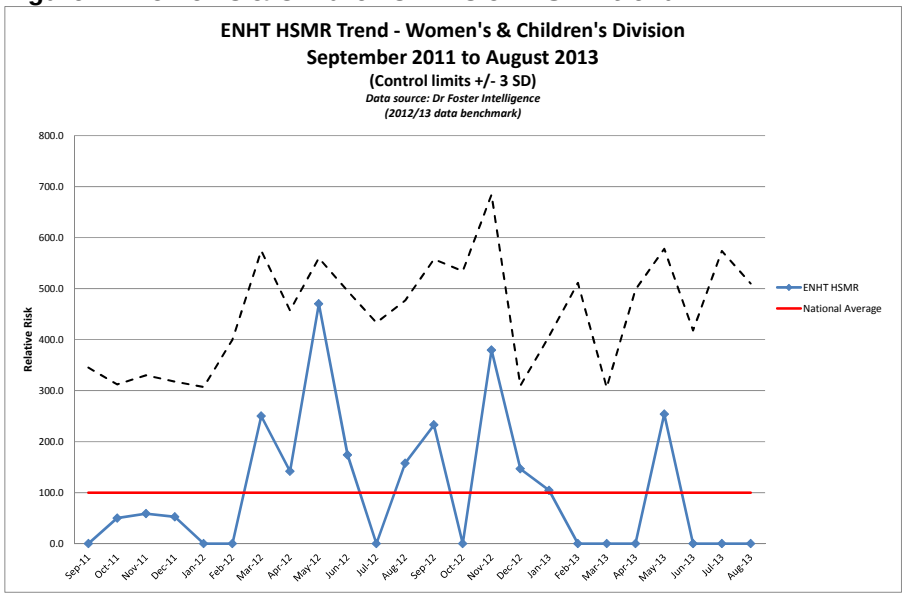
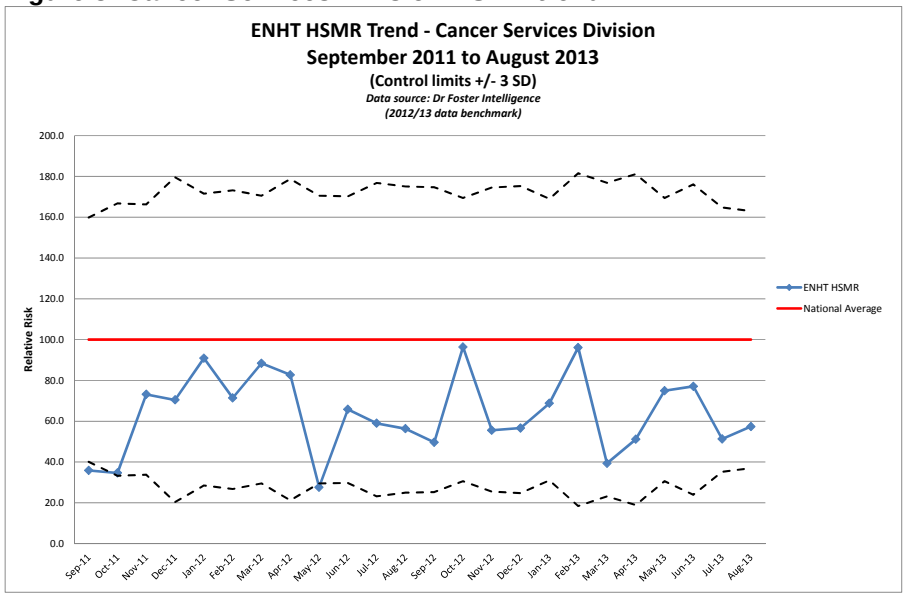


Figure 8: Cancer Services Division HSMR trend

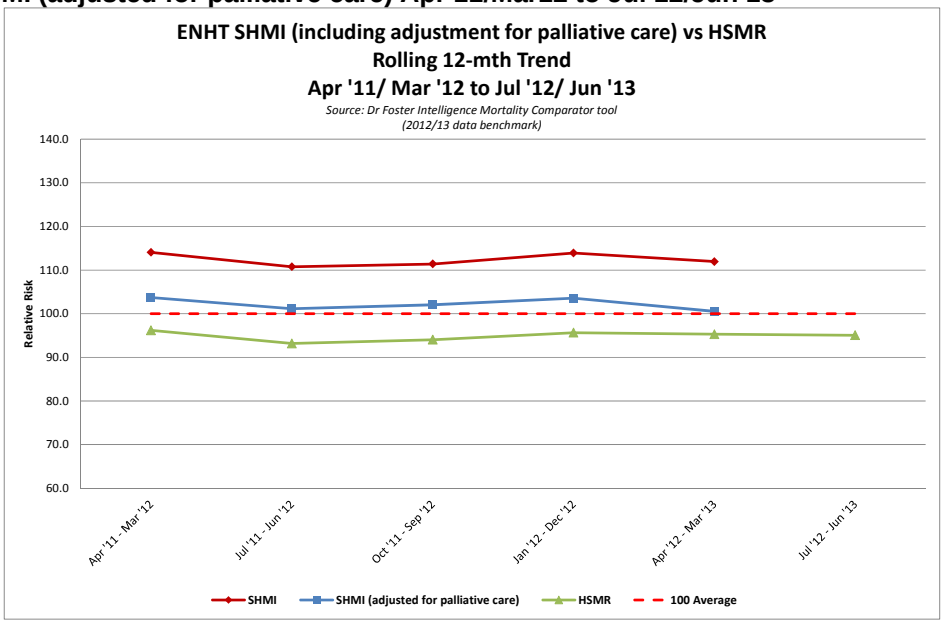


1.5. Standardised Hospital Mortality Index (SHMI)

The SHMI is published by the National Information Centre on a quarterly basis and the reporting period lags approximately 5 months behind the HSMR. The latest SHMI published for the period April 2012 to March 2013 was 111.9, as reported in late October 2013. This places the Trust in 129th position nationally out of 142 Trusts and is back within the 'as expected' range.

The chart below shows the Trust trend for SHMI, SHMI (adjusted for palliative care by Dr Foster), HSMR and crude mortality for the same time periods.

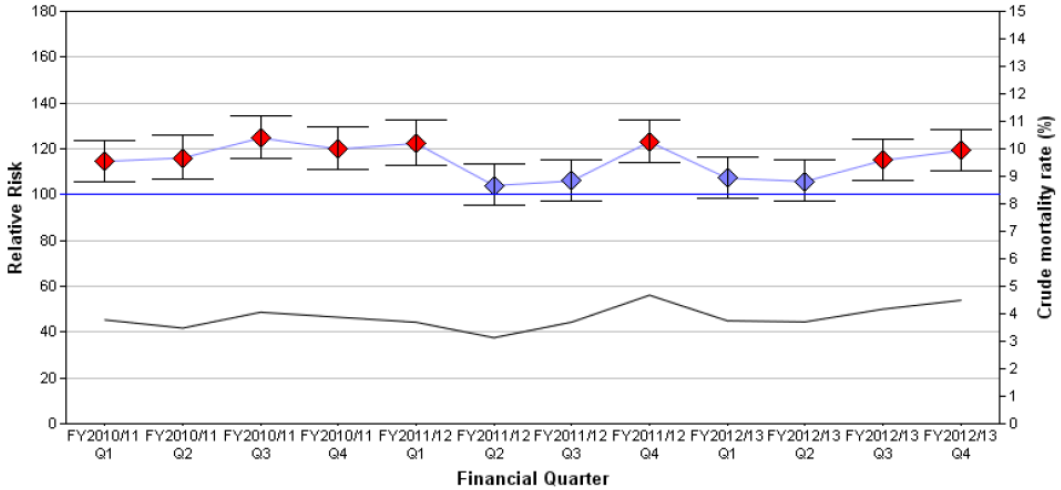
Figure 9: SHMI (adjusted for palliative care) Apr 11/Mar12 to Jul 12/Jun 13



The SHMI reduced by 2 with the latest release. There should be a small fall with the next release in January 2014 and a larger fall in April 2014.

Figure 10 illustrates an increase in SHMI in the final quarter of 2012/13, which coincides with the national trend in higher mortality during the winter months, as evidenced by the report published by Public Health England 'Excess winter mortality 2012-13'[1].

Figure 10: Quarterly SHMI



[1](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229819/Excess_winter_mortality_2012.pdf, last accessed 07/11/2013)

1.5.1 Elevated SHMI Pathways

Figure 11 shows the clinical diagnoses which had a statistically elevated SHMI during the financial year 2012/13. These are listed in order of "excess" deaths. This has been calculated by observing differences in actual deaths attributed to that diagnosis compared to number of deaths predicted for that coded case-mix.

The table also details reasons why SHMI is higher that Standardised Mortality Rate (SMR) for certain groups. There is ongoing work with Dr Foster to better understand this discrepancy.

Figure 11

High SHMI Diagnoses April 2012- March 2013	Approx "excess" deaths	Reason higher than HSMR	Comments
Pneumonia	36	Palliative coding, subgroup methodology	
Acute CVD	36	Mostly palliative coding	
Acute Bronchitis	32	High proportion of community deaths, ambiguous coding group	HSMR also significantly elevated
Biliary tract disease	11	Part community, part palliative	
Respiratory failure	9	(Part community, part palliative)	HSMR relatively high

1.6. CQUIN Pathway Monitoring

Mortality monitoring of 9 pathways currently under review as part of the CQUIN agreement is ongoing. 8 pathways are shown below and the data for 2013/14 are included in Appendix 1. Those pathways in yellow will be monitored by SHMI and those in mauve by HSMR.

Figure 12 CQUINS Pathways

CQUIN Pathways	HSMR 2011/12	HSMR 2012/13	SHMI Apr '12 – Mar '13	HSMR Apr '12 – Mar '13	HSMR Sept 12- Aug 13
Acute Renal Failure	113	101.3	102.2	101.3	97
Congestive Heart Failure	108.1	103.6	110.9	103.6	82
Septicaemia	122	109.0	101.6	109.0	71
Urinary Tract Infection	106.1	83.8	120.3	83.8	82
Pneumonia (replacing Respiratory Infections)		101.2	111.9	101.2	97
Acute Myocardial Infarction (AMI)		128.6	136.3	128.6	138
Acute Cerebrovascular Disease (includes stroke)		98.6	131.1	98.6	87
Fracture of Neck of Femur (#NOF)		88.0	123.0	88.0	89

The 9th CQUIN pathway is for 'Unexpected ITU Admission for Patients who deteriorate in hospital'. An initial audit has being undertaken and pathway changes are to be agreed by December 2013. As it is impossible to monitor this pathway through SHMI or HSMR, other indicators are to be agreed, once the initial audit is complete.

1.7 Update by Specific Pathways

1.7.1 Respiratory

This group has been included as the vast majority of "excess" deaths in Figure 11 occurred in respiratory conditions which includes 3 significantly elevated SHMI pathways for the latest year April 2012-March 2013 (pneumonia, respiratory failure and acute bronchitis). For the latest rolling year Acute Bronchitis is the only significantly elevated HSMR diagnosis at 138.1 and the Trust has received a CUSUM alert for this group of patients (See 4.8). The respiratory situation has been a cause for concern and the following actions have taken place:

- Respiratory service centralised to the Lister August 2013
- Non-invasive ventilation centralised to the Lister August 2013
- Recruitment of additional respiratory Consultants for acute chest team.
- Ward reconfiguration August 2013.
- Additional medical staff out of hours since August 2013.
- Clinical pathway audits for pneumonia to be repeated

1.7.2 Acute Myocardial Infarction

The Acute myocardial infarction (AMI) HSMR has been a cause for concern, particularly in light of the strategic decision to be taken about location of 24/7 PPCI sites in Herts & Beds and its inclusion in the CQUIN pathway monitoring report for this year. Whilst latest rolling year mortality for neither SHMI nor HSMR are statistically elevated both are above average (see Figure 11, 12 and Appendix 1). HSMR has deteriorated slightly in 2013/4. A number of improvements are in train to address this:

- Clinical pathway audit was completed in September 2013.
- 3 new Consultants have been in post since October 2013.
- Business case for Cardiology Nurse specialist is in progress
- Recruitment and training programme in progress to staff cath lab 24/4 from 01/2014
- Ward reconfiguration August 2013.
- Additional medical staff out of hours since August 2013.

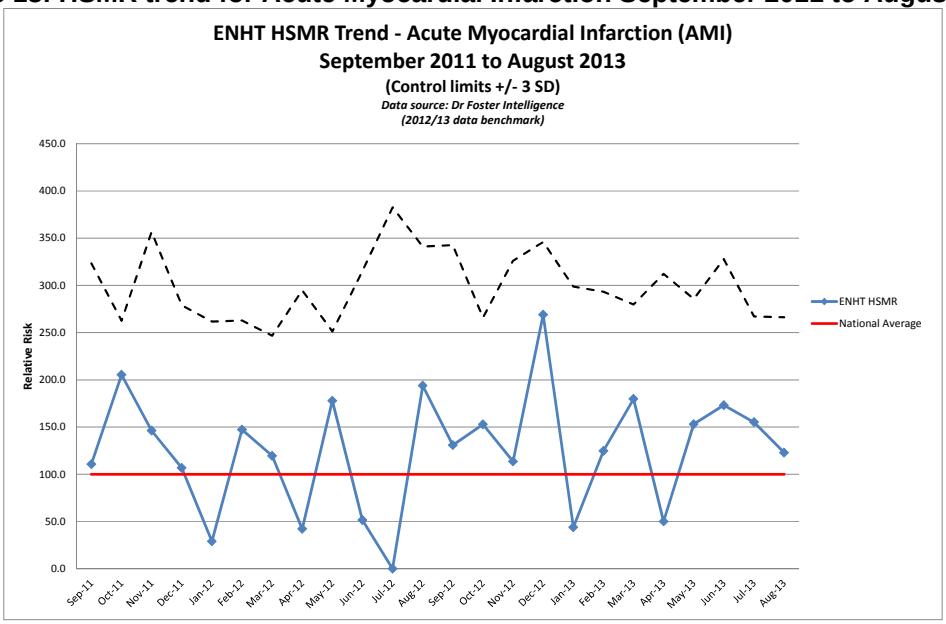
The outcome of the pathway audit was that overall patients were receiving good treatment meeting almost all NICE guidelines. It highlighted some areas for improvement including:

- Encourage A&E and GIM teams to use ACS proforma (should resolve/improve with 24/7 PPCI when cardiology registrar will be on call 24/7)
- Encourage cardiologists to use radial approach if possible
- Improve documentation and coding

However, clinico-coding review has shown that the main reason for elevated AMI HSMR has been inaccurate coding with several cases of cardiac arrest being coded as AMI as well as misleading clinical documentation by junior doctors resulting in a code of AMI when an alternative higher risk diagnosis would have been more appropriate.

The chart below shows the HSMR trend for AMI over the past two years.

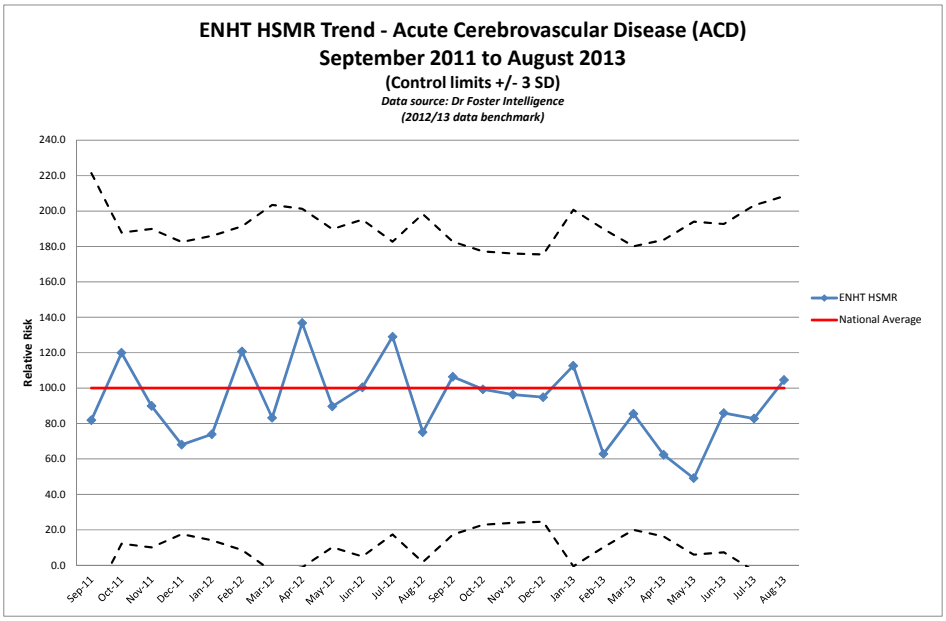
Figure 13: HSMR trend for Acute Myocardial Infarction September 2011 to August 2013



1.7.3 Acute Cerebrovascular Disease (Stroke)

The Stroke HSMR has been a cause for concern, particularly in light of the strategic decision to be taken about location of hyper-acute stroke units (HASU) in Herts & Beds and its inclusion in the CQUIN pathway monitoring report for this year. SHMI for April 2012 to March 2013 was significantly elevated (see Figures 11 & 12) but there has been a dramatic improvement since April 2013 (see Appendix 1) and SHMI improvement will follow. The chart below shows the HSMR trend for Stroke over the past two years.

Figure 14: HSMR trend for Acute Cerebrovascular Disease September 2011 to August 2013



A number of ongoing clinical improvements will make further improvement:

- Clinical pathway audit was completed in September 2013.
- 2 new Consultants recruited

- Additional medical staff out of hours since August 2013.

The pathway audit checked compliance with National guidelines on urgent 1 hour CT scan and on anticoagulation in patients with AF in stroke. Case notes of all patients admitted during the first quarter (April – June 2013) of all patients on the breach list for 1 hour urgent CT and anticoagulation in AF were studied. The audit showed:

- Just 1 breach to Urgent 1 hr CT request compared to a reported position of 3. One patient had been scanned at 42 minutes and the other presented outside the treatment window.
- No breaches in Anticoagulation as all decisions against anticoagulation were taken in view of associated co-morbidities and had been clearly documented in the case notes.

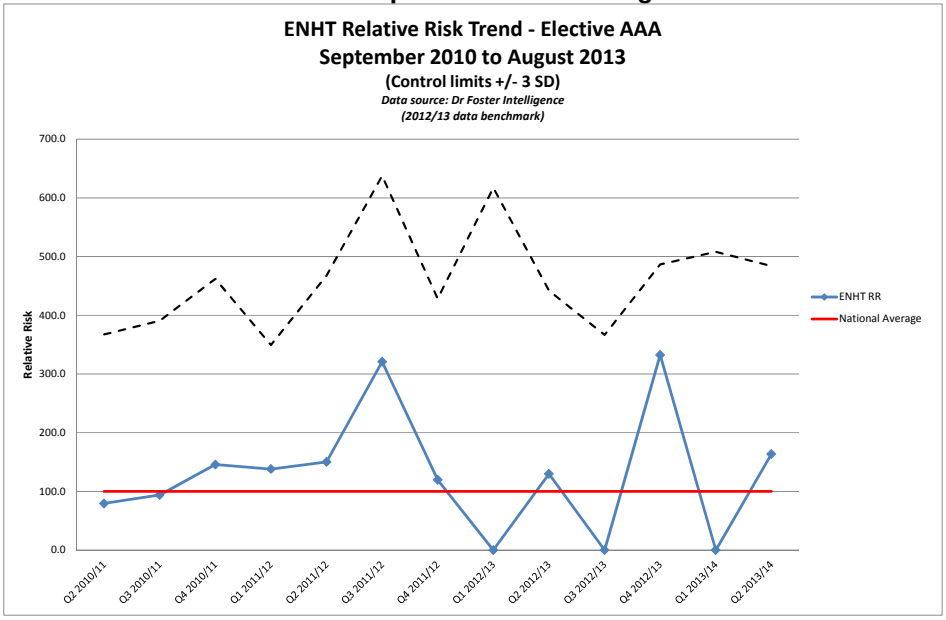
The audit highlighted the need for on-going education around the importance of timely CT and for case notes to be reviewed prospectively if patients breach on anticoagulation.

1.7.4 Elective Abdominal Aortic Aneurysm Repair (AAA)

The Vascular service is currently scheduled to centralise to Watford, in part because of historical mortality concerns at the Lister Hospital following elective AAA surgery. The chart below shows a quarterly relative risk trend for elective AAA procedures and performance is now good (see Figure 15).

The SHMI (which includes elective and non-elective activity) for the CCS group aortic, peripheral and visceral artery aneurysms for the period April 2012 to March 2013 is 91.21; the relative risk for all AAA procedures for the same period was 100.9.

Figure 15: HSMR trend for Elective AAA September 2011 to August 2013



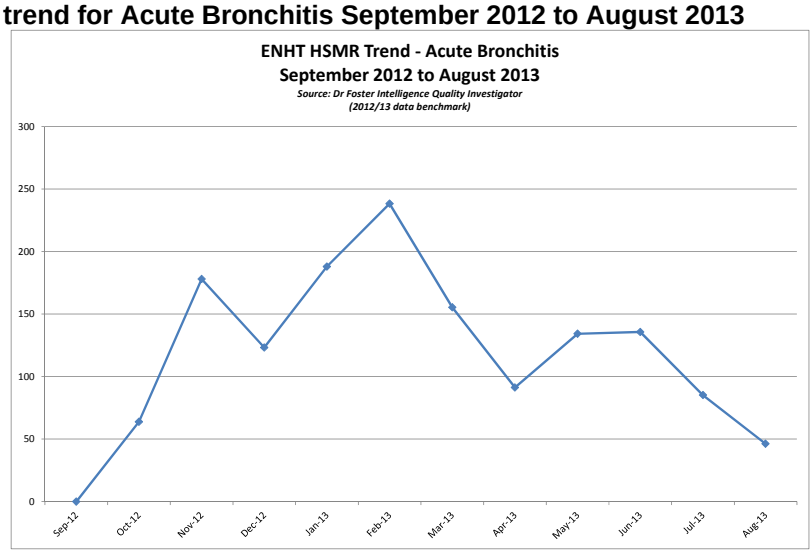
1.8. CQC CUSUM Alerts

In October 2013 the CQC notified the Trust of a mortality outlier alert for acute bronchitis and requested a review of 33 patients who died with this diagnosis between January and March 2013.

In the response to the CQC, the Trust outlined the changes to the Respiratory Service detailed in 4.7.1 and commented on the reduction in HSMR since April 2013. The Trust expects a more significant reduction from August 2013 as the impact of the service changes becomes greater, particularly the centralisation of the inpatient service. The crude mortality rate for acute bronchitis has dropped from 7.98% in Q1 2013/14 to 5.98% for August and September.

Figure 16 shows the HSMR trend for acute bronchitis for the rolling year to August 2013.

Figure 16: HSMR trend for Acute Bronchitis September 2012 to August 2013



The 33 sets of patient's notes were examined by a review team using a data collection tool reflecting both clinical information and criteria for assessing good practice. The outcome of the review was:

- That this was an extremely challenging clinical review in a complex elderly group of patients.
- In the majority of cases the respiratory condition if present was only one of a complex group of diagnosis.
- The clinical review found consistently good medical and nursing care in the majority of the cases reviewed.
- It found mature and advanced discussions in hospital over end of life issues and palliative care.
- Where care had fallen short e.g. delayed thrombo-prophylaxis or antibiotics, it was not felt to have impacted on outcome.
- Finally the review did highlight particular issues over recording of J22, lower respiratory tract infection (LRTI). As discussed none of the cases reviewed turned out to be simple LRTI. A local policy is now being developed to better define this group of patients in the clinical notes to enable coders to accurately record this diagnosis in future.

Overall the review highlighted the difficulties faced by clinical teams in making early clear diagnosis in the complex elderly patient. The Trust has a focussed strategy for this patients group and in conjunction with commissioners we are setting up an interface geriatrician model. This model will place Elderly Care Consultants in the Emergency Department and medical assessment units, to support and enhance decision making in exactly this group of patients.

A copy of the full report will be available to view at or after the RAQC.

1.9 Progress on possible schemes identified through Keogh inspections

- *100% detailed Mortality reviews*. This scheme has progressed. We have identified a small group of trained reviewers. The audit questions have been agreed and a database, to be held on a shared drive, is being constructed for direct data entry by reviewers. There is a common clinical section then separate sections for surgical or medical patients. Clinical audit will assist with data analysis.
- *Better feedback to directorates after mortality reviews*. It is proposed that quarterly analysis of themes from the 100% mortality reviews will be supplied to the RHDs. Individual cases where the death was deemed avoidable or where concerns were raised should be scrutinised in the directorate in greater depth.
- *Greater clinical involvement in mortality reduction programme.* This scheme has progressed. The Acumen system will enable on-line notification to Consultants each month of patients who are reported to have died under their care. Consultants will have the opportunity to highlight errors of diagnosis, operation or responsibility
- *Focus not just on those who die*. This is improving due to care bundle development through the CQUINS pathways and the Coding improvement plan.
- *Systematic focus on all apparently outlying pathways*. The information team supply a monthly list of 99 and 95% CUSUM alerts to the Medical Director. The investigations (coding or clinic-coding) are co-ordinated via the Coding Review group.
- *Routine Care Bundle audits following pathway redesign.* Pathway redesign is always followed by re-audit. Audit of the bundle itself rather than re-audit of the original audit will need to be negotiated with the CCG.
- *Harnessing staff comments.* An anonymous help line has been established for junior doctors wishing to raise their concerns.
- *Pay penalties for failing to do Mandatory Training*. Until capacity closely matches demand this was deemed unworkable.
- *Community/Interface geriatrician to educate care homes and reduce demand for admission.* This appointment is progressing. Our Quality Improvement fellow will also assist with the education programme.

1.10. Summary of Key Issues

- Crude mortality has reduced substantially since December 2012.
- Overall HSMR performance continues to improve
- SHMI is back in the 'as expected range'.
- Numerous clinical improvements have been put in place detailed in this paper and the forthcoming Improving Outcomes plan.
- Improvement and monitoring of 8 CQUIN mortality pathways is on-going – an increase in diagnostic groups from last year.
- Audit has been undertaken on a further clinical pathway, 'Unexpected ITU Admission for Patients who deteriorate in hospital'. Indicators for monitoring progress have yet to be agreed.
- A detailed mortality inspection with the TDA, LAT and CCG took place on 7th November 2013
- Mortality monitoring is on-going with regular reporting to DEC, RAQC, Board and PCT
- Regular joint meetings with NHS Hertfordshire to improve mortality rates
- Attendance at the East of England NHS Dr Foster User Group meetings.

Appendix 1 CQUIN Pathway Monitoring

1 Acute Cerebrovascular Disease

Full year 2012/13: HSMR – Relative risk 96.1 Crude mortality 24.1%

For September 2012 to August 2013:

	HSMR - Relative Risk	HSMR Crude Mortality	
Period	November Update	Count	Rate
Sep-12	106.4	14	29.8%
Oct-12	99.3	15	24.6%
Nov-12	96.3	15	30.0%
Dec-12	94.9	15	34.9%
Jan-13	112.6	10	23.3%
Feb-13	62.8	7	14.9%
Mar-13	85.5	12	17.9%
Apr-13	62.3	8	16.3%
May-13	49.1	5	9.6%
Jun-13	85.9	9	20.0%
Jul-13	82.8	7	18.9%
Aug-13	104.6	8	16.7%
Sep 12/Aug 13	**87.2**	**125**	**21.2%**

SHMI Apr '12 - Mar '13
131.1

HSMR Apr '12 - Mar '13
98.6

HSMR Crude Mortality Apr '12 - Mar '13
24.1%

2 Acute Myocardial Infarction

Full year 2012/13: HSMR – Relative risk 127.6 Crude mortality 12.7%

For September 2012 to August 2013:

	HSMR - Relative Risk	HSMR Crude Mortality	
Period	November Update	Count	Rate
Sep-12	130.9	2	10.0%
Oct-12	152.9	5	17.2%
Nov-12	113.6	2	8.0%
Dec-12	269.0	4	25.0%
Jan-13	43.8	1	3.9%
Feb-13	124.6	3	11.5%
Mar-13	179.7	5	20.8%
Apr-13	50.1	1	4.2%
May-13	153.1	4	13.3%
Jun-13	173.2	3	13.6%
Jul-13	155.2	5	19.2%
Aug-13	122.9	4	16.0%
Sep 12/Aug 13	**137.7**	**39**	**13.3%**

SHMI Apr '12 - Mar '13
136.3

HSMR Apr '12 - Mar '13
128.6

HSMR Crude Mortality Apr '12 - Mar '13
12.7%

3 Acute Renal Failure

Full year 2012/13: HSMR – Relative risk 90.3 Crude mortality 15.9%

For September 2012 to August 2013:

Period	HSMR - Relative Risk November Update	HSMR Crude Mortality Count	HSMR Crude Mortality Rate
Sep-12	137.3	5	18.5%
Oct-12	147.5	8	32.0%
Nov-12	0.0	0	0.0%
Dec-12	108.1	4	22.2%
Jan-13	52.0	3	10.0%
Feb-13	117.9	4	16.7%
Mar-13	102.3	4	16.0%
Apr-13	136.0	4	22.2%
May-13	78.9	3	14.3%
Jun-13	110.5	3	12.5%
Jul-13	28.4	1	4.2%
Aug-13	106.8	4	17.4%
Sep 12/Aug 13	**96.7**	**43**	**15.6%**

SHMI Apr '12 - Mar '13
102.2

HSMR Apr '12 - Mar '13
101.3

HSMR Crude Mortality Apr '12 - Mar '13
16.3%

4 Congestive Heart Failure

Full year 2012/13: HSMR – Relative risk 100.8 Crude mortality 16.7%

For September 2012 to August 2013:

Period	HSMR - Relative Risk November Update	HSMR Crude Mortality Count	HSMR Crude Mortality Rate
Sep-12	74.1	4	10.5%
Oct-12	95.6	4	15.4%
Nov-12	79.1	5	13.5%
Dec-12	116.8	4	22.2%
Jan-13	82.8	4	14.3%
Feb-13	76.6	2	8.0%
Mar-13	141.1	7	22.6%
Apr-13	169.5	8	25.0%
May-13	46.2	3	8.8%
Jun-13	23.8	1	3.6%
Jul-13	52.6	2	6.1%
Aug-13	25.7	1	3.7%
Sep 12/Aug 13	**82.1**	**45**	**12.6%**

SHMI Apr '12 - Mar '13
110.9

HSMR Apr '12 - Mar '13
103.6

HSMR Crude Mortality Apr '12 - Mar '13
16.5%

5 Fracture of Neck of Femur

Full year 2012/13: HSMR – Relative risk 82.5 Crude mortality 10.6%

For September 2012 to August 2013:

	HSMR - Relative Risk	HSMR Crude Mortality	
Period	November Update	Count	Rate
Sep-12	107.6	5	17.9%
Oct-12	165.0	6	12.8%
Nov-12	60.7	2	5.6%
Dec-12	102.6	6	15.0%
Jan-13	137.9	8	21.1%
Feb-13	54.7	4	7.7%
Mar-13	57.9	3	6.7%
Apr-13	89.1	4	9.3%
May-13	74.7	4	10.3%
Jun-13	81.3	4	8.0%
Jul-13	92.8	2	5.6%
Aug-13	59.2	2	5.1%
Sep 12/Aug 13	**89.3**	**50**	**10.1%**

SHMI Apr '12 - Mar '13
123.0

HSMR Apr '12 - Mar '13
88.0

HSMR Crude Mortality Apr '12 - Mar '13
10.6%

6 Pneumonia

Full year 2012/13: HSMR – Relative risk 97.3 Crude mortality 21.9%

For September 2012 to August 2013:

	HSMR - Relative Risk	HSMR Crude Mortality	
Period	November Update	Count	Rate
Sep-12	103.3	17	22.1%
Oct-12	116.6	29	28.7%
Nov-12	114.7	26	25.5%
Dec-12	115.9	29	25.0%
Jan-13	106.5	33	20.0%
Feb-13	56.3	15	13.0%
Mar-13	98.8	27	20.2%
Apr-13	86.0	21	18.0%
May-13	96.9	17	16.2%
Jun-13	79.0	13	20.0%
Jul-13	99.9	15	20.0%
Aug-13	65.1	8	13.6%
Sep 12/Aug 13	**96.3**	**250**	**20.3%**

SHMI Apr '12 - Mar '13
111.9

HSMR Apr '12 - Mar '13
101.2

HSMR Crude Mortality Apr '12 - Mar '13
21.9%

7 Septicaemia

Full year 2012/13: HSMR – Relative risk 89.1 Crude mortality 21.3%

For September 2012 to August 2013:

Period	HSMR - Relative Risk November Update	HSMR Crude Mortality Count	HSMR Crude Mortality Rate
Sep-12	125.0	3	25.0%
Oct-12	60.6	2	10.5%
Nov-12	33.7	1	6.7%
Dec-12	105.0	4	23.5%
Jan-13	140.9	5	35.7%
Feb-13	60.7	2	15.4%
Mar-13	37.0	1	7.7%
Apr-13	85.5	3	20.0%
May-13	45.4	1	7.7%
Jun-13	33.1	1	5.9%
Jul-13	67.6	2	11.8%
Aug-13	34.6	1	4.8%
Sep 12/Aug 13	**71.0**	**26**	**14.0%**

SHMI Apr '12 - Mar '13
101.6

HSMR Apr '12 - Mar '13
109.0

HSMR Crude Mortality Apr '12 - Mar '13
21.5%

8 Urinary Tract Infection

Full year 2012/13: HSMR – Relative risk 83.2 Crude mortality 4.6%

For September 2012 to August 2013:

Period	HSMR - Relative Risk November Update	HSMR Crude Mortality Count	HSMR Crude Mortality Rate
Sep-12	88.5	5	4.2%
Oct-12	61.3	5	4.0%
Nov-12	46.2	3	2.6%
Dec-12	24.5	1	1.2%
Jan-13	80.1	8	6.0%
Feb-13	92.0	7	6.4%
Mar-13	39.4	2	1.9%
Apr-13	111.9	7	5.9%
May-13	136.6	7	7.1%
Jun-13	179.5	9	7.5%
Jul-13	65.0	4	3.0%
Aug-13	61.3	3	2.7%
Sep 12/Aug 13	**81.9**	**61**	**4.4%**

SHMI Apr '12 - Mar '13
120.3

HSMR Apr '12 - Mar '13
83.8

HSMR Crude Mortality Apr '12 - Mar '13
4.5%