1. Introduction

This second all-Wales annual report on NHS heart disease highlights the progress we have made in our services for those with heart disease and identifies areas for future improvement.

Reports have already been produced by health boards, setting out local progress against “Together for Health – Heart Disease Delivery Plan”. This report provides a national overview. Taken together, the reports demonstrate our commitment in Wales to the improvement of cardiac services.

Overall we can report that:

- in 2013, 4,363 people died from coronary heart disease (CHD) in Wales, this is almost 14% of all deaths that year. CHD is responsible for almost 17% of deaths in men and almost 11% of deaths in women. In recent years CHD death rates have been falling more slowly in younger age groups.
- in 2013, there were about 2,460 premature deaths (deaths before the age of 75) from cardiovascular disease (CVD) in Wales. This represents about 23% of all premature deaths in Wales and 19% in women.
- CVD continues to be one of the major causes of inequality in health outcomes.

Good progress is being made in implementing the actions set out in our Heart Disease Delivery Plan and this is reflected through our outcome and assurance measures. They show that:

- premature death rates are falling and survival rates are improving. The percentage of those treated for heart disease is much higher for those aged 65 and over.
- there has been a reduction of over 8,000 patients being treated by their GP for CHD over the last five years.
- 360 fewer people died from CHD in 2013 than in 2010.
- over the last 12 months the percentage of eligible patients receiving pre-hospital thrombolysis from the Welsh Ambulance Service tends to be above 85%.
- the use of primary percutaneous coronary intervention (PCI) continued to increase. 79.5% of eligible patients had primary PCI in 2013-14 compared to 72% in 2012-13.
- in 2013-14, 75% of eligible patients received primary PCI within 150 minutes from the time of the call to the administration of the balloon, an increase of over 5 percentage points from 2012-13.

There are however a number of areas where further progress is required or where new issues need to be addressed:

- there are over 330,000 patients aged 16 or over, registered with a GP with a BMI of greater than or equal to 30 in Wales; an increase of almost 27,000 patients over the past five years.
- in 2014, 23.6 million prescriptions were issued for the treatment and prevention of CVD in Wales. This is 5.5 million more than in 2005.

1 British Heart Foundation Cardiovascular Disease Statistics 2014.
2 Primary PCI is not routinely available in north Wales, although this service will commence in 2015.
• between January and December 2014 between 89 and 90% of cardiac patients started their treatment within 26 weeks of their GP referral against the target of 95% 
• since March 2014, there has been an overall increase in the percentage of patients waiting over eight weeks for cardiology diagnostic tests, including echo cardiograms 
• more than 4,600 patients attended cardiac rehabilitation in Wales. This is an uptake of only 38% and below the UK uptake rate of 45%. 

We expect to see progress in these areas in 2015-16.

Dr Andrew Goodall
Chief Executive – NHS Wales

Judith Paget
Chair, Heart Disease Implementation Group
2. How well are we doing in Wales on heart disease

Heart disease is a major killer in Wales, particularly affecting our poorer communities. The most significant cause of heart-related ill health and death is coronary heart disease, particularly angina and heart attack.

2.1 Background

Analysis of prevalence, mortality and survival rates provides an important insight into the effectiveness of our work to prevent and treat heart disease. In last year’s annual report, highlighted in figure one, we reported that there has been a steady decline in the rate of people aged 35-74 in Wales and across the UK dying from premature coronary heart disease since 1978. This is due in part to the improved detection of coronary heart disease (CHD) and cardiovascular disease (CVD) amongst GPs, the ban on smoking in public places, prevention strategies led by Public Health Wales, the public health role played by health boards and their partners and better treatments within the NHS.

For this year’s annual report it is not possible simply to update historical trends. Age-standardised death rates for the years 2010 to 2012 have been calculated by standardising to the new European standard population rate (ESP). The new ESP is the first update since 1976 and reflects the older age-structure of the present population of Europe.

As CVD affects older age-groups more than younger age-groups, the larger number of older people in the new ESP means that any age-standardised rates for CVD mortality calculated will be higher than if they were calculated using the old ESP from 1976. This means that the age-standardised mortality rates presented in this annual report are not comparable to the previous rates.
2.2 Heart disease mortality rate

This tells us how many people die from coronary heart disease each year. If we are successful, over time we would expect to see a continued fall in the number of deaths from premature heart disease and lower mortality rates comparable with the best in Europe.

Death before the age of 75 years is considered to be premature. In Wales, about 26% of premature deaths in men and around 19% of premature deaths in women were from CVD in 2013. In total that year, there were over 2,400 premature deaths from CVD in Wales.

CHD by itself is the most common cause of premature death in the UK in men. More than 16% of male premature deaths in 2013 were from CHD, equating to around 1,000 deaths under the age of 75. In women, CHD was the cause of 8% of premature deaths.

Figure two shows that across the UK there has been a reduction in the percentage of people dying from CHD. In Wales 360 fewer people died from CHD in 2013 than in 2010.

Figure 2: Deaths from coronary heart disease as a percentage of all deaths, all ages, in the UK, 2010, 2012 and 2013

![Figure 2: Deaths from coronary heart disease as a percentage of all deaths, all ages, in the UK, 2010, 2012 and 2013](image)

Source: Coronary Heart Disease Statistics and Public Health Wales

2.3 30-day post hospital survival rates

This measure shows us how many people aged 35 to 74 are alive 30 days after they have been admitted to hospital with a heart attack. It is an indicator of the overall effectiveness of treatment.

Between 96 and 97% of adults aged between 35 and 74 survive following a hospital admission for a heart attack. This highlights how effective the emergency response to a heart attack is.

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3 Expressed as an age standardised rate to allow comparisons between years and countries
2.4 Heart disease incidence rates

Heart disease incidence measures how many people have had or suffered symptoms of heart disease. It provides a feel for how well we are doing at preventing heart disease in Wales. If we are achieving our objectives, we would expect to see a slower rise or a fall in the rate of increase.

Unfortunately there is no standard measure available to measure incidence rates, so a number of alternative measures can be used. One proxy measure of incidence rates in Wales is the number of emergency admissions to hospital for CVD and CHD.

CVD is an umbrella term for all diseases of the heart and circulation, including heart disease, stroke, heart failure, cardiomyopathy, and atrial fibrillation. CHD is when the coronary arteries (the arteries that supply the heart muscle with oxygen-rich blood) become narrowed by a gradual build-up of fatty material within their walls.

Figure three shows that the number of emergency admissions for CVD during 2014-15 has decreased by 1,733 patients to 34,152 when compared to the previous year. The number of emergency admissions for CHD has remained stable at around 4,100 admissions between 2010 and 2014.

Figure four gives an indication of how many people are currently being treated by their GP for CHD. The percentage of patients on the CHD GP register has fallen gradually. This represents a reduction of 8,037 patients since 2008-09. The total number of people living with CHD in Wales (recorded on the GP disease register) in 2013-14 is 122,688. This represents the impact of preventative strategies over past years. In Wales, the percentage of people living with CHD (3.9%) is the same as Northern Ireland, lower than Scotland (4.3%) but higher than England (3.3%).
The number of people with hypertension continues to rise. The number of patients registered with their GP with hypertension in Wales in 2013-14 was just over 493,000. This represents 15.6% of the population, an increase of over 23,500 people since 2008-09.

Figure five highlights that across the UK there has been a gradual increase in people with hypertension and that as a percentage Wales has more people registered with their GP for hypertension than elsewhere in the UK. The identification of hypertension creates a significant workload in primary care but is an extremely valuable opportunity to advise individuals of potential risks and to offer formal cardiovascular risk assessment.
3. Heart disease services in Wales

A number of NHS performance measures have been developed to help us understand how well we are detecting and treating heart disease in Wales. The baseline for each measure was published in the heart disease annual report in 2014. In this report we will look at the progress that has been made against those performance measures. We also review service improvements across health boards that will drive up the quality of heart disease services in Wales.

3.1 Promotion of healthy hearts

In general our population is living longer and overall health is improving. However, wide inequalities in health between socioeconomic groups and geographic areas persist, and overall population health status in Wales is far from the best in Europe.

The risks of heart disease are influenced by common primary risk factors which affect a number of chronic conditions; these include diet, exercise levels, use of tobacco and alcohol. The risk of both CVD and CHD can be reduced by preventative work on lifestyle choices, including the reduction of alcohol and smoking rates, increasing exercise levels and healthy eating.

Assurance measure one – Percentage of population with cardiovascular risk conditions managed appropriately

Figure 6: Percentage of all aged 16+ who reported smoking daily or occasionally

Smoking is the greatest single cause of avoidable mortality in Wales. In people aged 35 and over, smoking causes nearly one in five of all deaths and around one third of the inequality in mortality between the most and least deprived areas.4

20%\textsuperscript{5} of adults reported smoking in 2014 (daily or occasionally). This is considerably lower than in the 1970s, but the fall in rates has slowed down in recent years. Unfortunately this reduction in smoking is not consistent across all parts of Wales, there is a significant variation between communities, with the highest rates of smoking contributing to poorer health outcomes in the most deprived areas. Overall, smoking is more common in males than in females, although in children and young people the reverse is true. According to Public Health Wales it is likely that decrease in smoking rates is the single biggest contributor to the decrease in death rates in males.

The 2007 ban on smoking in enclosed public places has led to a reduction in adults’ exposure to second-hand smoke. However, in 2013 36% of children live in households where at least one adult is a current smoker, and 20% report recent exposure to second-hand smoke in cars\textsuperscript{6}.

Exposure to second-hand smoke is a real and substantial threat to children’s health. In the confined space of cars, children are more vulnerable to second-hand smoke because they breathe more rapidly and inhale more pollutants than adults. Passive smoking can lead to a host of chronic diseases, which are very largely avoidable. A ban on people smoking in cars when children under the age of 18 are present will be introduced in Wales on October 1, 2015.

Smoking is estimated to cause almost 28,000 hospital admissions and 5,500 deaths\textsuperscript{7} each year in Wales. According to the BMA, the estimated smoking costs for NHS Wales are more than £380m a year, accounting for 7% of healthcare expenditure\textsuperscript{8}.

Figure 7: Percentage of patients aged 16+ registered with a GP with a BMI greater or equal than 30 in the previous 5 years

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure7.png}
\caption{Percentage of patients aged 16+ registered with a GP with a BMI greater or equal than 30 in the previous 5 years}
\end{figure}

\textit{Source: Quality and outcome framework statistics for Wales, Northern Ireland, England and Scotland 2013-14}

\textsuperscript{5} Welsh Health Survey 2013
\textsuperscript{6} www.gov.wales/statistics-and-research/tobacco-health-wales/?lang=en
\textsuperscript{7} www.gov.wales/topics/health/improvement/smoking/?lang=en
\textsuperscript{8} www.bma.org.uk/working-for-change/improving-and-protecting-health/tobacco/smoking-statistics
Analysis of the quality and outcomes framework in figure seven illustrates that Wales has a higher proportion of patients with a BMI of greater than or equal to 30 than the rest of the UK. There are almost 325,000 people registered with a BMI of greater than or equal to 30 in Wales, an increase of almost 19,000 over the past five years.

The Public Health Wales Observatory has published a new web-based resource on obesity in adults, using data from the Welsh Health Survey.

The resource, available on the Public Health Wales Observatory website, presents information on the prevalence of overweight and obesity by age and sex, and at a range of geographical levels. An animated map also shows the change in levels of obesity across Wales over recent years.

The Welsh Health Survey undertaken in 2014 reported that excessive alcohol intake is widespread; 40% of adults reporting that they drank above the recommended guidelines on at least one day in the previous week, including 24% reporting binge drinking (more than twice the daily guidelines).

3.2 Timely detection of heart disease

It is important that systems are developed that ensure that those individuals at risk of heart disease can be identified and then supported to manage their condition. This will require a move to a more preventative, primary and community care led system.

The Plan for a Primary Care Service for Wales, published in November 2014, describes our commitment to improve and strengthen services through 64 local networks serving local communities. GP practices are networked as ‘Clusters’ to assess local need and to work with partners to develop effective and efficient services. There is a strong emphasis on prevention and early diagnosis-working with citizens to help them access the support and advice they need.

Tackling health inequalities in Cwm Taf – a GP practice model

Since February 2015 Cwm Taf University Health Board has been testing a practice based approach to Cardiovascular Risk Assessment in 8 practices located across the Health Board. The approach involves the practice identifying patients age 40-74 years, not already on a “CVD Register” to be invited for a CVD risk assessment performed by trained Health Care Support Workers (HCSW).

The training equipped the HCSW with the knowledge and skills to undertake the QRisk2 Tool using BMJ Informatica Health Check + software and provide lifestyle advice and signposting to ongoing support in the community. They also received motivational interviewing training. The menu driven software and practice agreed pathway included triggers for both clinical referral and further action e.g. signposting.

The early experience from the pilot is informing the next phase of the programme in Cwm Taf and supporting ways of characterising and engaging the 48% who we have so far failed to reach.
Local public health teams are advising “clusters” in the assessment of local heart needs. This includes action to identify those at increased risk of heart disease and in planning, coordinating and delivering care at or close to home to meet those needs. We need to ensure that GPs have direct access to a range of diagnostic tests and procedures for those people where cardiac disease is suspected.

The inverse care law programme is developing new models of care, based on the management of cardiovascular risk, in Aneurin Bevan University Health Board and Cwm Taf University Health Board areas. This work will inform similar developments across Wales.

Add to your Life, an on-line self assessment, facilitates access to a range of quality assured information to support lifestyle management.

**Assurance measure two – Reducing the number of people with untreated hypertension and reducing the number of people with high levels of blood pressure**

Risk of CHD is directly related to higher levels of both systolic and diastolic blood pressure. Small increases in blood pressure above the recommended levels can increase the risk of death from CHD\(^9\). Both drug treatment and lifestyle changes can effectively lower blood pressure.

Individuals with high blood pressure need to be identified and given appropriate advice to ensure that their blood pressure is managed, controlled and remains at the recommended level.

It is encouraging to note in figure eight that more than 80% of those diagnosed with hypertension were given lifestyle advice from their GP, though disappointing that it is not rising. We would expect this figure to rise in the coming years.

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\(^9\) British Heart Foundation
Figure 8: Percentage of people diagnosed with hypertension after 1st April 2009 who were given lifestyle advice in the last 15 months

Source: Quality and outcome framework statistics for Wales and the UK

With regard to managing hypertension, figure nine shows that in 2013-14, of those that received a blood pressure test, 84.5% were reported as having blood pressure levels of 150/90 or less. This means that compared to 2009-10 an additional 55,000 people are managing their hypertension in line with the recommended limits.

Figure 9: The percentage of patients with hypertension whose last blood pressure reading (in last 9 months) is 150/90 mmHg or less

Source: Quality and Outcome Framework statistics for Wales

The total number of patients on the hypertension register has increased by just over 23,500 since 2008-09 with 15.6% of all registered patients being on the register, 14.9% of all registered patients were recorded on the register in 2008-09.

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10 Quality and Outcome Framework statistics for Wales
The prudent healthcare approach encourages a balance between the medical model of care and recognition of the importance of lifestyle behaviours to minimise the risk of over medicalisation. The primary care plan is encouraging greater coordination of community services to ensure that access to smoking cessation, alcohol management, dietary advice and exercise programmes is improved.

**Assurance measure three – Reducing the number of people with untreated diabetes**

Diabetes substantially increases the risk of CHD. The prevalence of diabetes increases with age and is higher in men than in women. Obesity and hypertension are the main risk factors for type 2 diabetes.

All GPs are required to keep a register of all patients aged 17 years and over with diabetes that specifies whether the patient has type 1 or type 2 diabetes. Using the information provided by GPs it is possible to estimate the percentage of the population diagnosed with diabetes. Figure ten clearly shows the growth in the number of people aged 17 plus diagnosed with diabetes.

**Figure 10: Number of patients in Wales registered as diabetic with their GP**

![Figure 10: Number of patients in Wales registered as diabetic with their GP](Source: Stats Wales)
Between 2009-10 and 2013-14 an additional 24,037 people were registered with their GP as having diabetes. Community Pharmacy campaigns have encouraged citizens to consider the risk of diabetes and to undertake testing where appropriate. The Add to your Life assessment also provides personalised advice. Over 177,000 people in total in Wales in 2013-14 were registered on a GP register as diabetic. This is over 5.7% of the total population and around 7.1% of the population aged 17 or over. This has resulted in an increase in the amount of time that doctors and nurses spend treating and supporting diabetic care. If trends continue at this rate then it is estimated that this number will rise to almost 288,000 people by 2025.  

NHS Wales needs to increase its focus on prevention as this will achieve better outcomes.

**Assurance measure four – Reducing the incidence of angina and heart failure**

The table below highlights the percentage of people in Wales who have reported that they have either had a heart attack or been treated for angina, heart failure and other heart conditions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Ever treated for heart attack</th>
<th>Currently being treated</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Angina</td>
<td>Heart failure</td>
</tr>
<tr>
<td>2012</td>
<td>3.8%</td>
<td>3.5%</td>
<td>1.3%</td>
</tr>
<tr>
<td>2013</td>
<td>3.6%</td>
<td>3.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>2014</td>
<td>3.5%</td>
<td>3.2%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

*Source: Welsh Health Survey 2014*

**Assurance measure five – Ensuring access to echo cardiogram diagnostic tests**

Figure 11 indicates that since March 2014, there has been an overall increase in the percentage of patients waiting over eight weeks for cardiology diagnostic tests (echo cardiogram tests and stress tests) and specifically for echo cardiogram tests. NHS Wales is working hard to reduce these timescales, with a view to ensuring that waiting lists for diagnostic tests are reduced, to meet the standard of eight weeks or less.

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Conwy and Denbighshire Community Heart Failure Clinic

In 2012, Betsi Cadwaladr University Health Board was awarded monies to support a heart failure service in Conwy and Denbighshire from the British Heart Foundation:

- in 2013, 12 practices participated in the project. The remaining practices made use of the Llandudno rapid access echo service, accessed the cardiac network training event or hosted the practice pharmacy audit
- in 2014, the Denbigh Infirmary open access echo clinic was launched. Echocardiograms are undertaken weekly with specialist pharmacist or nurse follow up of confirmed LVSD heart failure patients
- a Cardiac Network vascular training day complemented a series of practice visits undertaken with individual practices.

Results:

- hospital admissions of heart failure coded patients appear to have halved
- the service was well accepted by patients and the feedback has been very appreciative
- most patients assessed by the project feel they have benefited.

“I was quite poorly when I first attended the clinic. I found the staff extremely professional. After a thorough assessment, my medicines were revised and with the new pills I soon started to improve. Since then I feel I have had a better quality of life.”

Patient Testimony – Llandudno Clinic
3.3 Fast and effective care

If you suffer a cardiac arrest out of hospital in the UK, you have less than a one in ten chance of surviving. Prompt life-support intervention and defibrillation can improve survival in cases of cardiac arrest.

In September 2014, the British Heart Foundation started a campaign to change this by promoting the need for creating a Nation of Lifesavers. Since the launch of the campaign free CPR training kits are being provided to eligible secondary schools, sixth forms and colleges. The kit covers how and when to perform CPR on an adult or child, put someone in the recovery position and use a public access defibrillator (www.bhf.org.uk/heart-health/nation-of-lifesavers).

In the last decade treatment has changed dramatically, with considerable increases in the number of prescriptions dispensed for antiplatelet drugs to counter the medical risk factors of CVD. In 2014, 24 million prescriptions were issued for the treatment and prevention of CVD in Wales. This is over five million more than in 2005. At the same time the use of surgical coronary interventions, which improve survival rates after a CHD event, have become more commonplace. The challenge to the NHS is to ensure that patients in every area of Wales get the most cost-effective and appropriate service that meets their needs.

Cardiac catheter laboratories (cath labs) provide the correct clinical environment for cardiologists and their teams to care for patients using various procedures, including angioplasty (also known as primary PCI).

Most cath labs in Wales were installed over 7 years ago and their use has increased significantly, mainly due to the 24/7/365 nature of heart conditions and the urgency of treatment. The cath labs in Wales are now in need of replacement equipment and the All-Wales Cath Lab Replacement Programme, was set up to oversee work for the labs across Wales. The Programme Board agreed that collaborative procurement approach would be adopted to achieve economies of scale, and free up clinical time.

In January 2015, cardiologists, cardiac physiologists, ICT managers, clinical systems managers and radiographers from across south Wales had demonstrations from suppliers for the Cardiology PACS (Picture Archiving and Communications System) which is the IT system that effectively ‘drives’ cardiology departments. North Wales, in a separate procurement exercise had their PACS system upgraded and installed across the health board in 2014. Later in January a team visited sites to evaluate replacement physiological monitoring equipment, which has now been ordered. February saw a team evaluating replacement x-ray imaging equipment.

Replacement systems will start to be deployed over the next few months which will have significant benefits for all organisations and the patients they serve.

12 British Heart Foundation 2014 and Welsh Government Statistics
Assurance measure six – Referral to treatment waiting times

Our aim is to assess and treat patients as promptly as possible. We have been working hard to achieve waiting time targets. It is important that these improvements are sustainable and lead to system changes. Improving patient pathways using appropriate service improvement methodologies will improve patient experience. The Welsh Government is committed to listening to patients and clinical experts to ensure future targets reflect best practice.

In Wales, patients with heart disease are monitored within the 26 week referral to treatment (RTT) target. This means that 95% of patients should start treatment within 26 weeks of referral by a GP. The Welsh Government expects the waiting time targets to be met and sustained on a consistent basis.

Figure 12: Percentage cardiac referral to treatment, within 26 weeks, all Welsh residents

The RTT target was last achieved for cardiac patients in April 2012. For the period January 2014 and March 2015 between 89 and 91% of patients started treatment within 26 weeks. There is now an increased focus within health boards to ensure that this target is achieved. To support this, a drive to improve waiting times has been agreed as one of the priorities for the heart disease implementation group. In order to support this priority, a pilot based upon component waits commenced in January 2015. The aim of the pilot is to improve cardiac waiting times through a focus upon two key measures within the overall waiting times. These are:

- no patients to be on a cardiac waiting list after 16 weeks unless they have an agreed treatment plan
- a wait for cardiac patients of not more than 10 weeks from addition to the elective waiting list, or from definitive diagnosis, to the start of definitive treatment.

13 Includes cardiology and cardiothoracic surgery and non-Welsh providers
We have been working with the Welsh Health Specialised Services Committee (WHSSC) to put in place additional short-term capacity for heart surgery through a variety of internal arrangements and through using the facilities of hospitals in England on a temporary basis. One of WHSSC’s priorities for 2014-15 was to improve outcomes by reducing waiting times for cardiac surgery in South Wales through:

- increasing access to heart surgery during 2014-15 to ensure the longest waiting patients were treated and that there would be no patients continuing to wait in excess of the maximum waiting time target (36 weeks from referral to treatment)
- establishing agreements with Abertawe Bro Morgannwg University Health Board and Cardiff & Vale University Health Board for increased provision of heart surgery from 2015-16 onwards. This will ensure a sustainable service, that treats patients within appropriate timescales, is provided for the population of South Wales.

Considerable progress has been made as follows:

- in 2014-15, approximately 200 additional cardiac surgery operations were funded by NHS Wales for patients from South Wales to reduce waiting times. The extra operations have helped to ensure that the longest waiting patients were treated
- there are currently no patients waiting longer than the maximum target of 36 weeks from referral to treatment for cardiac surgery in Abertawe Bro Morgannwg University Health Board and in Cardiff & Vale University Health Board

Harmonisation of N-terminal pro b-type natriuretic peptide (NT-pro BNP) cut offs for suspected chronic heart failure

The recent move to an all Wales laboratory information management system highlighted variation in NT-pro BNP cut off levels used for suspected chronic heart failure across health boards. Whilst lower age-specific cut-offs have been previously recommended for use, audit data from Aneurin Bevan University Health Board and experience in Cwm Taf University Health Board confirmed 100% sensitivity but at a cost of very low specificity. After an all Wales consultation it was agreed that all laboratories would adopt NICE guidance, an approach already in place in Betsi Cadwaladr University Health Board.

For those with suspected heart failure, for a NTpro BNP level of:

- >2,000ng/l consider urgent cardiology referral
- 400-2000ng/l consider cardiology referral
- <400ng/l heart failure is unlikely

This change will reduce the requirement for echocardiography, ensuring a more prudent approach and improving waiting times.
• the total number of patients on the waiting list for heart surgery in south Wales (including patients waiting for out-patient appointments, diagnostic investigations and surgery) has reduced by 50% over the last year. This improvement in the total waiting list will help to sustain shorter waiting times

• NHS Wales have agreed extra investment to increase the capacity of the heart surgery services at University Hospital of Wales, Cardiff & Vale University Health Board, and Morriston Hospital, Abertawe Bro Morgannwg University Health Board, from 2015-16 onwards. This investment will provide extra facilities and staff to ensure patients in South Wales who require heart surgery have access to the right treatment at the right time.
Assurance measure seven – Outcome following acute ST-elevation myocardial infarction

3RU – Rapid Resuscitation Response Unit

Managing a pre hospital cardiac arrest can present challenges for pre-hospital staff including working in confined spaces, fraught relatives and a reduced number of staff available compared to the hospital setting. The 3RU vehicle is staffed by an experienced paramedic who has undergone specialist training and assessment by the Scottish Ambulance Service 3RU team in leading a pre-hospital cardiac arrest. This highly skilled paramedic removes some of the challenges of dealing with a highly charged scene and ensures that the resuscitation remains patient focused and high quality. The paramedic is also trained in post return of spontaneous circulation care (ROSC), and ensures that the patient is transferred to the most appropriate department within the hospital which may be the cath lab in preference to the emergency department. The 3RU trial is operating in the Cardiff and Vale University Health Board area seven days a week for 12 hours a day and will continue until the end of May 2015. It has been funded and supported by the British Heart Foundation. Using the 3RU has resulted in a ROSC rate of 31% at hospital (pulse on transfer to emergency department staff) compared with 11% previously.

Acute ST-elevation myocardial infarction (STEMI) is a type of heart attack in which one or more of the coronary arteries (blood vessels supplying blood to the heart), becomes blocked by a blood clot (coronary thrombus). This blood clot cuts off the supply of oxygen to the heart muscle behind it, which if not treated quickly, can result in partial or complete damage to the affected area of the heart, and/or death of the victim.

The signs and symptoms commonly associated with acute STEMI include sudden onset of central chest pain, often described as crushing or as a heavy weight, breathlessness, profuse sweating and nausea. Paramedics provide a crucial role in the early identification of STEMI, because the condition is most commonly detected through the use and interpretation of 12-lead Electrocardiogram (ECG). ST-elevation on the ECG usually indicates complete blockage of a coronary artery and immediate action is required to un-block the affected artery.

Acute management of STEMI can include immediate transfer to hospital for primary percutaneous coronary intervention (PPCI), or, if indicated, pre-hospital or in-hospital thrombolysis. PPCI is the preferred and most effective treatment available, so pre-hospital management is focussed on early identification and transfer to hospital. Thrombolysis (administration of a clot-buster) may be provided as an initial treatment for patients whose journey to a PPCI centre may exceed 90-minutes.

Ambulance services need to ensure delivery of rapid assessment and treatment for patients experiencing this type of heart attack, as this is crucial to the cardiac care pathway. The two measures\(^\text{14}\) used to assess this are:

- the percentage of eligible patients who receive pre-hospital thrombolysis within 60 minutes of the emergency call
- patients who are documented as receiving the appropriate pre-hospital STEMI care bundle.

\(^\text{14}\) Calculated on a three month rolling basis
As a consequence of the development of PPCI services in Wales, the number of patients eligible for pre-hospital thrombolysis is and will continue to decline. Overall, the percentage of eligible patients who received pre-hospital thrombolysis from April to December 2014 was 80.3%.

The pre-hospital STEMI care bundle requires that all STEMI patients should in addition to a 12-lead ECG, receive aspirin, GTN, 2 pain scores and analgesia (pain relief) as part of their package of care. Compliance to the provision of the individual components of the care bundle ranges from 76.6% to 88.1% for the period April 2014 to December 2014. Compliance against the combined bundle for the same period was 55.1%, which is consistent with that reported last year. It should be noted that the combined bundle performance is reliant on all elements of care being provided to each patient, so must therefore be interpreted alongside the percentage compliance for the individual elements of the bundle.

**Figure 14: Compliance against the STEMI clinical indicators**

![Compliance against the STEMI clinical indicators](source: WAST)

**Enhanced Assessment**

As part of the clinical modernisation strategy, WAST has invested over two million pounds in state of the art defibrillator/monitors. These new devices will support an enhanced level of care for patients, particularly those with cardiac-related symptoms, because the ECGs recorded by paramedics at the scene, can be sent directly to the cardiac team in the PPCI lab, via secure internet technology.

The following stories serve to demonstrate that WAST clinicians provide the highest quality of care to its patients.
The Patient’s Perspective

Annette suffered a cardiac arrest whilst with her daughter. Annette’s daughter provided CPR until paramedics arrived within 6 minutes of their 999 call. Annette was taken to University Hospital of Wales (UHW) a few miles away and remained in a coma for three days in intensive care before moving to the high dependency unit. She celebrated her 50th birthday with a party on the ward just seven days after her episode.

Paul Burrows, Advanced Paramedic Practitioner who attended Annette said: “We were lucky that day as I had just cleared at UHW and so had the crew when the call came in, but it just goes to show that if the resources are available we can achieve success for out of hospital cardiac arrests. Early CPR and early defibrillation does work, if Annette’s daughter had not started the CPR and dialled 999, we would be looking at a different outcome. It’s about being in the right place at the right time”.

Paul’s story below illustrates the value of acute care pathways which are designed to provide the best prehospital and in-hospital care to achieve the best possible outcome for the patient.

On the 10th of Jan 2014, Paul was the victim of a heart attack. “I live just outside Brecon (in Groesfford) and hospital services for major incidents mean that we have to travel further and further away to receive treatment.” A rapid response vehicle arrived within 13 minutes of the 999 call, closely followed by an ambulance. Paul was quickly assessed by the paramedics, who recognised he was potentially eligible for PPCI. The paramedics contacted Morriston PPCI lab, who accepted the referral. Paul arrived at Morriston 1-hour and 41 minutes after the 999 call, which meant he received the most effective treatment for his life-threatening condition and made a speedy recovery.

“I would like to therefore offer my sincere thanks and gratitude for treating me in such a prompt manner and for getting me down to Morriston Hospital in Swansea where I was given excellent care by the CCU team”.

Assurance measure eight – Percentage of eligible primary percutaneous coronary intervention (primary PCI) patients with 150 minute call to balloon time

The call-to-balloon time is the interval from a call for professional help to the time that the primary PCI procedure is performed. It is a shared responsibility between WAST and the admitting hospital.

The use of primary PCI continued to increase in 2013-14. In Wales 79.5% patients had primary PCI compared to 72% in 2012-13 and in England, 98.5% of patients had primary PCI compared to 96.6% in 2012-13.

In Wales there has been an increase in direct admissions from 457 in 2012-13 to 663 in 2013-14. The proportion of patients receiving primary PCI within the 90 minute standard (door to balloon) continues to rise. In Wales 87% of 491 eligible patients were treated within 90 minutes compared to 85% in 2012/13.
New defibrillators provide live ECG telemetry

As part of their clinical modernisation strategy, WAST received over £2 million from Welsh Government to purchase 140 new Corpuls3 Monitor Defibrillators which will be placed on front line emergency medical ambulances in strategic parts of Wales. This will be rolled out across the whole of Wales in the next 2 years.

The new Corpuls3 will assist WAST to deliver the best care possible for patients enabling live ECGs to be sent by internet telemetry from an ambulance direct to clinicians in primary care, emergency departments and PPCI labs. This will enable patients to be diagnosed more accurately and treated appropriately. The rollout of the initial 140 units will commence in June 2015.

Figure 15: Eligible patients that receive primary PCI within 150 mins of calling for help (call to balloon) inc those admitted directly or transferred to heart attack centre

Figure 15 shows that 75% of eligible patients receive primary PCI within 150 minutes from the time of the call to the administration of the balloon, this is an increase of nearly 5 percentage points from 2012-13. In England, 82% of eligible patients were treated within 150 minutes, the same as last year.

The primary PCI service until January 2015 was only routinely available to patients in south and mid Wales. Primary PCI commences in north Wales in 2015.
Use of secondary prevention medication

Use of secondary prevention medication after the acute event is proven to improve outcomes for patients after either STEMI or nSTEMI.

There is good evidence\textsuperscript{15} that composite measures of hospital performance correlate with outcomes. This means that patients will benefit if they receive all, rather than just some aspects of care, in a timely manner. The use of secondary prevention medicines is therefore reported within a bundle of care and reported as the proportion of patients discharged from hospital who received all drugs for which they were eligible (figure 16). The proportion of patients who survived to be discharged and who received all the drugs for which they were eligible was 73.2\% in Wales and 88.6\% in England.

Figure 16: Percentage of patients discharged on all the secondary prevention medicine for which they were entitled

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure16}
\caption{Percentage of patients discharged on all the secondary prevention medicine for which they were entitled}
\end{figure}

\textit{Source: MINAP 2014}

3.4 Living with heart disease

As treatments and survival rates from heart disease have improved over time, so too have the number of people living with the heart disease as a chronic condition. Very often, these individuals will have complex and ongoing physical, psychological and social needs. It is important that NHS Wales can effectively manage the side effects of treatment, ensuring that patients remain out of hospital, unless absolutely necessary. This will have significant benefits for improving patient outcomes and quality of life.

We need to ensure that NHS Wales have appropriate levels of cardiac rehabilitation and community-based self care education support.

\textsuperscript{15} MINAP 2014
**Adult Congenital Heart Disease Service (ACHD)**

**South and West Wales**

The ACHD service is a success story, in that ever more people born with ACHD are surviving well into adulthood. The consequent need to expand the service to treat people in a more timely manner and closer to their homes has been recognised for the best part of a decade. A £400 000 phase 1 investment from WHSSC has now been earmarked for service development, and from March 2015 onwards new staff will be joining the South and West Wales ACHD. The service will be led by Dr Gergely Szantho, the first ACHD Consultant to be appointed in Wales.

ACHD clinics are currently held in Cardiff, Swansea, Neath Port Talbot, Merthyr and Haverfordwest. Aided by the new investment each health board across south Wales will have a local ACHD cardiologist lead, a local lead physiologist and a local clinic. When recruitment is complete, these new clinics will be supported by a visiting consultant, ACHD physiologist and specialist ACHD nurse.

In addition to these local ACHD clinics, each health board has a transition clinic up to twice a year and University Hospital Wales will host a new joint cardiovascular-obstetric clinic to look after pregnant women with heart disease and those contemplating pregnancy.

**North Wales**

The ACHD service is now fully integrated within the North West and Wales ACHD plan, as part of the hub and spoke model. Manchester Royal Infirmary is the hub centre, and the Wrexham Maelor hospital is the spoke centre for North Wales. The development of the service over the last three and half years has meant that patients can be seen locally, by appropriately trained professionals.

Dr Raj Thaman, Consultant Cardiologist and Nicola Coates, the ACHD nurse specialist, provide weekly clinics in Wrexham, as well as a monthly clinic whereby more complex patients are seen jointly by a visiting consultant, Dr Petra Jenkins from Manchester. This aims to improve the patient’s experience, by being able to perform the majority of tests locally, removing communication barriers, and seeing familiar health care professionals on a regular basis, whilst receiving high quality care.

In addition, for children being transferred over to adult services, nurse-led clinics are being developed to help reduce anxiety of this transition to adult care, and give patients a point of contact; it also aims to reduce patients lost to follow up.
Assurance measure nine – Cardiac rehabilitation

Everyone with established coronary heart disease in Wales should be offered an appropriate evidence-based cardiac rehabilitation plan and have the high-quality, multi-disciplinary cardiac rehabilitation support the patient needs to achieve this plan\textsuperscript{16}.

In financial year 2012-2013, more than 4,600 patients attended cardiac rehabilitation in Wales. This is an uptake of 38\%. This is below the UK uptake rate of 45\% and the “agreed” standard\textsuperscript{17} of 60\%.

The cardiac rehabilitation uptake of 38\% as highlighted in figure 17 ranges from 22\% for post myocardial infarction (MI) to a highly successful 79\% for MI+PCI. The procedures for recruiting patients following MI+PCI are obviously working well and should be applied to post MI and elective PCI patients to overcome the much lower uptake to cardiac rehabilitation from these groups. The low uptake in patients following MI (22\%) and elective PCI (30\%) is of particular concern as is the worrying low uptake of patients with a primary diagnosis of heart failure which currently stands at fewer than 4\% (2,346) of all patients registered on the National Association of Cardiac Rehabilitation. NHS Wales will be expected to make improvements in this area over the next 12 months.

Figure 17: Percentage receiving cardiac rehabilitation: 2012-2013

There is guidance from NICE that cardiac rehabilitation should start within 28 days of referral for most patients following post MI medical management and PCI. The timeframe for patients undergoing CABG is six weeks or 42 days. Figure 18 shows that patients are waiting too long before starting cardiac rehabilitation.

\textsuperscript{16} The Cardiac Disease National Service for Wales (June 2009) – HcS7
\textsuperscript{17} The National Audit of Cardiac Rehabilitation Annual Statistical Report 2014
**Patient Experience – Aneurin Bevan University Health Board**

‘Following my cardiac event I initially felt fine. I realised the enormity of what had occurred, took things one day at a time and realised that I was about to start a new journey. The following few weeks came and went by as though I was on autopilot. The emotions I felt ranged from feeling numb, crying, feeling scared, afraid to close my eyes in case I wouldn’t wake up which disturbed my sleep pattern and a total loss of confidence.

From the moment I walked into the Cardiac Rehabilitation Unit, I was made to feel very welcome, I can honestly say that I had never been so scared or felt so safe at the same time. Prior to this I had never attended an exercise class. Suddenly the focus was on me and with support I started to relax and realised that I could exercise even with a bad back. As the weeks went by, my strength and confidence started to increase and I thoroughly enjoyed the camaraderie of the group members and staff. After the group exercise, we had a relaxation session or Thai Chi session. The focus was on relaxation and breathing techniques which enables you to ‘stop the wheel’ for a while whilst doing gentle exercise. The last part of the session would include a talk by the Cardiac Nurses to better understand your cardiac event i.e. by-pass, angina, heart attack or question and answer sessions with the Pharmacist or Dietician.

I have now returned to work on a phased return basis and continue to attend the cardiac exercise programme in Cwmbran Stadium and Thai Chi and Relaxation. The first few weeks back in the workplace were very challenging but I have found that during the course of my work, where situations have arisen I have been able to adopt the techniques I have learnt and put them into practice. I’ve learnt how to say No and how to be kind to myself. Insignificant things no longer matter’.
For the majority, the outcome from attending a programme translated into improvements in exercise status, psychosocial well-being, blood pressure and cholesterol control and health related quality of life specifications.

The National Exercise Referral Scheme has worked with local leisure service to ensure that there is easy transition from formal rehabilitation services to regular use of local services to maintain these improvements. Local Clusters will lead on the further development of local services to improve access and coordination.

3.5 Research

There is good evidence that treatment centres involved in clinical research achieve better outcomes for their patients. Advances in research can improve quality of life, influence patient care, and save resources. Research is critical to effective heart care.

Assurance measure 10 – Participation in NISCHR research

Figure 19: Recruitment (numbers) to Cardiovascular NISCHR CRP studies

It is encouraging to see in figure 19 that the number of individuals recruited to NISCHR cardiovascular trials almost doubled in 2013-14 from 727 individuals to 1,365 individuals. However this increase in recruitment was not sustained. We would expect the numbers of participants to continue to improve in future years.


18 National Institute for Social Care and Health Research
Life support training and provision of automated external defibrillators in secondary schools

Sudden cardiac death in young people accounts for about 45 deaths per year in Wales. Prompt life-support intervention and defibrillation can improve survival in cases of cardiac arrest. There are clear international examples that show significant improvements in cardiac arrest survival by providing automated external defibrillators (AED), supported by appropriate training in schools.

In a recent survey led by two sports and exercise medicine physicians and a cardiologist, supported by the South Wales Cardiac Network, a disappointingly low number of secondary schools in south Wales were identified as having an adequate number of staff trained in basic life support and a readily available automated external defibrillator. Not surprisingly, the requirement for improved training and provision of AED in schools, whilst not currently mandatory, was welcomed by the majority of respondents. The results of the survey have been presented both locally at a meeting held in the University of South Wales and nationally at a Public Health Medicine conference. A paper summarising the work was also published recently in abstract format in the Lancet.

The team are looking to extend the survey to schools throughout Wales to investigate this further and to establish the potential difference that may follow if life support training and AED provision are made mandatory in schools.
4. Conclusion: looking ahead to 2015-16 and beyond

There has been considerable progress in heart care in Wales over the past 12 months. This is a tribute to all those involved in the planning and delivery of this important area. This includes staff in the NHS and those in other parts of the public sector. We must also acknowledge the invaluable work of the community and voluntary sector. We have now established firm foundations for further positive development.

In several areas, we have performed well and seen progress in many of our performance measures. We will continue to track our progress in future years to ensure that we are in a sustainable position to achieve our vision.

There is still a tremendous amount to be done in Wales. In response to the challenges raised in this and last year’s annual report and in an attempt to be more focused, coordinated and strategic in its approach to service delivery and improvement, the Heart Disease Implementation Group has agreed a small number of national priorities. These are:

• delivering the cardiac waiting times targets by putting in place more effective pathways
• developing and piloting component or differential waiting times targets
• developing a consistent model for the delivery of cardiovascular risk assessment
• reviewing workforce capacity and consider new models of delivery that release capacity
• improving participation and case ascertainment in National Clinical Audit

In next year’s annual report we will look at how we have progressed during the year.
Glossary

ACHD  Adult Congenital Heart Disease
AED  Automated External Defibrillator
CHD  Coronary Heart Disease
CVD  Cardiovascular Disease
ECG  Electrocardiogram
ESP  European Standardised Population
GTN  Glyceryl Trinitrate
LHB  Local Health Board
MI  Myocardial Infarction: heart attack
MINAP  Myocardial Ischaemia National Audit Project
NISCHR  National Institute for Social Care and Health Research
nSTEMI  not STEMI: less serious MI
NWIS  NHS Wales Informatics Service
PACS  Picture Archiving and Communications System
PCI  Percutaneous Coronary Intervention
PEDW  Patient Episode Database for Wales
PPCI  Primary Percutaneous Coronary Intervention
QOF  Quality and Outcome Framework
ROSC  Return of Spontaneous Circulation Care
RTT  Referral to Treatment Time: target waiting time
STEMI  Myocardial Infarction with ST-segment Elevation: serious MI
WHSSC  Welsh Health Specialised Services Committee