



Bwrdd Iechyd Prifysgol
Betsi Cadwaladr
University Health Board

Mr Darren Millar AM
Chair
Public Accounts Committee
National Assembly for Wales

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Dyddiad / Date: 23 June 2014

Dear Mr Millar

Public Accounts Committee – Governance Arrangements at Betsi Cadwaladr University Health Board

Thank you for your letter of 11 March 2014 asking for information on the Board's response to Recommendation 11 from the Public Accounts Committee. Please accept my sincere apologies for the delay in responding to you.

We are engaged in a wide range of activities to ensure patient safety, and provide the public with appropriate assurance about the quality and safety of our services.

A key element of this continual cycle of quality improvement is the analysis and understanding of mortality information.

In line with Welsh Government requirements, we publish information on our Hospital RAMI scores alongside additional information about mortality relating to some common medical emergencies such as stroke, hip fracture and heart attack. This information is publicly available via our website and is updated every three months. Please see link below:

<http://www.wales.nhs.uk/sitesplus/861/page/68460>

You will be aware of the recent decision by the Chief Medical Officer requiring Health Boards to publish an expanded set of measures for Welsh hospitals rather than just RAMI. These measures provide a focus on continuous quality improvement, and timely intervention to ensure the best outcome for our patients.

The published data is supported by a clear narrative that outlines the actions we are taking to improve the quality and safety of patient care. The briefing papers describe the data we are monitoring, why we are monitoring these figures, what the data tells us and what action we are taking to improve further.

The latest briefing document can be found on our website via the link below:

<http://www.wales.nhs.uk/sitesplus/861/opendoc/237883>



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The Board is fully committed to openness and transparency. In addition to the published data we also provide regular detailed updates to the Chief Medical Officer. The RAMI data, its implications, the work to investigate possible causes and the actions taken as a result has also been regularly reported at public meetings of the Board and the relevant Board committees.

We are committed to continuing to work to reduce mortality rates and to sharing information on that work with the public. If you need any further information, please do not hesitate to contact me directly.

Yours sincerely

A handwritten signature in black ink that reads 'Peter Higson'.

DR PETER HIGSON
CHAIRMAN



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WALES

Bwrdd Iechyd Prifysgol
Betsi Cadwaladr
University Health Board

Using mortality data to improve the quality and safety of patient care

20th June 2014

| Version | Date Published | Notes |
|---------|----------------|--|
| 6.0 | 20/06/2014 | 6 th publication – expanded set of measures |
| 5.0 | 21/03/2014 | 5 th publication |
| 4.0 | 20/12/2013 | 4 th publication |
| 3.0 | 20/09/2013 | 3 rd publication |
| 2.1 | 28/08/2013 | Figures revised inline with national guidance |
| 2.0 | 21/06/2013 | 2 nd publication |

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Publication notes

This document is the Health Board's 6th release of data relating to mortality. In line with criteria agreed with Welsh Government, we are continuing to expand the published set of measures. In this release, the Health Board is publishing additional contextual mortality data sourced from the Office for National Statistics (ONS). This provides context to the risk adjusted figures, and further evidence of the quality of care provided. This information is also available for other Welsh Health Boards from the [My Local Health Service Website](#)¹.

All data that appear in the document are also available as Excel tables and charts on our [web site](#)².

Data has been sourced from the All Wales Benchmarking system and ONS.

¹<http://mylocalhealthservice.wales.gov.uk/>

²<http://www.wales.nhs.uk/sitesplus/861/page/68460>

Introduction

Quality and Safety

Betsi Cadwaladr University Health Board is committed to delivering safe and high quality healthcare services. Everyone who works for the Health Board has a part to play in driving up standards. We must always put the safety of our patients at the heart of everything we do. To support this, the Board is engaged in a wide range of activities to ensure patient safety, and provide patients with appropriate assurance about the quality and safety of our services.

A key element of this continual cycle of quality improvement is the analysis and understanding of mortality information. This, our 6th publication, continues the drive to build a robust set of measures. In addition to the figures published in March 2014 (RAMI, Welsh RAMI, mortality relating to stroke, hip fracture and heart attack), this publication now provides measures relating to emergency and elective care. Office for National Statistics data on life expectancy and mortality for the population of North Wales is also provided to contextualise this information and assist the reader.

Following the March 2014 publication, Wrexham Maelor was identified as being one of 6 hospitals in Wales with a higher than expected Welsh RAMI. Welsh Government therefore asked Professor Stephen Palmer to undertake a review of the 6 hospitals. The Health Board has been working with Professor Palmer, and await the outcome of his review.

Why are we monitoring these figures?

The Health Board monitors mortality on a regular basis, with any concerns investigated. The focus is on continuous quality improvement and timely intervention to ensure the best outcome for our patients.

Focussed on learning we firmly believe that every death deserves a review and have put extensive processes in place to ensure this happens.

The key points of learning from these reviews are:

- a. Recognition of and response to the acutely deteriorating patient on the ward remains a concern. This has been the subject of close attention from the Board, and the focus of the national RRAILs (Rapid Response to the Acutely Ill) work stream. An action plan is in place and recent preliminary data points to improvement.

- b. The quality of the patient case record – documentation is important in providing safe effective care. Almost solely paper-based, these reviews have highlighted ways this can be improved setting a steer for the organisation.
- c. Do Not Attempt Resuscitation Orders (DNACPR) - motivated by a desire to avoid subjecting patients with little prospect of success to the indignity of resuscitation, substantial progress has been made in the use of these orders. Nevertheless, there are still some outstanding issues around completion of all the components, which we are addressing.

We believe the way we staff the organisation is important. The Board is committed to working towards achieving the Chief Nursing Officer's recommended level across the organisation.

Furthermore, we have undertaken an analysis of patient complaints and changes to administrative practices. This work has brought into focus our data collection processes and significant work has been undertaken to improve our processes, as incomplete or incorrect data can have a misleading effect on the risk adjusted measures. We are continuing this work at the Wrexham Maelor Hospital, following learning from the two other acute hospitals.

To more fully understand the quality and safety of the service we provide, and committed to continually improving service, the Health Board scrutinises a range of quality and safety indicators.

What are we measuring?

Crude Mortality

Crude (or unadjusted) mortality figures take no account of risk factors. The definition is therefore relatively simple (actual deaths in a month ÷ total discharges per month x 100), but is affected by the number of patients treated. The services delivered at the Health Board's three main sites differ in the range of specialties provided – for example, Ysbyty Glan Clwyd has a Cancer Treatment Centre.

Common Medical Emergencies

Stroke, heart attack and hip fracture are common medical emergencies associated with mortality. Monitoring mortality for these conditions provides us with further useful information on the quality of care in our hospitals. All three conditions are more prevalent in older people whose health may be more fragile so death cannot always be avoided.

Risk Adjusted Mortality Indices³

The risk adjusted mortality figures quoted in this document are for the Health Board's 3 main district general hospitals (Ysbyty Gwynedd in Bangor, Ysbyty Glan Clwyd in Bodelwyddan and Wrexham Maelor Hospital).

In this release we are publishing:

- the RAMI 2012 and 2013 model;
- the Welsh RAMI 2013, which is based on major Welsh acute sites; and
- the In-Hospital Summary Hospital Mortality Indicator 2013 (SHMI).

Risk adjusted mortality indices are one of a number of measures indicating how a hospital is managing the care of its patients and should be considered alongside other measures, such as those published in this document. The indices reflect not only the quality of care, but also the system of care delivery and the quality of information.

Clinical Coding

Clinical Coding is the process of transcribing a patient's diagnosis and treatment from their case notes onto the Patient Administration System. The quality and timeliness of this data is essential to support reporting.

The national target is 98% for any rolling 12 months. For the period referenced in this report (April 2011 – December 2013), the Health Board achieved the target every month.

The administrative processes surrounding the recording of palliative and end of life care pathways can affect the risk adjusted mortality index. The following two charts show the percentage of hospital deaths that have been clinically coded with the palliative care or end of life care pathway codes. The 3 Betsi Cadwaladr University Health Board acute hospitals are highlighted in red. It should be noted that there is variation across Wales. We are improving our processes to ensure we capture all relevant information from the case notes.

³ Appendix 1 contains an explanation of the Welsh RAMI and links to technical documents

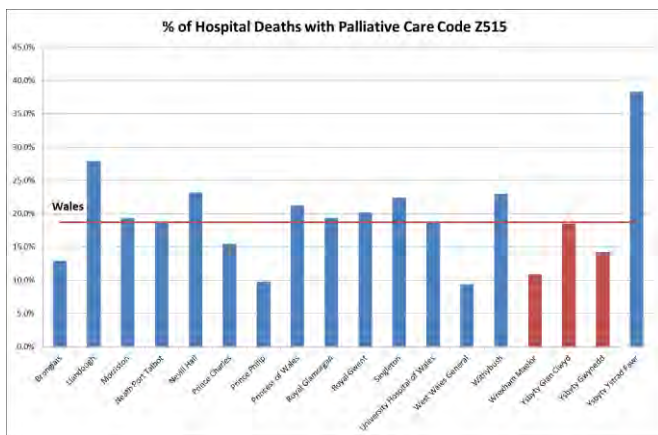


Figure 1: Acute hospitals Palliative Care coding

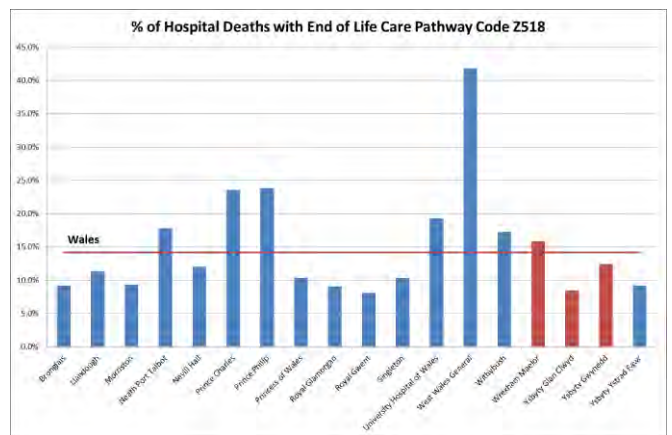


Figure 2: Acute hospitals End of Life care pathway coding

Office for National Statistics Mortality Indicators

The ONS data is provided to give context to the delivery of care in North Wales.

Life Expectancy at Birth⁴

The following table shows the life expectancy at birth for males and females born between 2010 and 2012. For both men and women, the life expectancy is within 1 year of the Welsh average across North Wales.

Life Expectancy at birth (2010-12)

| UA Area | Males | Females |
|------------------|-------------|--------------|
| Isle of Anglesey | 78.5 | 83.0 |
| Gwynedd | 78.8 | 83.1 |
| Conwy | 79.0 | 82.6 |
| Denbighshire | 78.3 | 81.2 |
| Flintshire | 79.0 | 82.4 |
| Wrexham | 78.2 | 82.0 |
| Wales | 78.2 | 82.22 |

Source: StatsWales (via ONS)

Figure 3: Life Expectancy at Birth

Age Standardised Mortality Rates

Age-standardised mortality rates (ASMR) are standardised to the 1976 European Standard Population, expressed per 100,000 population, they allow comparisons between populations with different age structures, including between males and females and over time. The following chart shows the ASMR for each Unitary Authority in Wales (2012). The 6 north Wales Authorities are highlighted in red. It can be seen that only Denbighshire (607 per 100,000) has an ASMR higher than the Welsh average (567.8 per 100,000).

⁴ <https://statswales.wales.gov.uk/Catalogue/Health-and-Social-Care/Life-Expectancy/LifeExpectancy-by-Gender-Year>

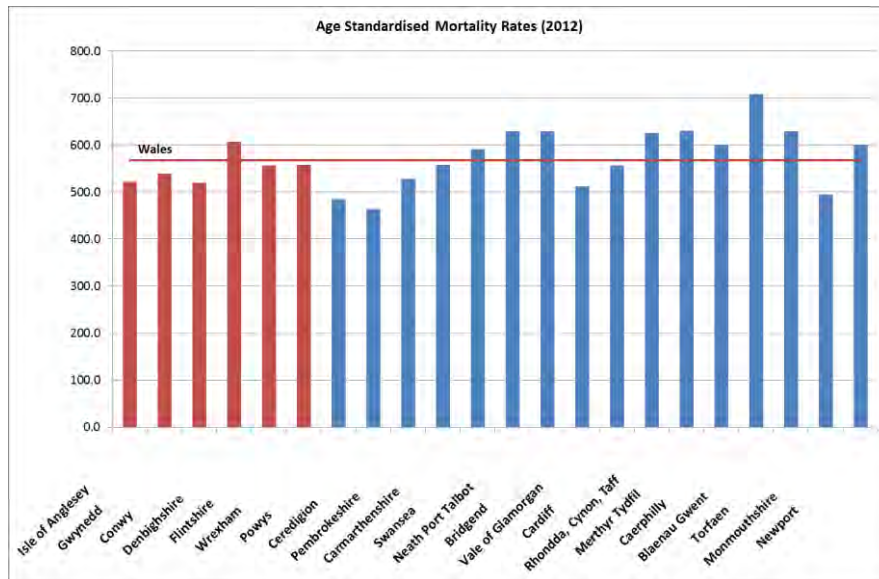


Figure 4: Age Standardised Mortality rates

Perinatal Mortality

Perinatal mortality is defined as stillbirths and deaths under 1 week. In 2012 the perinatal mortality rate for Wales was 7.2 deaths per 1,000 live births and stillbirths. The rate for the Health Board was 7.4. (Source – Office for National Statistics⁵)

Perinatal mortality (a) deaths per 1,000 of still/live births
Live births, stillbirths and infant deaths (b): area of residence, numbers and rates (c), 2012

| Area of usual residence | Numbers | | | | | | Rates (c) | | | | |
|-----------------------------|-------------|-------------|-----------|----------|---------------|--------|-------------|------------|----------|---------------|--------|
| | Births | | Deaths | | | | Stillbirths | Perinatal | Neonatal | Post-neonatal | Infant |
| | Live births | Stillbirths | Perinatal | Neonatal | Post-neonatal | Infant | | | | | |
| WALES | 35,238 | 181 | 255 | 97 | 42 | 139 | 5.1 | 7.2 | 2.8 | 1.2 | 3.9 |
| Betsi Cadwaladr University | 7,826 | 38 | 58 | 27 | 9 | 36 | 4.8 | 7.4 | 3.5 | 1.2 | 4.6 |
| Powys Teaching | 1,190 | 5 | 7 | 3 | - | 3 | 4.2 | : | 2.5 | - | 2.5 |
| Hywel Dda | 3,978 | 15 | 22 | 10 | 6 | 16 | 3.8 | 5.5 | 2.5 | 1.5 | 4.0 |
| Abertawe Bro Morgannwg Univ | 5,874 | 38 | 50 | 16 | 5 | 21 | 6.4 | 8.5 | 2.7 | 0.9 | 3.6 |
| Cwm Taf | 3,555 | 21 | 29 | 11 | 2 | 13 | 5.9 | 8.1 | 3.1 | : | 3.7 |
| Aneurin Bevan | 6,736 | 25 | 39 | 18 | 10 | 28 | 3.7 | 5.8 | 2.7 | 1.5 | 4.2 |
| Cardiff and Vale University | 6,079 | 39 | 50 | 12 | 10 | 22 | 6.4 | 8.2 | 2.0 | 1.6 | 3.6 |

(a) Perinatal mortality is defined as stillbirths and deaths under 1 week.
(b) Occurring in the year.
(c) Stillbirths and perinatal deaths per 1,000 live births and stillbirths. Neonatal, postneonatal and infant deaths per 1,000 live births

Figure 5: Perinatal Mortality

⁵ <http://www.ons.gov.uk/ons/rel/vsob1/child-mortality-statistics--childhood--infant-and-perinatal/2012/stb-child-mortality-stats-2012.html>

Deaths in hospital by place of occurrence

The following table shows the percentage mortality by place of occurrence⁶ for 2012. A total of 7,403 deaths were recorded for Betsi Cadwaladr University Health Board. Of these, 54.4% occurred in an NHS hospital in our area. This is lower than the Wales average of 57.3%.

Percentage of deaths by place of occurrence 2012

| LHB Area | Home | Care Home | | Hospices | | Hospitals (acute or community not psychiatric) | | Other communal establishments | Elsewhere |
|-----------------------------------|-------|-----------------|---------------------|----------|---------|--|---------|-------------------------------|-----------|
| | | Local Authority | Non-Local Authority | NHS | Non-NHS | NHS | Non-NHS | | |
| Betsi Cadwaladr University | 20.4% | 0.9% | 17.3% | 0.0% | 4.6% | 54.4% | 0.2% | 0.2% | 2.1% |
| Powys Teaching | 25.1% | 1.3% | 14.2% | 0.0% | 2.5% | 52.1% | 0.0% | 1.8% | 2.9% |
| Hywel Dda | 25.7% | 2.6% | 15.5% | 0.0% | 1.3% | 53.0% | 0.0% | 0.1% | 1.9% |
| Abertawe Bro Morgannwg University | 23.2% | 1.2% | 12.8% | 0.0% | 0.1% | 58.5% | 0.0% | 1.8% | 2.4% |
| Cwm Taf | 20.7% | 0.7% | 8.3% | 2.5% | 0.1% | 65.8% | 0.0% | 0.0% | 1.9% |
| Aneurin Bevan | 24.3% | 0.8% | 12.6% | 0.0% | 1.4% | 58.7% | 0.1% | 0.1% | 2.0% |
| Cardiff and Vale University | 19.9% | 0.4% | 13.9% | 0.0% | 4.5% | 59.4% | 0.0% | 0.4% | 1.5% |
| WALES | 22.5% | 1.1% | 13.9% | 0.3% | 2.2% | 57.3% | 0.1% | 0.5% | 2.1% |

Figure 6: Deaths in hospital by place of occurrence

Percentage of LSOAs in most deprived 20%⁷

Lower super output areas (LSOA) are a set of geographic areas of consistent size, and have a population of around 1500. Deprivation refers to problems caused by a lack of resources and opportunities. The [Welsh Index of Multiple Deprivation](#)⁸ (WIMD) is a measure of deprivation constructed from eight different types of deprivation, which include health. The following chart shows the percentage of LSOAs that each unitary authority has in the most deprived 20% across Wales. The 6 north Wales unitary authorities have between 4% and 16% of their LSOAs in the 20% most deprived in Wales.

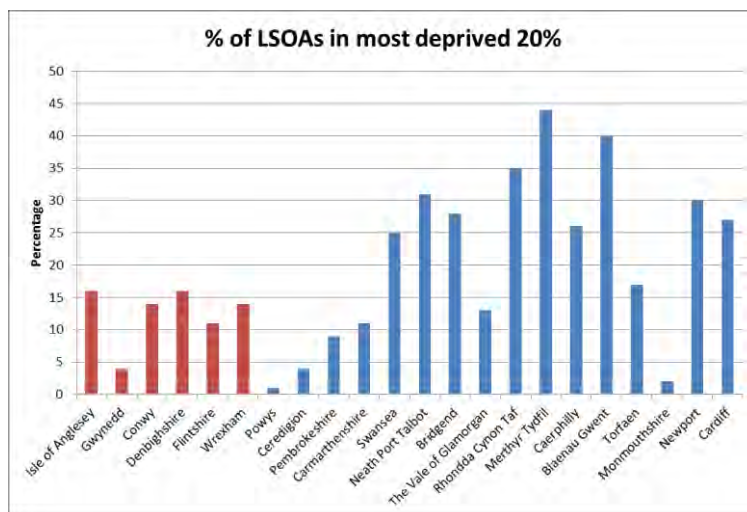


Figure 7: % of LSOAs in most deprived 20%

⁷ <https://stats.wales.gov.uk/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation/WIMD-2011>

⁸ <http://wales.gov.uk/statistics-and-research/welsh-index-multiple-deprivation/?lang=en>

What does this data tell us?

Health Board wide

For the 12 months to March 2014, the average number of deaths per month was 280 across the Health Board. The crude mortality figures for the period April 2011 to March 2014 for Betsi Cadwaladr University Health Board was 1.87%, which is slightly lower than the all Wales peer at 1.90%.

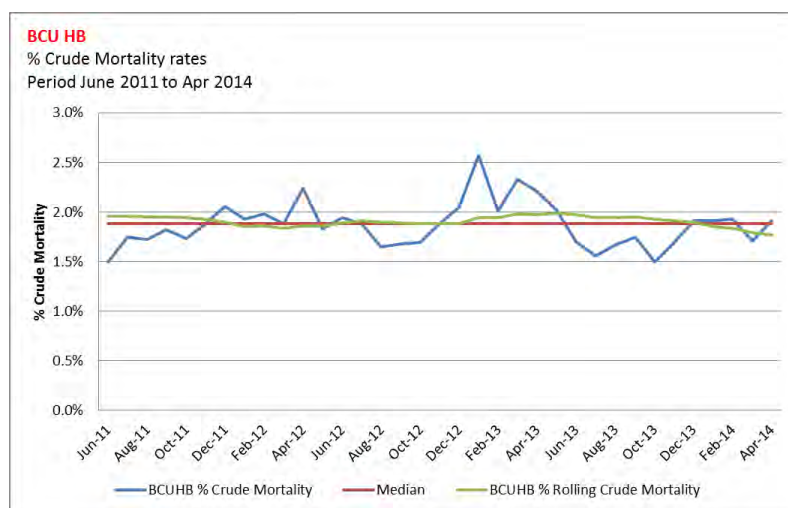


Figure 8: BCUHB Crude Mortality

For the 12 months to December 2013, the Health Board had a Risk Adjusted Mortality Index (RAMI 2013 model) of 111, against an all Wales peer of 109. While above the Welsh average, it is of note this position continues to improve.

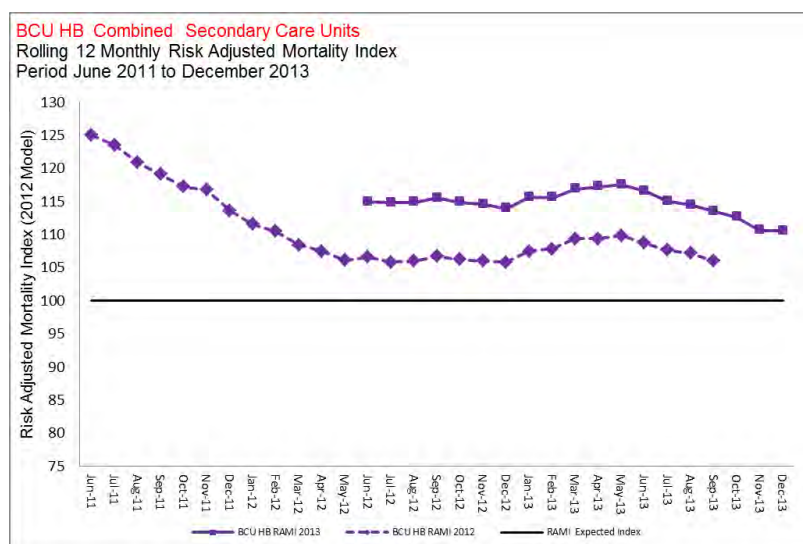


Figure 9: BCUHB RAMI

Mortality following Surgery

The following two indicators present information on mortality within 30 days of elective (planned) or non-elective (emergency) surgery.

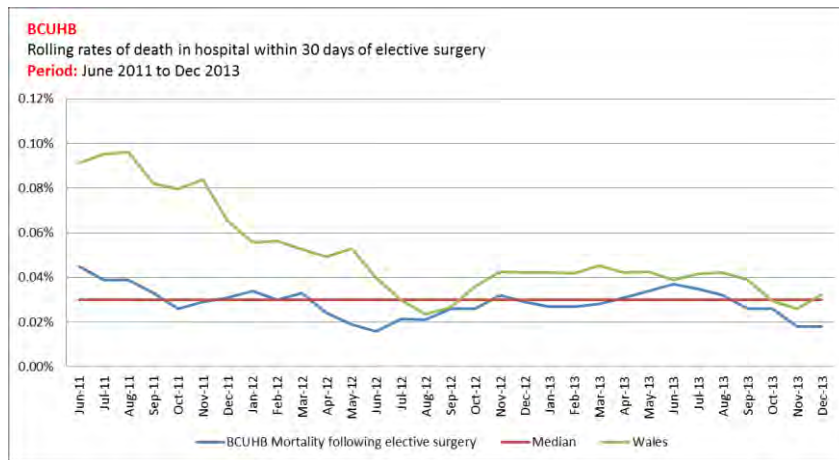


Figure 10: Elective Surgery Mortality

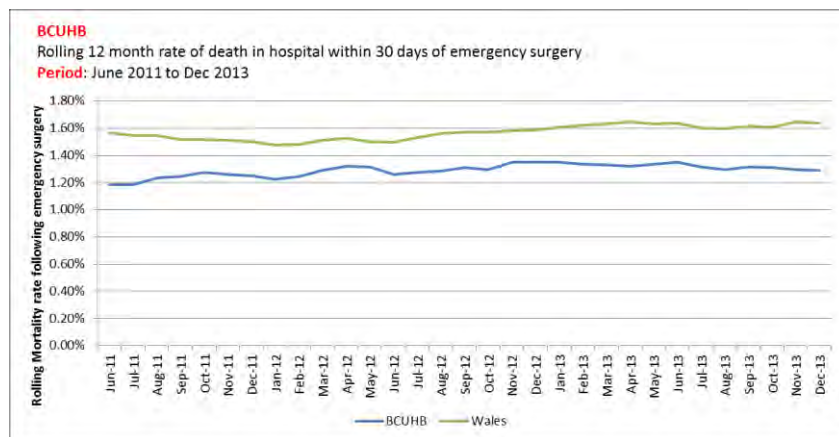


Figure 11: Non-elective Surgery Mortality

In both elective and non-elective surgery, the mortality rate within 30 days is very low. The latest data (12 months to December 2013) shows a mortality rate of 0.02% for elective surgery (6 patients) and 1.3% (161 patients) for non-elective. For both, the Health Board was below the Welsh average.

Common medical emergencies

The following indicators present information on mortality following specific medical emergencies (stroke, hip fracture, and heart attack). This provides some information on the quality of care in each hospital. All three conditions are more prevalent in older people whose health may be more fragile so death cannot always be avoided. The charts show this data as a rolling 12 months for periods from June 2011 through December 2013). The red line shows the median point for the period.

Stroke

The following chart shows the rolling 12 month mortality within 30 days of an admission following a stroke (June 2011 to December 2013). The latest data (12 months to December 2013) shows an average of 14 (15.2%) patients per month died within 30 days of being admitted with a stroke. This is slightly higher than the average for Wales (14.8%).

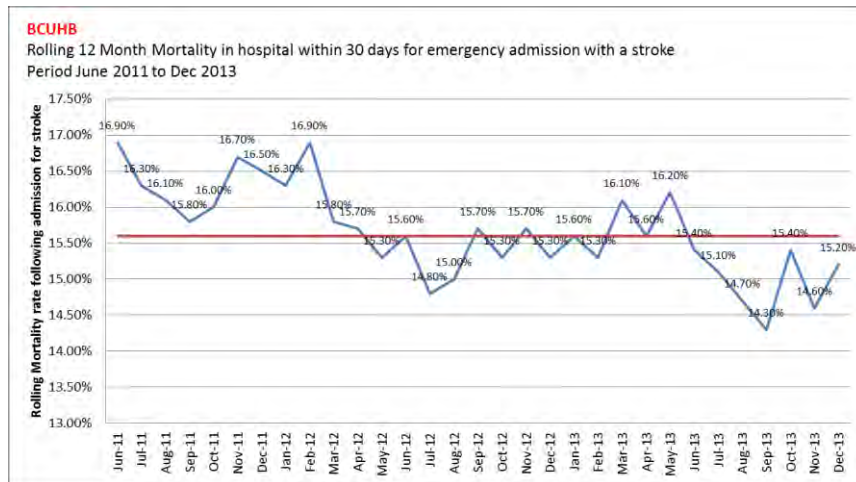


Figure 12: Stroke

Hip Fracture

Figure 13 shows the rolling 12 months mortality within 30 days of admission following a hip fracture (for those aged 65 and over). The latest data (12 months to December 2013) shows that 5.0% of patients died (between 3 and 4 patients per month), which is lower than the Welsh average (6.1%).

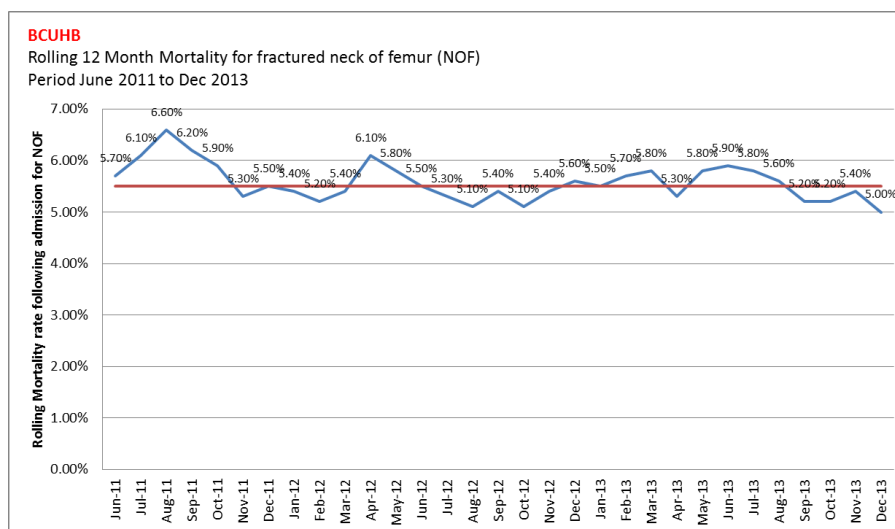


Figure 13: Hip Fracture

Heart Attack

Figure 14 shows the rolling 12 month mortality within 30 days of admission with a heart attack for patients aged 35 to 74. The latest data (12 months to December 2013) shows that 3.2% of patients died (between 1 and 2 patients per month), which is lower than the Welsh average of 4.1%.

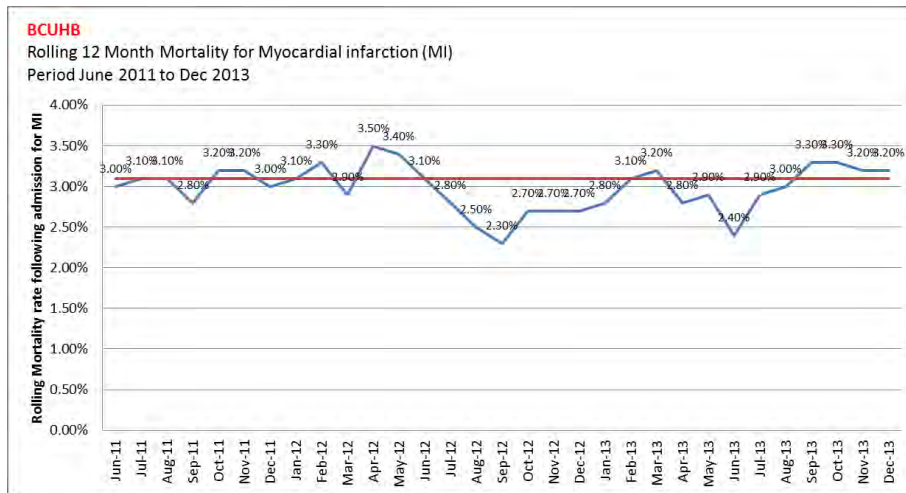


Figure 14: Heart Attack

Ysbyty Gwynedd

Based on the 2013 model Ysbyty Gwynedd had a Risk Adjusted Mortality Index (RAMI) value of 105 (for the rolling 12 months to December 2013), which is greater than the average of 100. Data for the previous 2012 model is shown for background.

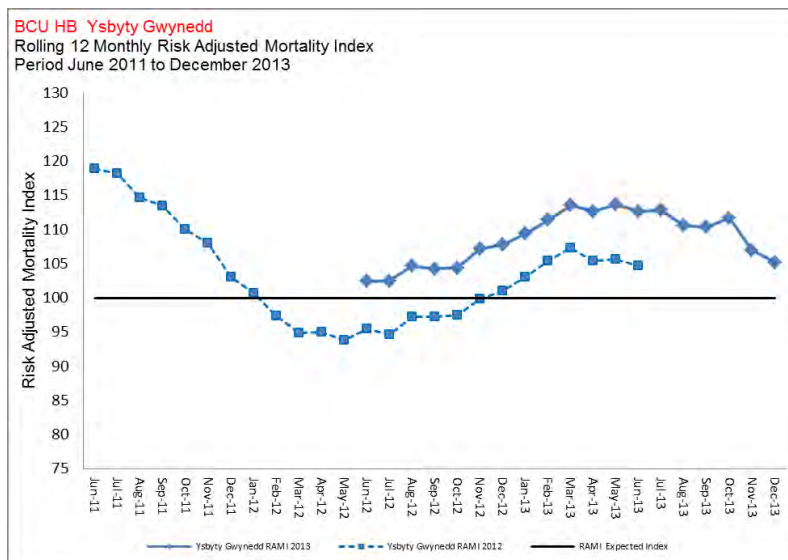


Figure 15: RAMI

Figure 16 shows the Welsh Risk Adjusted Mortality Index. This index is based only on the 18 major Welsh hospitals. Ysbyty Gwynedd performed better than the Welsh average of 100, with

an index value of 90. Ysbyty Gwynedd also had a lower than expected Summary Hospital level Mortality Indicator (SHMI) (Figure 17), with an index value of 71 compared to the average of 82.

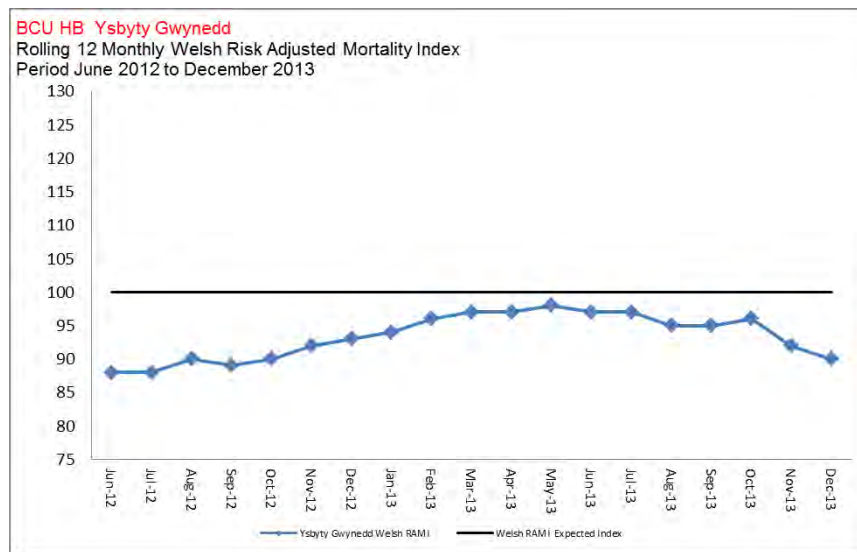


Figure 16: Welsh RAMI

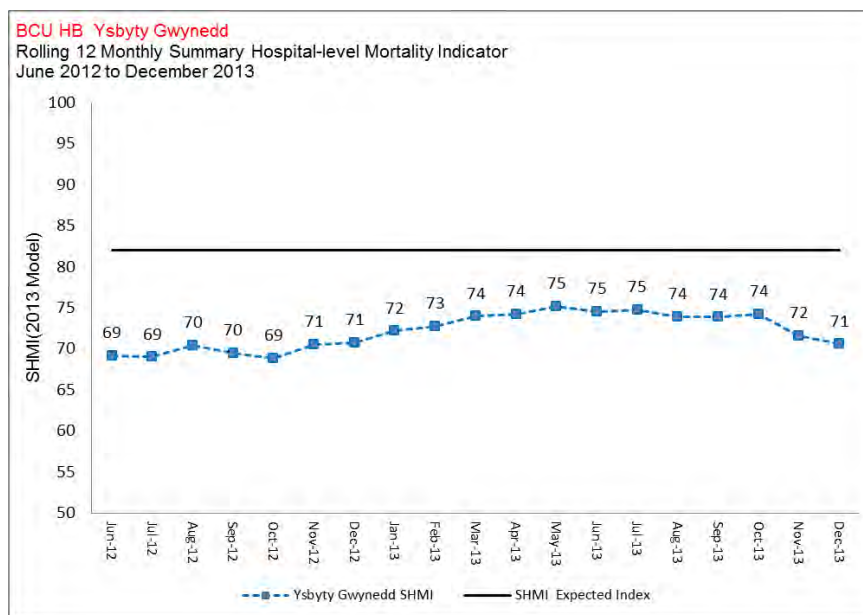


Figure 17: SHMI

For the 12 months to April 2014, the average number of deaths per month was 69 in Ysbyty Gwynedd. Figure 18 shows the rolling 12 monthly and individual monthly crude mortality figures, which show a median of 1.4% between June 2011 and April 2014. The monthly data highlights the expected increase in mortality during the winter months.

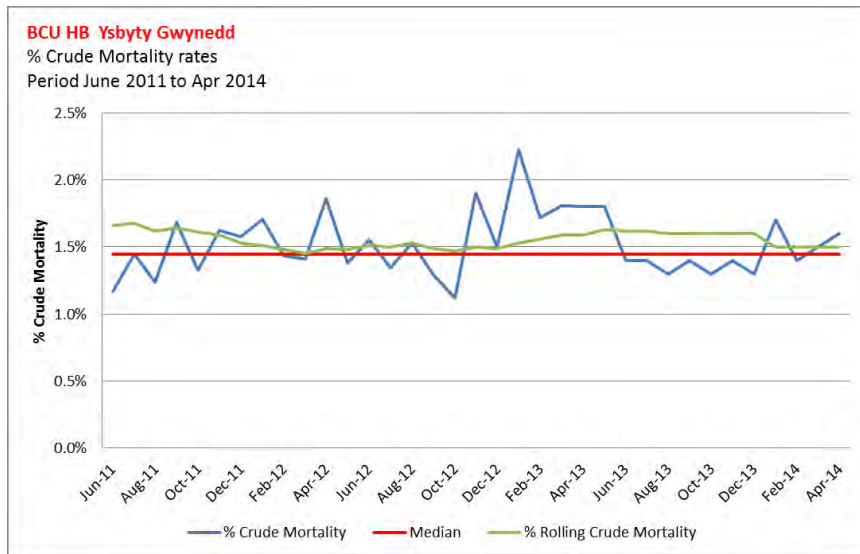


Figure 18: Crude Mortality

Ysbyty Glan Clwyd

Ysbyty Glan Clwyd had a Risk Adjusted Mortality Index (RAMI) value of 102 (rolling 12 months to December 2013) compared to the average of 100 based on the 2013 model. The index has continued to improve since March 2013.

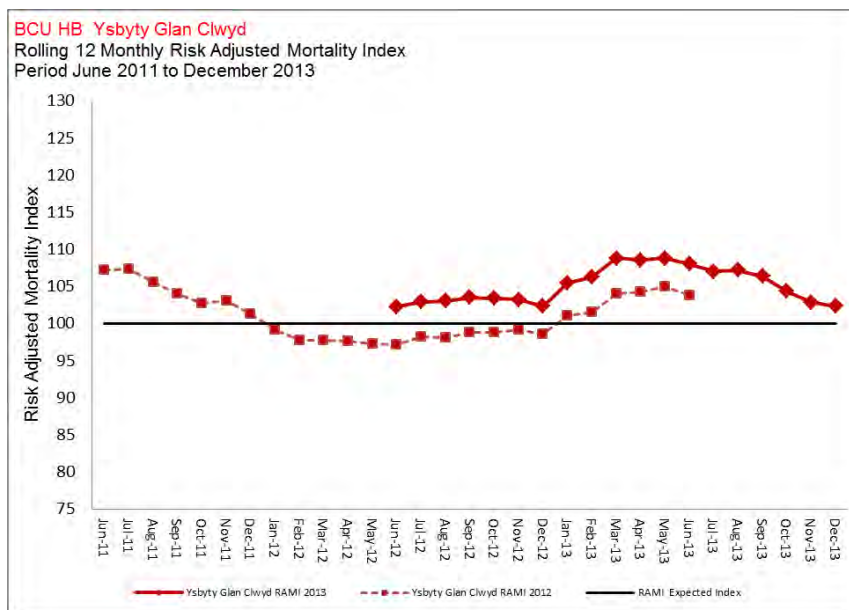


Figure 19: RAMI

Figure 20 shows the Welsh RAMI. Ysbyty Glan Clwyd had an index value of 88 compared to the average of 100.

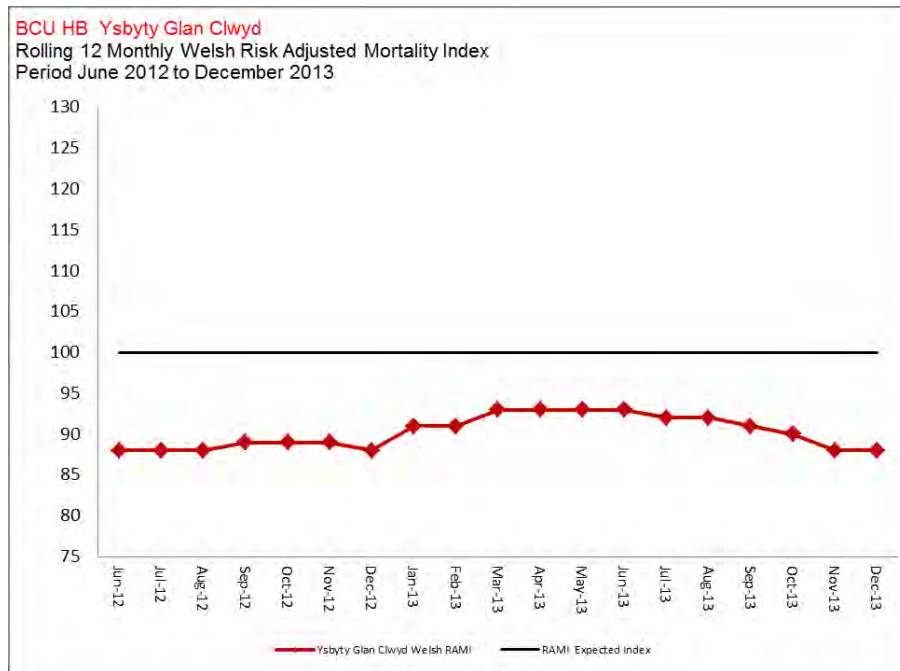


Figure 20: Welsh RAMI

Ysbyty Glan Clwyd also had a slightly lower than expected Summary Hospital Mortality Indicator (SHMI) (Figure 22), with an index value of 80 compared to the average of 82.

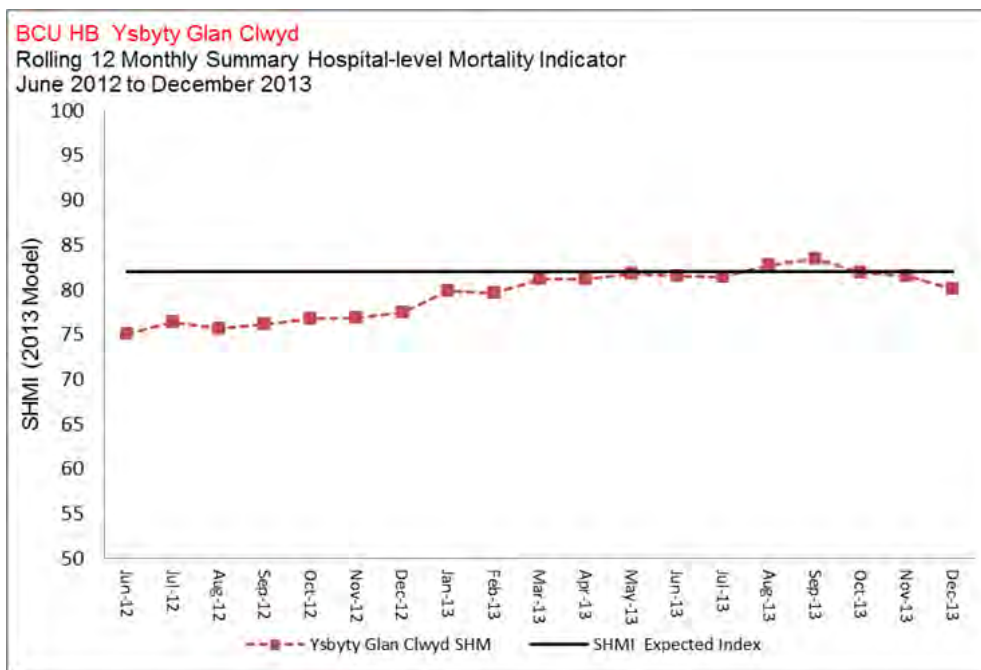


Figure 21: SHMI

For the 12 months to April 2014, the average number of deaths per month was 85 in Ysbyty

Glan Clwyd. Figure 22 shows the monthly crude mortality figures, which show a median of 1.6% between June 2011 and January 2014.

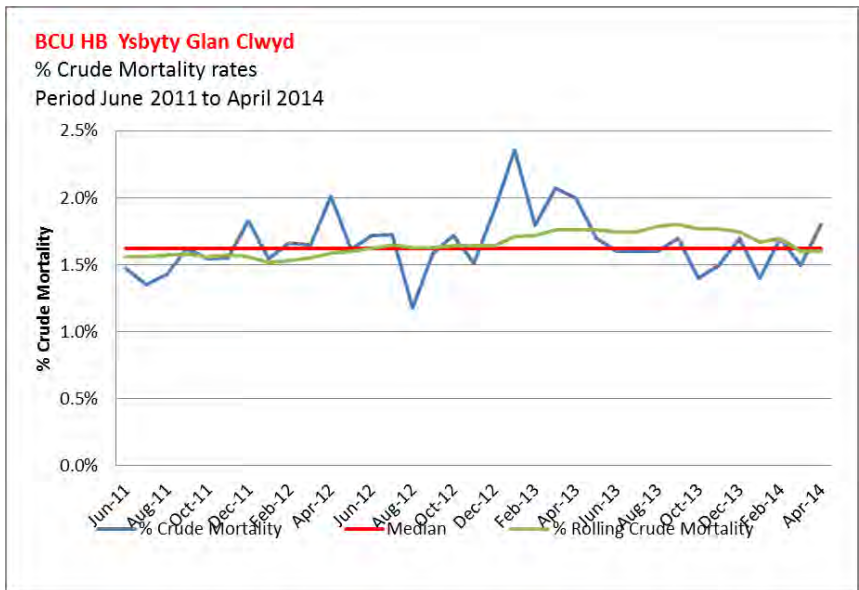


Figure 22: Crude Mortality

Wrexham Maelor Hospital

Wrexham Maelor Hospital has a Risk Adjusted Mortality Index (RAMI) value of 118 (rolling 12 months to December 2013), which is high compared to the average of 100, based on the 2013 model (Figure 23). While higher than the other two sites, we have been reassured to see a continuing downward trend, but committed to quality improvement, are investing significant effort into understanding the factors which account for the figures as well as reviewing standards of clinical care. The Health Board has also supported the review of RAMI being undertaken by Professor Stephen Palmer on behalf of Welsh Government.

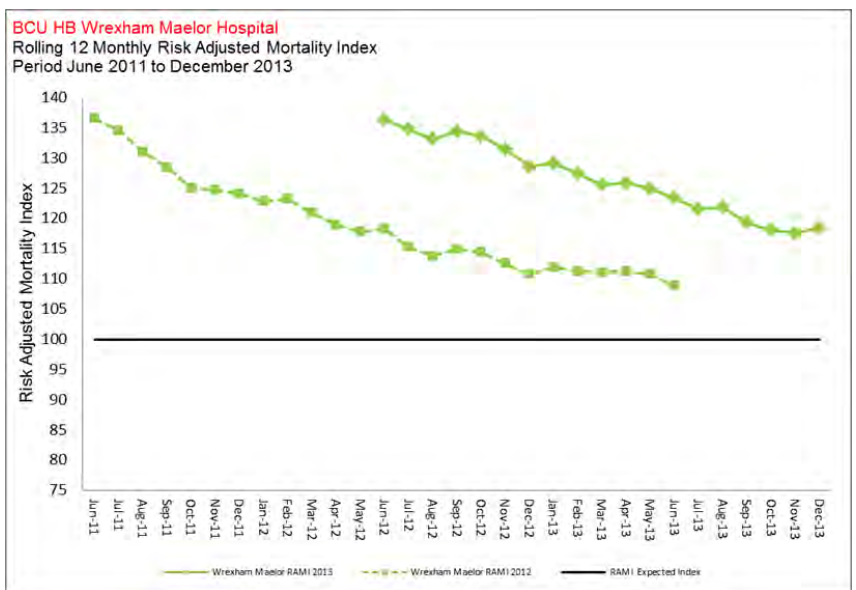


Figure 23: RAMI

Figure 24 shows the Welsh RAMI. Wrexham Maelor Hospital had an index value of 102 compared to the average of 100.

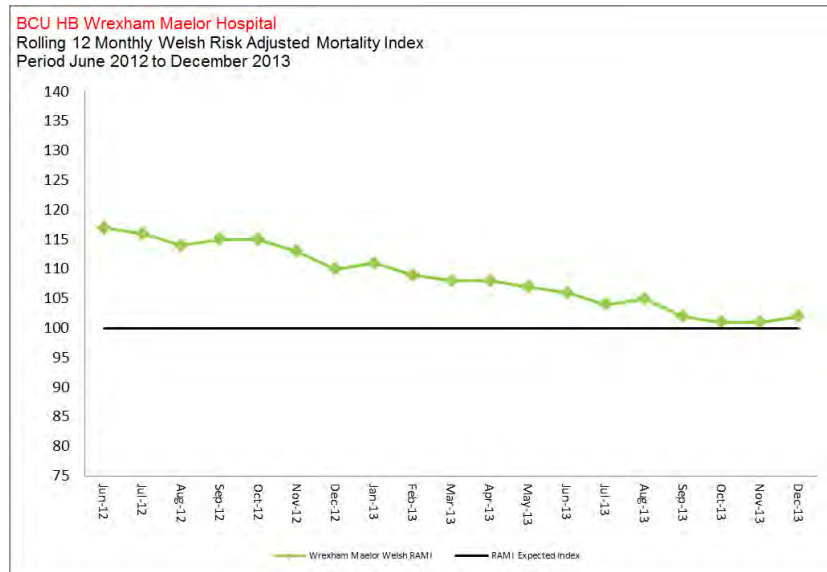


Figure 24: Welsh RAMI

The hospital also had a higher than expected Summary Hospital Mortality Indicator (SHMI) (Figure 25), with an index value of 86 compared to the average of 82.

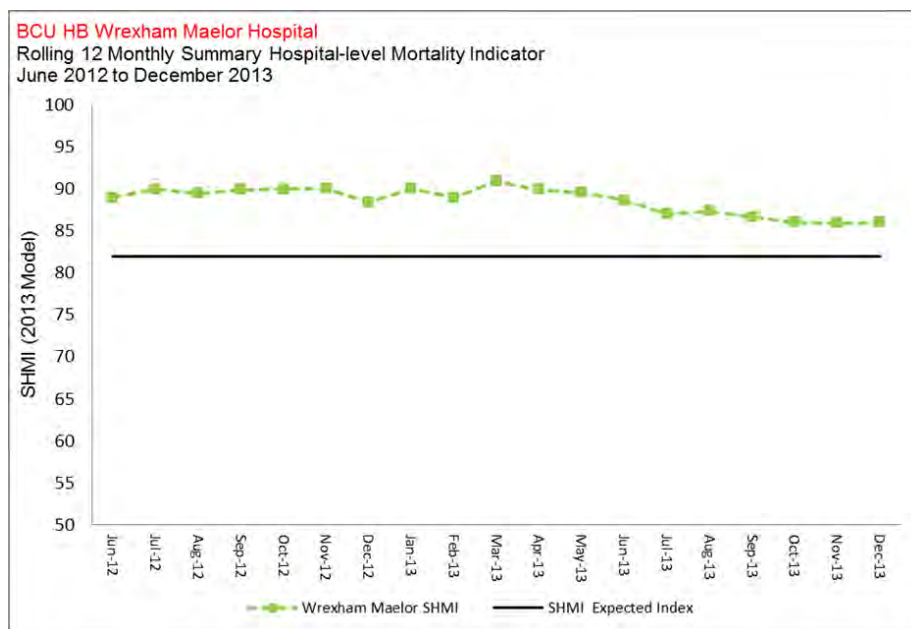


Figure 25: SHMI

Figure 26 shows the monthly crude mortality figures, which show a median of 1.9% between June 2011 and January 2014. For the 12 months to January 2014, the average number of

deaths per month was 79 at Wrexham Maelor.

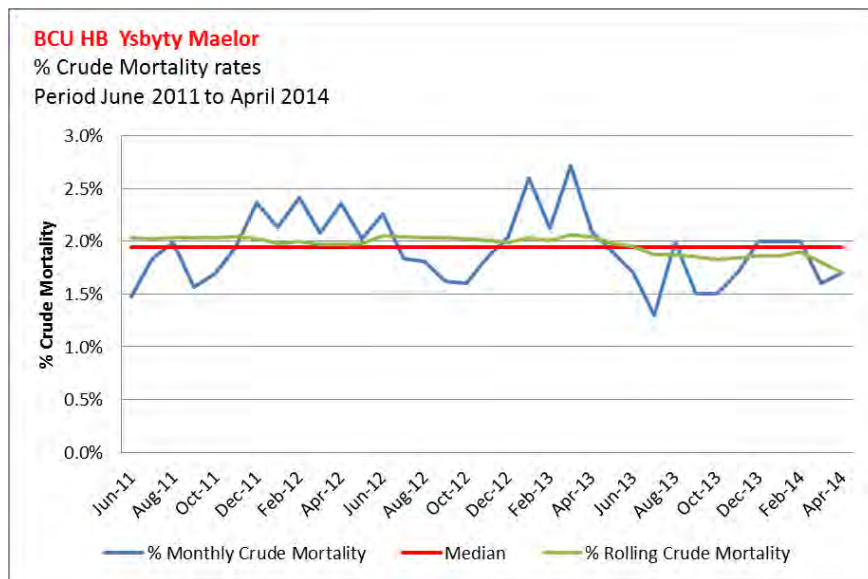


Figure 26: Crude Mortality

What action are we taking to improve further?

The Health Board has a mortality review process in place for all deaths. In addition, 40% to 50% undergo a more detailed stage 2 review. This work has shown that attention must be focussed on the recognition of and response to acutely deteriorating patients on wards.

We are undertaking thorough analysis of staffing levels, complaints, and changes in administrative practices. Key to this is our data collection processes and significant work has been undertaken to improve these.

Nurse staffing levels have increased, particularly on acute wards and the Board is committed to continuing to work towards achieving Chief Nursing Officer levels across the organisation.

We are engaged in extensive work to address how patients flow through the hospital care system, in particular with respect to unscheduled care. Improvements in flow are associated with improved hospital outcomes, including mortality. We are also reviewing the process for sharing information with individual consultants on mortality to ensure that comparisons against local and national peers are embedded into everyday practice.

Appendix 1 –What is the Welsh RAMI?

The Welsh RAMI scores are derived from RAMI 2013 outcomes for the 18 major hospitals across Wales. The average RAMI scores for these hospitals are recalibrated to 100 for the baseline period (12 months to June 2012) to account for the difference between this average and the standard population (i.e. England, Wales and Northern Ireland).

The purpose of this to reduce the impact of known differences between Wales and England which influence the model outcomes. For example, differences in service configuration, healthcare delivery, end of life care delivery and the quality and consistency of data. Therefore the Welsh RAMI seeks to provide an alternative and unique view of mortality for Welsh hospitals, albeit still influenced by predicted risk from the standard population.

A detailed technical explanation of risk adjusted mortality indices can be found on the [statistics](#) page of our internet site. This has been provided by CHKS, the provider of the Welsh Benchmarking system.



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Betsi Cadwaladr
University Health Board

Using mortality data to improve the quality and safety of patient care

| Version | Date Published | Notes |
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Introduction

Quality and Safety

Betsi Cadwaladr University Health Board is committed to delivering safe and high quality healthcare services. Everyone who works for the Health Board has a part to play in driving up standards. We must always put the safety of our patients at the heart of everything we do. To support this, the Board is engaged in a wide range of activities to ensure patient safety, and provide patients with appropriate assurance about the quality and safety of our services.

A key element of this continual cycle of quality improvement is the analysis and understanding of mortality information. This latest publication provides additional information to complement previously reported Risk Adjusted Mortality Index (RAMI) figures and includes mortality information relating to some common medical emergencies such stroke, hip fracture and heart attack.

It also includes the introduction of a Welsh RAMI which is intended to reduce the impact of known differences between Wales and England which influence the model outcomes. These measures provide a focus on continuous quality improvement, and timely intervention to ensure the best outcome for our patients.

Why are we monitoring these figures?

The Health Board monitors mortality on a regular basis, with any concerns investigated. The focus is on continuous quality improvement and timely intervention to ensure the best outcome for our patients.

We firmly believe that every death deserves a review and has put extensive processes in place to ensure this happens. We look to screen all deaths, and using nationally agreed criteria, a proportion are selected for closer, additional review.

The key points of learning from these reviews are:

- a. Recognition of and response to the acutely deteriorating patient on the ward remains a concern. This has been the subject of close attention from the Board, and the focus of the national RRAILs (Rapid Response to the Acutely Ill) work stream. An action plan is in place and recent preliminary data points to improvement.

- b. The quality of the patient case record – documentation is important in providing safe effective care. Almost solely paper-based, these reviews have highlighted ways this can be improved setting a steer for the organisation.
- c. Do Not Attempt Resuscitation Orders (DNACPR) - motivated by a desire to avoid subjecting patients with little prospect of success to the indignity of resuscitation, substantial progress has been made in the use of these orders. Nevertheless, there are still some outstanding issues around completion of all the components, which we are addressing.

In addition, we believe the way we staff the organisation is important. We have increased our nurse staffing, with a particular focus on our acute wards, and the Board is committed to working towards achieving the Chief Nursing Officer's recommended level across the organisation.

Furthermore, we have undertaken an analysis of patient complaints and changes to administrative practices. This work has brought into focus our data collection processes and significant work has been undertaken to improve our processes, as incomplete or incorrect data can have a misleading effect on the risk adjusted measures.

To more fully understand the quality and safety of the service we provide, and committed to continually improving service, the Health Board scrutinises a range of quality and safety indicators. RAMI is just one aspect of this which can be used to help identify where further investigation is warranted. It is important to note that this indicator should not be treated in isolation, but as part of a wide range of quality measures that help to identify areas for improvement. This has been acknowledged by various independent reviews.

What are we measuring?

Crude Mortality

Crude (or unadjusted) mortality figures take no account of risk factors. The definition is therefore relatively simple (actual deaths in a month ÷ total discharges per month x 100), but is affected by the number of patients treated. The services delivered at the Health Board's three main sites differ in the range of specialties provided – for example, Ysbyty Glan Clwyd has a Cancer Treatment Centre.

Common Medical Emergencies

A stroke, heart attack and hip fracture are three common medical emergencies and we monitor the outcome of care for these patients. This provides us with some evidence about the quality of care in each hospital. All three conditions are more prevalent in older people whose health may be more fragile so death cannot always be avoided.

Risk Adjusted Mortality Indices¹

The risk adjusted mortality figures quoted in this document are for the Health Board's three main district general hospitals (Ysbyty Gwynedd in Bangor, Ysbyty Glan Clwyd in Bodolwyddan and Wrexham Maelor Hospital).

In this release we are publishing:

- the RAMI 2012 and 2013 model;
- the Welsh RAMI 2013², which is based on major Welsh acute sites; and
- the In-Hospital Summary Hospital Mortality Indicator 2013 (SHMI).

Risk adjusted mortality indices are one of a number of measures indicating how a hospital is managing the care of its patients and should be considered alongside other measures, such as those published in this document. The indices reflect not only the quality of care, but also the system of care delivery and the quality of information.

Clinical coding completeness

Clinical Coding is the process of transcribing a patient's diagnosis and treatment from their case notes onto the Patient Administration System. The quality and timeliness of this data is essential to support reporting.

For the period referenced in this report (April 2011 – September 2013), the Health Board achieved a coding completeness of 99.8 per cent. The national target is 98 per cent for any rolling 12 months.

What does this data tell us?

Health Board wide

For the 12 months to January 2014, the average number of deaths per month was 285 across the Health Board. The crude mortality figures for the period April 2011 to January 2014 are in line with the rest of Wales, with Betsi Cadwaladr University Health Board at 1.87 per cent, compared with all Wales peer at 1.90 per cent

¹ Appendix 1 contains an explanation of the Welsh RAMI and links to technical documents

(Source: All Wales Benchmarking system).

For the 12 months to September 2013, the Health Board had a Risk Adjusted Mortality Index (RAMI 2013 model) of 113, against an all Wales peer of 112.

Common medical emergencies

The following indicators present information on mortality following specific medical emergencies (stroke, hip fracture, and heart attack). This provides some information on the quality of care in each hospital. All three conditions are more prevalent in older people whose health may be more fragile so death cannot always be avoided. The charts in figures 1 to 3 show this data over time (rolling 12 months for periods ending June 2011 through September 2013). The red line shows the median point for the period.

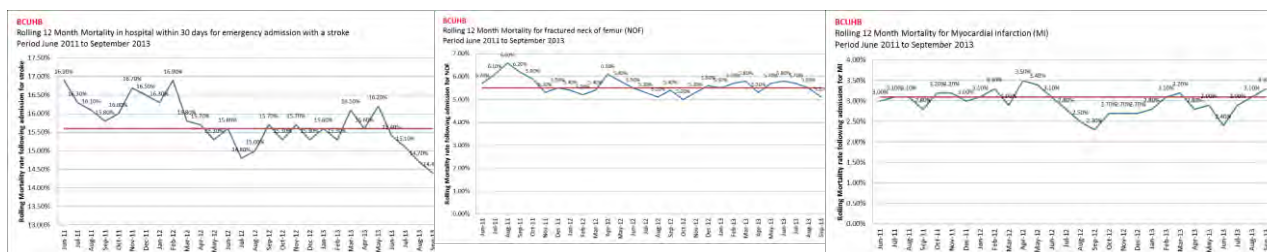


Figure 1: Stroke

Figure 2: Hip Fracture

Figure 3: Heart Attack

Stroke

Figure 1 shows the rolling 12 month mortality within 30 days of an admission following a stroke (June 2011 to September 2013). The latest data (12 months to September 2013) shows an average of 13 (14.4 per cent) patients per month died within 30 days of being admitted with a stroke. This is lower than the average for Wales (15.1 per cent).

Hip Fracture

Figure 2 shows the rolling 12 months mortality within 30 days of admission following a hip fracture (for those aged 65 and over). The latest data (12 months to September 2013) shows that 5.1 per cent of patients died, which is lower than the Welsh average (6.2 per cent).

Heart Attack

Figure 3 shows the rolling 12 month mortality within 30 days of admission with a heart attack for patients aged 35 to 74. The latest data (12 months to September 2013)

shows that 3.3 per cent of patients died, which is lower than the Welsh average of 4.0 per cent.

By hospital

Ysbyty Gwynedd

Based on the 2013 model Ysbyty Gwynedd had a Risk Adjusted Mortality Index (RAMI) value of 110.(for the rolling 12 months to September 2013), which is greater than the average of 100. The Health Board has undertaken extensive work to more fully understand why the figure is at this level, including individual case notes reviews looking at standards of clinical care. This is alongside a review of data quality and administrative processes. The latest figure is of concern, but this being an improvement on previous values, whilst it is pleasing to see the success of this effort, the work to improve this continues. Figure 4 shows the data for the 2012 model up to June 2013, and the more recent 2013 model up to September 2013.

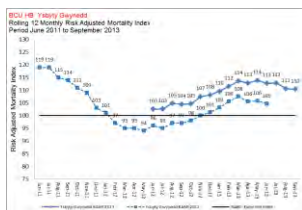


Figure 4: RAMI

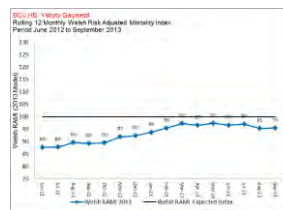


Figure 5: Welsh RAMI

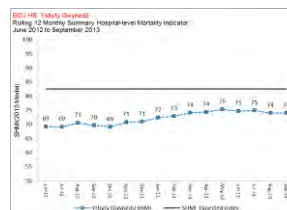


Figure 6: SHMI

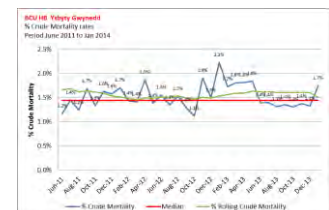


Figure 7: Crude Mortality

Figure 5 shows the Welsh Risk Adjusted Mortality Index. This index is based only on the 18 major Welsh hospitals. Ysbyty Gwynedd had an index value of 95 compared to the average of 100. Ysbyty Gwynedd also had a lower than expected Summary Hospital Mortality Indicator (SHMI) (Figure 6), with an index value of 74 compared to the average of 82.5.

For the 12 months to January 2014, the average number of deaths per month was 70.5 in Ysbyty Gwynedd. Figure 7 shows the rolling 12 monthly and individual monthly crude mortality figures, which show a median of 1.4 per cent between June 2011 and January 2014. The monthly data highlights the expected increase in mortality during the winter months.

Ysbyty Glan Clwyd

Ysbyty Glan Clwyd had a Risk Adjusted Mortality Index (RAMI) value of 106 (rolling 12 months to September 2013) compared to the average of 100 based on the 2013

model. As at Ysbyty Gwynedd, the Health Board continues to undertake significant work reviewing clinical care, and doing this alongside a review of data quality and administrative processes. This has led to data being corrected, and an improving value against the average. Figure 8 shows the rolling 12 monthly and individual monthly crude mortality figures, which show a median of 1.6 per cent between June 2011 and January 2014.

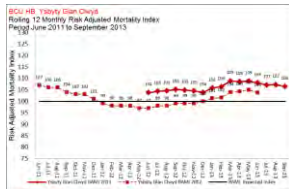


Figure 8: RAMI



Figure 9: Welsh RAMI

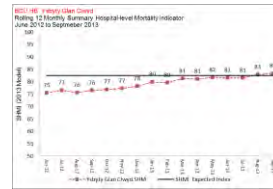


Figure 10: SHMI

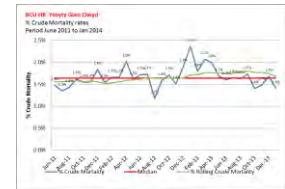


Figure 11: Crude Mortality

Figure 9 shows the Welsh RAMI. Ysbyty Glan Clwyd had an index value of 91 compared to the average of 100. Ysbyty Glan Clwyd had a slightly higher than expected Summary Hospital Mortality Indicator (SHMI) (Figure 10), with an index value of 83 compared to the average of 82.5.

For the 12 months to January 2014, the average number of deaths per month was 87.4 in Ysbyty Glan Clwyd. Figure 11 shows the monthly crude mortality figures, which show a median of 1.7 per cent between June 2011 and January 2014.

Wrexham Maelor Hospital

Wrexham Maelor Hospital has a Risk Adjusted Mortality Index (RAMI) value of 119 (rolling 12 months to September 2013), which is high compared to the average of 100, based on the 2013 model (Figure 12). Though greater than 100, we have been reassured to see a continuing downward trend for both models, but committed to quality improvement are investing significant effort into understanding the factors which account for the figures as well as reviewing standards of clinical care. The Health Board has identified areas for further investigation to understand the higher than expected index value.



Figure 12: RAMI

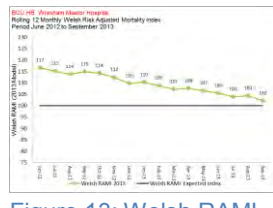


Figure 13: Welsh RAMI

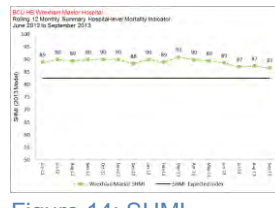


Figure 14: SHMI



Figure 15: Crude Mortality

Figure 13 shows the Welsh RAMI. Wrexham Maelor Hospital had an index value of 102 compared to the average of 100. The hospital also had a higher than expected Summary Hospital Mortality Indicator (SHMI) (Figure 14), with an index value of 87 compared to the average of 82.5.

For the 12 months to January 2014, the average number of deaths per month was 95 at Wrexham Maelor. Figure 15 shows the monthly crude mortality figures, which show a median of 1.9 per cent between June 2011 and January 2014.

What action are we taking to improve further?

The Health Board has a mortality review process in place for all deaths. In addition, 40 per cent undergo a more detailed stage 2 review. This work has shown that attention must be focussed on the recognition of and response to acutely deteriorating patients on wards.

We have undertaken thorough analysis of staffing levels, complaints, and changes in administrative practices. This work has brought into focus our data collection processes and significant work has been undertaken to improve these.

Nurse staffing levels have increased, particularly on acute wards and the Board is committed to continuing to work towards achieving Chief Nursing Officer levels across the organisation.

We are engaged in extensive work to address how patients flow through the hospital care system, in particular with respect to unscheduled care. Improvements in flow are associated with improved hospital outcomes, including mortality. We are also reviewing the process for sharing information with individual consultants on mortality to ensure that comparisons against local and national peers are embedded into everyday practice.

Publication notes

This document is the Health Board's fifth release of data relating to mortality. In line with criteria agreed with Welsh Government, we are now publishing an expanded set of measures.

In this release, the Health Board is publishing additional data around crude (or unadjusted) mortality, along with mortality following certain medical emergencies. These provide context to the risk adjusted figures, and can be seen as evidence of the quality of care. This additional data, along with comparisons with other Health Boards in Wales is available via the [My Local Health Service Website](#)³.

We are also providing additional risk adjusted measures.

All data has been sourced from the All Wales Benchmarking system.

³<http://mylocalhealthservice.wales.gov.uk/>

Appendix 1 –What is the Welsh RAMI?

The Welsh RAMI scores are derived from RAMI 2013 outcomes for the 18 major hospitals across Wales. The average RAMI scores for these hospitals are recalibrated to 100 for the baseline period (12 months to June 2012) to account for the difference between this average and the standard population (i.e. England, Wales and Northern Ireland).

The purpose of this is to reduce the impact of known differences between Wales and England which influence the model outcomes. For example, differences in service configuration, healthcare delivery, end of life care delivery and the quality and consistency of data. Therefore the Welsh RAMI seeks to provide an alternative and unique view of mortality for Welsh hospitals, albeit still influenced by predicted risk from the standard population.

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