1. Executive Summary

“Together for Health – Stroke Delivery Plan” published in December 2012 provides a framework for action by Local Health Boards, NHS Trusts and their partners. Furthermore, the plan outlines Welsh Government’s expectations of NHS Wales in order to tackle stroke in people of all ages; regardless of residency and personal circumstances.

In 2013, we published our first Stroke Delivery Plan. The plan has since been refreshed annually with the latest iteration March 2016. The UHB is required to provide an annual report this being the fourth report which details the main areas of focus and outcomes of our service, covering the period from September 2015 - September 2016.

This annual report spans a period of change in the way in which Stroke performance is measured moving from intelligent targets to Quality Improvement Measures. It focuses on the progress made against the Quality Improvement Measures introduced in September 2015. This has been a transitional period for the stroke service in Cardiff and Vale reflecting a significant level of service improvement work which is evident from the improved compliance seen from April 2016.

The report notes the main areas of progress, as well as areas where further development is being undertaken.

There is a focus on improvement informed by small tests of change using the continuous improvement methodology with the following work streams being progressed:

- Code Stroke (pilot undertaken Nov 2014 and second phase was implemented in Oct 2015. Further refinement was undertaken following our Kaizen events in February 2016.)
- Improvement in Swallow screen within 4 hours and formal swallow and communication assessments by SLT within 72 hours.
- Patient flow throughout the pathway with a focus on the Stroke Rehabilitation Centre (SRC) and Community.
- Local Authority Partnership working, working with Community services and local authority to improve home care and implement ICF projects – Discharge to assess.
- Diagnostic - CT scanning is now 24/7 resident on site arrangement with Radiographers a member of the code stroke team receiving the code stroke call at ASHICE.
- Capacity Modelling is ongoing with an emphasis on the community services.

The expectation relating to Stroke as a tier 1 target places a demand on the service which influences the pace of change and creates a constant tension between operational (transactional) management and the transformational approach required to develop and change a complex pathway.

A significant amount of development work has been undertaken and the improvements which have been introduced against the priorities are summarized below;
Prevention

The UHB was successful in securing funding from Welsh Government to run a project to explore the management of AF in primary care. A multidisciplinary team (MDT) was set up to develop a model of providing general practice with the knowledge, skills and confidence to review high risk atrial fibrillation (AF) patients for suitable anticoagulation to prevent the occurrence of a stroke in line with current NICE guidance.

The UHB Public Health Department engages fully within both local LSBs. Population outcomes have been identified within SIPs. It has delivered with partners smoking cessation, public health campaign for stroke and obesity management; The Cardiff and Vale physical activity and alcohol consumption plans have been implemented with partners.

Detecting a stroke quickly- Early Diagnosis and treatment

The UHB has implemented a model called code stroke which is a way of activating a dedicated multidisciplinary team to attend patients who have been admitted to the Emergency Department(ED) or Assessment Unit (AU) in UHW with a suspected stroke and provide timely thrombolysis where indicated. This development was implemented in October 2015 and refined in Feb 2016 with the introduction of a consultant based in the ED footprint. This was initially only on a 9-5 Monday to Friday basis but has recently extended to provision of a 24/7 service.

The main challenge for the UHB is the achievement of the 4 hour bundle which comprises swallow screen and direct admission to acute stroke ward within 4 hours of arrival. Compliance has been poor throughout 2015/16 but is already seeing improvement in August following service changes outlined above.

The UHB has since August 2015 consistently delivered thrombolysis to 100% of eligible patients and has also seen a rise in the number of patients receiving thrombolysis from April to July. 40% of patients are receiving their thrombolysis in less than 1 hour with a median time of 59 mins.

The Cardiff and Vale stroke mortality rate continues to reduce and appears to be reducing at a faster rate than the all Wales trend. Cardiff and Vale is lower than all Wales.

The UHB continues to provide a mechanical clot retrieval service across SE and Mid Wales and has had some notable success; however the long term sustainability of this service needs to be secured as it continues to be un-commissioned, recharging LHBs on a cost per case basis (consumables only).

Delivering fast effective care

The Patient centred integrated workforce pilot in SRC has been completed and evaluated. The UHB are continuing to use Rehabilitation Assistants on the unit as they deliver enhanced rehabilitation over 7 days providing opportunities to practice demonstrating improved patient experience and outcomes. Student volunteers are also in place in the SRC to support patient activity 7/7. Positive patient and student satisfaction has been reported.
A number of developments to improve processes have been implemented across the inpatient pathway including, additional speech and language therapy resources, integrated stroke documentation used from front door to A6S, daily MDT board round on A6S and SRC and integrated assessment embedded in SRC, a discharge support officer employed through Age Connect.

The UHB was successful in securing Welsh Government Flexible funding in 2015 to trial 7 day therapies working. This has been implemented in the acute stroke unit in UHW. There has been notable improvement in the QIM for 72 hours. Formal swallow and communication assessments by SLT are now compliant with the 72hour bundle.

**Person Centred Care and Co-production**

Patient engagement sessions have been very successful when planning the integrated workforce model. The UHB continues to use their close links with the Stroke Association and Stroke Ambassadors to support service redesign and education and training.

The successful re-introduction of the ‘Patient and Relative Education Programme in Stroke’ (PREPS) which is now held regularly on a Wednesday afternoon.

Bridges training has been undertaken by 80 healthcare practitioners across stroke and neuro-rehabilitation services. This is an innovative and evidenced based programme where self management support is integrated within every interaction an individual has.

**Closer to Home – Supporting Life After Stroke**

We are greatly exceeding expectations with our Early Supported Discharge (ESD). Well over 50% of all patients discharged directly from A6S go home with ESD making our ESD service one of the best performers in the UK.

**Improving Information and Operational Management**

A number of initiatives to improve patient information have been introduced across the pathway including, patient leaflets and posters in public areas, production of a Welsh language version of the leaflet and updated website to fit corporate identity and patient need.

There is still more to be done and challenges which we need to focus on including:

NICE has approved the procedure for use on the NHS that uses a mechanical device to remove clots from stroke patients. In order to deliver a safe, sustainable, future proof service urgent work is required to establish the commissioning framework to deliver this regional service.

The UHB will need to review its current hyper acute care of patients as well as flow throughout the pathway given the importance of maintaining capacity within the hyper acute unit.

We are showing some good traction with improved performance in the acute bundles but will be more assured once we have a consistent run of improvement over the Quarter 3.
2. Introduction

This is the fourth Cardiff and Vale University Health Board Annual Stroke Report. The report details the main areas of focus and outcomes of our service, covering the period from September 2015 - September 2016.

Our Vision

Together, we will provide a world class, person centred stroke service for our population, which optimises health and wellbeing.

Delivery Plan

We continue to progress the initiatives within “Together for Health – Stroke Delivery Plan” published in December 2012. The plan provides a framework for action by Local Health Boards, NHS Trusts and their partners. Furthermore, the plan outlines Welsh Government’s expectations of NHS Wales in order to tackle stroke in people of all ages; regardless of residency and personal circumstances.

In particular, it sets out:

- Current areas of service delivery, what we do well and where the constraints are;
- The outcomes from treatment and support to return to health and independence we expect;
- How we will ensure that we deliver the level of performance we expect;
- How we will continue to develop the service across the whole patient pathway, working in partnership.

In 2013, we published our first Stroke Delivery Plan. The plan has since been refreshed annually with the latest iteration March 2016. In addition the UHB has invested significantly in training the staff working across the stroke pathway in service improvement methodology, undertaking 2 Kaizen lean methodology programmes. In addition it has supported the Clinical lead for stroke to undertake IHI programme and also participated in stroke collaborative project. This has led to the development of a culture of service improvement which is embedded in our operational delivery of the service.

This annual report spans a period of change in the way in which Stroke performance is measured moving from intelligent targets to Quality Improvement Measures. It will therefore focus on the progress made against the Quality Improvement Measures introduced in September 2015. This has been a transitional period for the stroke service reflecting a significant level of service improvement work which is evident from the improvement seen from April 2016.

This Annual Report notes the main areas of progress, as well as areas where further development is being undertaken.
3. Why is stroke a priority for Cardiff and Vale UHB?

Drivers for Service Improvement

There are clear reasons why stroke remains a top priority for the UHB:

- Stroke is one of the top three causes of death;
- It is estimated that there are around 11,000 stroke events (including 6,000 new strokes) per year in Wales;
- 25 per cent of strokes occur in people who are under the age of 65;
- Stroke is a leading cause of adult disability;
- Stroke has a higher risk for certain ethnic minorities;
- The rolling 12 month mortality rate within 30 days of hospital admission following a stroke has been reducing between September 2010 and March 2016 from 17% to below 11%
- There were 752 emergency admissions for stroke in Cardiff and Vale residents in 2015/16;
- There are on average 351 deaths from stroke in Cardiff and Vale residents each year, though this has been reducing between September 2010 and March 2016 from 17% to 11%.

Stroke continues to be one of our “Big Room” top 5 priorities and is included as a service standard in the UHB strategy “Shaping our Future Wellbeing”.

Figure 1: Shaping our future wellbeing strategy: Stroke

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1 Estimated figures based on the Welsh population and incident rate.
3 Patient Episode Database for Wales (PEDW), NHS Wales Informatics Service (NWIS) (Taken from scorecard data file)
4 Figure based on 2005-2014 deaths. Public Health Wales Observatory, using PHM & MYE (ONS) (Taken from scorecard data file)
Our priorities for stroke are:

- Preventing stroke
- Detecting stroke quickly
- Delivering fast, effective care
- Supporting life after stroke
- Information
- Research and Development

The Stroke Delivery Plan sets out a number of key priorities for the financial year. One of these is to formalise the stroke leadership structure to reflect the strategic development of the service as well as an operational group both with clinical and managerial input.

There is a focus on improvement informed by small tests of change using the continuous improvement methodology with the following work streams being progressed:

- Code Stroke (pilot undertaken Nov 2014 and second phase was implemented in Oct 2015. Further refinement was undertaken following our Kaizen events in February 2016.)
- Improvement in Swallow screen within 4 hours and formal swallow and communication assessments by SLT within 72 hours.
- Patient flow throughout the pathway with a focus on the SRC and Community.
- Local Authority Partnership working, working with Community services and local authority to improve home care and implement ICF projects – Discharge to assess.
- Diagnostic - CT scanning is now 24/7 resident on site arrangement with Radiographers a member of the code stroke team receiving the code stroke call at ASHICE.
- Capacity Modelling is ongoing with an emphasis on the community services.

Elements of each of the above work streams will be detailed throughout this Annual Report.

Our Stroke Delivery Plan is a live document, which is regularly updated and sets out our key responsibilities, highlighting a number of priority areas for further improvement to our stroke services. In line with recent national guidance the Stroke Delivery Plan will remain in place until 2020.

Organisational Profile

Delivery of safe, clinically effective and evidence based care to stroke patients is a key organisational priority; in order to support this there is Executive leadership for the UHB’s Stroke Delivery Plan. Furthermore, Stroke remains a key organisational priority for 2015/16.

Currently, within the UHB there are 19 Acute Stroke beds at UHW site (ward A6 South) and 45 specialist Stroke Rehabilitation beds at the SRC UHL.
There are two full time Specialist Stroke Physicians as well as Four contributing Specialist Stroke Physicians, providing a total of 26.5 stroke sessions. These sessions are supported by: one full time Specialty Registrar for Stroke, Geriatric, Neurology, Medical Registrars, two specialist nurses (Stroke Co-ordinators), and a wider multidisciplinary team including Physiotherapists, Occupational Therapists, Speech and Language Therapists, Dietician and Clinical Psychologist. There is further support provided by social workers and the Stroke Association and Age UK; these posts work across both UHL and UHW sites and some outreach into community settings.

4. Our Achievements

List of key achievements:

The expectation relating to Stroke as a tier 1 target places a demand on the service which influences the pace of change and creates a constant tension between operational (transactional) management and the transformational approach required to develop and change a complex pathway.

The following section describes the top achievements that the UHB has been able to celebrate. The metrics are based on the validated position for July 2016.

They reflect the significant amount of development work which has been undertaken and the improvements which have been introduced;

a) Prevention
   A multidisciplinary team including Secondary Care consultants, an expert pharmacist, Primary Care Managers, GP and Primary Care Quality representatives and The Heart Foundation was set up to develop a model of providing general practice with the knowledge, skills and confidence to review high risk atrial fibrillation (AF) patients for suitable anticoagulation to prevent the occurrence of a stroke in line with current NICE guidance.
   The project is aiming to see the conversion of non compliant patients who are now being anticoagulated appropriately; the aim being to reduce the stroke risk by 70%. It is hoped that there will be some preliminary data in September.

b) Detecting a stroke quickly- Early Diagnosis and treatment
   The UHB has implemented a model called code stroke which is a way of activating a dedicated Multidisciplinary team to attend patients who have been admitted to the Emergency Department(ED) or Assessment Unit (AU) with a possible diagnosis of stroke. The call is activated by a WAST initiated ASHICE call to ED who then notify the switchboard to send a group bleep out to all the key members of the code stroke team. This development was implemented in October 2015 and refined in Feb 2016 with the introduction of a lead decision maker based in the ED footprint to support the code stroke team. This was only on a 9-5 Monday to Friday basis.

c) Delivering fast effective care
• The UHB continues to provide a mechanical clot retrieval service and has had some notable success; however the long term sustainability of this service needs to be secured as it continues to be un-commissioned, relying on recharging Local Health Boards on a cost per case basis (consumables only). Discussions are ongoing with WHSSC to ascertain how this service will be commissioned and delivered on a sustainable basis over 24/7. An urgent decision is required in order to support the existing interventional radiologists.

• Deliver an effective Rehabilitation model – Patient centred integrated workforce pilot in the SRC has been completed and evaluated. The UHB are continuing to use Rehabilitation Assistants on the unit as they deliver enhanced rehabilitation over 7 days providing opportunities to practice which has demonstrated improved patient experience and outcomes.

• Student volunteers are now in place in the SRC to support patient activity 7/7. Positive patient and student satisfaction has been reported.

• Key worker allocation within 24 hours for 85% and 1st goal planning meeting within 1 week delivered in 62% of patients (previously took 4 weeks).

• Integrated assessment is embedded in SRC, and a discharge support officer, employed through Age Connect providing close liaison with Social care.

• Integrated Stroke documentation used from front door to A6S includes single therapies documentation which has reduced duplication and improved integration.

• Additional speech and language therapy resources provided to support the acute stroke unit in UHW and SRC.

• Daily MDT board round on A6S and SRC has improved communication and has removed the need for lengthy MDT meeting on A6S.

• The UHB was successful in securing Welsh Government Flexible funding in 2015 to trial 7 day therapies working. This has been implemented in the acute stroke unit in UHW and early indications are showing an impact on length of stay, increased therapies time over the weekend and improved patient experience.
  o 20 days of weekend cover so far utilising 38 therapy staff volunteers.
  o Daily shift coordinator and board round style handover
  o 115 new patient contacts and 267 follow up contacts.
  o 11,890 of therapy minutes delivered(198 hours of additional therapy time in 10 weeks)
  o Ward LOS has reduced since inception of pilot – from 7 to 5.9 days.
  o Significant improvement in formal swallow (100%) and communication (96%) assessment by SLT.

d) Person Centred Care and Co-production

• Patient engagement sessions have been very successful when planning the integrated workforce model. The UHB continues to use their close links with the Stroke Association and Stroke Ambassadors to support service redesign and education and training.

• The successful re-introduction of the ‘Patient and Relative Education Programme in Stroke’ (PREPS) which is now held regularly on a Wednesday afternoon. Studies have shown that individuals in the general population, including those who have suffered a stroke, have poor general knowledge about this condition. This can impact on their ability to adapt and cope with the consequences and can impair their recovery and progress. The aim of
PREPS is to inform patients and their carers about the condition, reduce their anxiety, change behaviour, engage and empower them within their rehabilitation and thereby improve their physical and psychological outcome. The programme consists of 3 teaching sessions covering aspects of the cause and effect of stroke, the recovery and rehabilitation process and plans for discharge.

- Bridges training has been undertaken by 80 healthcare practitioners across stroke and neuro-rehabilitation services. This is an innovative and evidenced based programme where self management support is integrated within every interaction an individual has. It has the potential to impact on the patient’s experiences and satisfaction and lead to better utilisation of health and social care resources.

  The Bridges programme utilises tools that have been co-produced with stakeholders who are from groups that often do not attend traditional self management programmes and has the potential to impact on a wider and more diverse group of people.

  Staff from all grades and professions across the stroke pathway have received the training and are empowered to support self management and shared decision making.

e) Closer to Home – Supporting Life After Stroke

We are greatly exceeding expectations with our ESD. The care planning improvement is down to a number of factors; increased use of CRTs who have their own care element, increased use of ESD in conjunction with CRT and a general increase in the number of well patients leaving A6S without ongoing care needs. The net effect of this is far more of the patients who leave A6S and return to primary care settings are continuing with rehabilitation in their own homes.

Well over 50% of all patients discharged directly from A6S go home with ESD, estimated that this should be between 16 and 19 cases per month or around 54 per quarter. The requirement for an A grade on SSNAP is 40% around 11 per month or 33 per quarter making our ESD service one of the best performers in the UK.

f) Improving Information and Operational Management

A number of initiatives to improve patient information have been introduced across the pathway including,

- Patient leaflets and posters in public areas
- Production of a Welsh language version of leaflet
- Updated website ensuring fit for purpose
- Photos of all staff on display board
- Working group established to continually review information

A weekly Stroke Operational Group (SOG) and SSNAP validation hour is well embedded which reviews SSNAP and QIM compliance in addition to daily and weekly dashboard which have been developed to manage stroke services and measure service improvement. This includes a 30 day rolling report of direct access to ward in 4 hours. This supports robust operational management with regular weekly MDT forum to discuss service improvement. For the first time our
Audit compliance is above 90% too meaning that we no longer suffer a penalty on overall score.

g) Public Health initiatives delivered with partners e.g. smoking cessation, public health campaign for stroke and obesity management;

Physical activity
- The Cardiff and Vale Physical Activity Plan has been implemented with partners including:
  - The delivery of the physical activity and primary care pilot project
  - The inclusion of health and healthy living policies in the adopted Cardiff Local Development Plan (to 2026)
  - The delivery of Making Every Contact Count training that included food and physical activity as key elements.
  - Submitting comments, to the relevant local authority, in relation to walking and cycling, access to a food environment and open spaces and access to health care facilities made on all large (50+ homes) housing development plans
  - Undertaking a health impact assessment of the impact of the length of school lunch breaks on pupil and staff health

Alcohol consumption
- The Cardiff and Vale Alcohol Action Plan has been implemented with partners including:
  - 282 people received Alcohol Brief Intervention training in 2015/16, 30 training sessions delivered, including 11 GP practices (6 in areas of deprivation)
  - Practitioners working with vulnerable young people and those living in deprived areas have received training in ABI and substance misuse awareness, organisations include Flying Start, Salvation Army (Northlands Hostel) and Vale Youth Service
  - The Switched On team (substance misuse specialists) delivered a total of 237 substance misuse education sessions which include alcohol awareness as part of a wider programme, to young people in a variety of settings, including schools, colleges and training providers.
  - 16 organisations ordered resources to promote Alcohol Awareness Week (2 based in areas of high deprivation), and 28 organisations ordered resources for Dry January (workplace challenge)

Healthy Settings:
- Early years:
  The Healthy and Sustainable Pre-schools Scheme is operational in 21 early years’ settings in the Vale and 16 in Cardiff. This focuses on physical activity, nutrition, and achievement of the Gold Standard Healthy Snack Award.

- Schools:
  All maintained secondary schools with Local Authority catering services and all maintained primary schools in Cardiff and Vale adhere to the Healthy Eating in Schools Regulations 2013 (Wales) for food and nutritional standards. These standards set out the type of food and drink that can and cannot be provided in local authority maintained schools and sets out
nutritional standards for school lunches. The uptake of free school meals is 82% in Cardiff, and 79% in the Vale (2015/16).

- Further and Higher education:
  Both Cardiff University and Cardiff Metropolitan have achieved a Gold Corporate Health Standard Award and Cardiff University has signed up to the principles of the Cardiff Food Charter.

**Workplace environments**
Within the UHB, there is a smoke-free UHB policy and vending machines are fully compliant with Welsh Government healthy vending guidance. A Healthy Retail Criteria & Catering Standards Policy has been implemented to ensure that healthy choices are highly visible and available at all UHB catering outlets. There are thirty nine food businesses which are Healthy Options Award holders in Cardiff, and 2 in the Vale of Glamorgan.

**Integrated Workforce Plan Project**
The UHB is particularly proud of a project that has been underway during 2015 which is testing a blueprint for integrated working which could have a significant impact on how we plan and organise the workforce in the future. We would like to shine a Spotlight on:

Integrated Workforce Planning;

The multidisciplinary rehabilitation team at SRC provides a high standard of specialist stroke rehabilitation, but is constantly faced with the challenges of running such a large and busy unit. In early 2015, representatives from the multidisciplinary
team attended a series of workshops held by the Clinical Diagnostics and Therapeutics' Workforce and Operational Development team.

The development of the integrated multi-disciplinary workforce development plan established an important milestone in the delivery of Stroke care as we started to identify the workforce configuration required to deliver improved, patient centred and seamless care.

By working together, this process has benefitted from the involvement of all professionals including nursing, therapists, medical staff, 1,000+ lives colleagues, Service Improvement Team and the Stroke Association. About 30 people participated in each of the three workshops, where shared thinking, making time to explore new ideas and planning together has been highly productive. In addition the Stroke Association facilitated a patient focus group to understand patient needs in this planning process. The team also undertook 2 day in the life of a patient conversations to gauge patient experiences during a normal working day and on the weekend.

With patient care and prudent healthcare principles central to each of the sessions, the workshops have provided a unique and timely opportunity to think differently and identify the high level workforce configurations to enable the delivery of transformed services across stroke care and to develop a new model of working i.e. co-production. An action plan was developed which focussed on stoke patients’ and carer needs.

The project established a Strap line; ‘Who fills the Water Jug?’

This is everyone's business. The water jug is an analogy for shared, integrated care delivery to support an enabling ethos 24/7 on the SRC. Any member of the integrated stroke team, regardless of rank or professional background will take immediate action to fill the water jug.

The focus is on patient centred, co-production where the person with stroke is actively involved and engaged in their rehabilitation throughout their journey. Skills which are not profession specific to meet persons needs have enabled the introduction of rehabilitation assistants, use of volunteers and involvement of the patient and carers to maximise rehabilitation opportunities on a 7 day basis.

Actions for Change:

- A cultural shift to uphold a rehabilitation ethos
- Development of an integrated workforce plan to deliver patient centred care through a model of co-production
- Maximise skills of the workforce focusing on integrated and extended Health Care Support Workers roles, advanced practitioner skills, enhanced leadership capability and develop the volunteer workforce from the University population.

Following these workshops, a plan was developed to further improve and promote effective delivery of 7-day rehabilitation via :-
• Undertaking service improvement work to identify the levels of rehabilitation currently being provided on SRC

• Identifying how the workforce can be re-aligned to improve performance and flow, and to deliver 7 day rehabilitation

• Identifying and defining the education and training required for re-alignment in the workforce, implementing newly aligned roles and measuring any improvement trends

• Developing lines of communication to encourage engagement in the project and purpose

• Exploring a tri-partite Leadership model

This work has been instigated and developed by a project team.

The RA role was trialled with a group of 15 patients over 8 weeks, with therapy disciplines aligning themselves to the team. RAs received training from each therapy disciplines to enhance their knowledge and skills in the delivery of rehabilitation programs. 6 RAs working a 7 day job plan provided rehab input and activities every day. 16 student volunteers were also recruited to assist in running activities.

Project Outputs

• Establishment of an integrated team at SRC, introducing the role of Rehab Assistant (RA)

• Establishment of a student volunteer programme at SRC

• Development of an activity programme to enhance rehabilitation delivery

• Education and Training framework RAs provided with competency training by therapy teams, documentation of rehab plans for RAs to use developed through PDSA cycles

• Service Improvement dashboard to monitor the impact of the RA and volunteer roles at SRC

• Recommendation of a Tripartite model of leadership on SRC and action plan for delivery

• Development of a communication plan for the project with ongoing actions

Open engagement event held

Results

The integrated working on stroke project implementation period ran for an 8 week period from January to March 2016. This involved the introduction of a new Rehabilitation Assistant (RA) role as an additional workforce to the SRC team, as well as increased engagement with the volunteer workforce and a variety of activities to promote the rehabilitation ethos throughout the unit.
• Over the initial 8 week pilot, the RAs’ provided 417hrs 35mins of direct patient interaction, including 81hrs at weekends and 203hrs 45mins of extra therapy time entered onto the SSNAP database.
• 6 patients spent their complete admission within the RAs’ team - average length of stay for these patients was 24 days vs 58 (SRC average during 2015)
• There was 1 death. The other 5 patients all reduced in dependency by the modified Rankin score (mRS) - 60% of patients by 2 points and 40% by one point. 2015 ward data shows that typical mRS change was a reduction by one point, or no change at all.
• A consistently higher proportion of patients were nutritionally screened and weighed in the RA trial team compared with the rest of the ward (4 week average: weighed – 80% vs 50%; WAASP screen completed– 73% vs 32%)
• Attendance at lunch club was consistently higher in RAs’ team patients (average = 5/15 vs 3/30)
• Patient satisfaction in the RAs team increased by 10% compared with 2% for rest of the ward.

Sample of comments from patients;
• “I have had enough therapy (eg. Physio, SALT, O.T.)” With RAs = 17% better
• “The staff attended well to my personal needs while I was in hospital (for example, I was able to get to the toilet whenever I needed)” With RAs = 15% better
• “I am satisfied with the type of treatment the therapists have given me (e.g. physio, SALT, OT)” With RAs = 14% better
• “I have been treated with kindness and respect by the staff at the hospital” With RAs = 11% better
• “I am happy with the amount of recovery I have made” With RAs = 10% better
• “I’m glad I get physio at the weekend now”
• “Lunch club gives me something to look forward to every day.”
• “Look forward to this time of day. Don’t feel so lonely!”

Some relatives are joining the patients at lunch club, commenting how much they enjoyed seeing the interaction. With RA support, lunch club is now available 7/7.

Since March;
• On average the RA team has provided 3000 minutes of additional therapy time per week or 50 hours including weekends.
• SSNAPable data has therefore increased improving the units overall compliance.
• A consistently higher proportion of patients were nutritionally screened and weighed in the RA trial team compared with the rest of the ward (4 week average: weighed – 80% vs 50%; WAASP screen completed– 73% vs 32%)
• Attendance at lunch club was consistently higher in RAs’ team patients (average = 5/15 vs 3/30)
• The activity in the patient’s day has increased significantly since the introduction of the RA along with lunch club and the unit activities. On a typical day the average patient could now receive up to 3 hours of additional activity time along with their therapy practice.
• Patient satisfaction in the RAs team increased by 10% compared to same time last year.
• Due to the success of the project, Workforce, Education and Development Services (WEDS), Shared Services and LED are currently working with the Clinical Teaching Support Officer (Stroke) to develop the Rehabilitation Assistant NVQ/Diploma, which may be offered nationally. This role is also being showcased by WEDS with a view to it being replicated in an in-patient setting in other UHBs.

The following quotes are from the Health Professional Student Volunteers;

David said; ‘Stroke is not only related to my studies but is also realistically somewhere I could end up working. I wanted to get real life experience and feel for what it would be like working in this kind of environment. I’ve really enjoyed the experience so far. Its been interesting and I have met a lot of people so far and am learning what life is like for people after stroke’

Laura said ‘A lot of my experience so far has been in paediatric areas and I wanted more insight into the adult field, so this opportunity was perfect for me. I can now enhance my skills and experience around adult care. I feel that you can help just by being here. It is such an invaluable experience for any student to undertake.'
5. Areas to Improve

There is still more to be done and challenges which we need to focus on including:

7 day working; The Quality Improvement Measure for 24 hours; Assessment by stroke consultant and one of the therapies shows improvement in June. Introduction of the pilot for 7 day working for therapies in the acute stroke unit in UHW has commenced which is starting to address 24 and 72 hour bundles with improvement in formal swallow (100%) and communication assessment (96%).

QIM 4 hour bundle; Direct access to stroke unit in 4 hours continues to be a challenge however the compliance in hours is notably better than out of hours. The out of hours rota has changed from 8th August 2016 to provide 24/7 code stroke with Core Medical Trainees for Neurology supporting the medicine registrar and on call Stroke consultant to deliver service between 17.00 -09.00. Our modelling and analysis of patient flow consistently shows the majority of patients present with stroke between 08.00 and 22.00. Weekend code stroke will also be provided. Swallow screen also continues to show poor compliance. Work with the Senior Nurses in ED is underway to improve this care standard. ED and AU nurses will blanket swallow screening all query strokes with daily monitoring and evaluation of every breach being undertaken to address reasons for non compliance.

Discharge process in SRC; Further work is underway to embed some of the developments that were started early in 2016. A development day is planned for late September 2016 which will be facilitated by the Delivery Unit and include a wide group of stakeholders. The main focus will be on cross pathway working and interface with Community, Health and Social care.

6 months review; Flexible funding has been secured by The Stroke Association to work collaboratively with us to deliver 6 month assessment which will improve compliance in this domain significantly. These posts are currently out for advert.

Operational and strategic Governance framework; While performance against Tier 1 targets has improved considerably over the past 2 years, delivery against some domains has proven challenging to achieve. In addition to delivering the Tier 1 targets sustainably, discussions are ongoing at a national and regional level regarding the evolution of Stroke services including the provision of hyper-acute stroke units (HASU). …It is proposed that a clearer separation of immediate operational issues from the wider strategic stroke agenda, along with the establishment of a more formal governance structure for stroke, will enable greater focus on targeted improvements in performance. This will entail the establishment of;

An Operational Stroke Service Team
Who will be responsible for day-to-day management of stroke and overseeing performance. Implementing operational policies and enacting. There will be clear accountability for and ownership of the different stages of the Stroke pathway within the Operational Stroke Service Team.

A Stroke Programme Board
Who will be responsible for monitoring delivery against the national stroke plan and being a venue for engagement of shareholders/stakeholders in stroke services.
All Wales Stroke Meeting; –development of a research and evaluation network with C&V as the hub. The project is aimed at the appropriate care of, and ongoing training and research in acute stroke patient care. The project will be a proof of concept for the benefits of having an official All Wales Stroke training meeting and training network. The project has a national profile.

The project will promote research in stroke in Wales; this is an important aspect of the project as the capability of recruiting patients into research trials will be increased through this training network.

Educational support will be available for those involved in stroke care, especially for complex cases, ongoing care planning and experience in neuro-imaging. By peer group members sharing their opinions for the benefit of appropriate patient care, there will be continued education for those involved in caring for stroke patients and this can only improve the care of patients and leads to a stronger desire for research in Wales.

**Intra-arterial Interventions**

NICE has approved the procedure for use on the NHS that uses a mechanical device to remove clots from stroke patients.

Mechanical clot retrieval aims to remove the obstructing blood clot or other material from arteries in the brain. This helps restore blood flow and minimise and so prevent or limit the damage caused by the stroke. The aim is to remove the clot as soon as possible, within a few hours of the stroke.

The Intra arterial intervention is currently carried out by the Interventional Neuroradiologists based in University Hospital of Wales and is only available within normal working hours. Notwithstanding this the UHB has seen a steady increase in the number of patients including out of hours and the weekend. This service is currently not formally commissioned. In order to deliver a safe, sustainable, future proof service urgent work is required to establish the commissioning framework to deliver this regional service.

**Hyper-acute Stroke Unit**

The provision of high quality emergency care and treatment to people with stroke in the first 72 hours continues to be a priority for the Welsh Government and the UHB. The Welsh Government through the Stroke Improvement Group has commissioned a report on the future configuration of hyper acute stroke services in Wales.

This work has been undertaken by the Royal College of Physicians in partnership with the SW Peninsula Collaboration for Health Operational Research (PenCHORD) based in Exeter University. The recommendations are due to be published shortly and it is likely that one of the hyper acute stroke Units be based in Cardiff and Vale given the requirement for co-terminosity of Neuroradiology and Neurosurgery.

The UHB will need to work towards its current hyper acute care of patients as well as flow throughout the pathway given the importance of maintaining capacity within the hyper acute unit. The UHB has already seen demand increase in out of area referrals for Intra arterial interventions as well as neurosurgical opinion and surgical intervention. This impacts on capacity within the acute stroke unit and is dependent on rapid repatriation to the referring Health Board.
6. How well are we doing in Cardiff and Vale UHB on services for patients with stroke?

We are using three outcome indicators to measure and track how well stroke services are doing over time. These are:

- Stroke incidence rate
- Stroke mortality rate
- 30 day hospital survival rate

6.1. Stroke incidence rates:

Stroke incidence measures how many people have had a stroke or suffered symptoms of stroke. It provides a feel for how well we are doing at preventing stroke in Wales. If we are achieving our objectives, we would expect to see over time:

- A slower rise in the rate of increase.
- A reduced gap between the most and least deprived areas of Wales.
- Incidence rates comparable with the best in Europe.

Fig 2; Emergency admissions for stroke, all persons, all ages, Cardiff and Vale, 2009-10 - 2015-16

The number of emergency admissions for stroke in Cardiff and Vale University Health Board (figure 2) provides us with a proxy measure for stroke incidence. The number fluctuates each year, and apart from the increase noted in 2013/14, is relatively consistent year on year. It should be noted that these figures include some patients from other Health Boards in South Wales.

Figure 2 highlights European age-standardised emergency admissions for stroke between 2009/10 – 2015/16 which enables a comparison with other Health Boards. The total number of emergency admissions for stroke in 2015/16 has increased compared to previous years:
There were approximately 638 admissions to the acute stroke ward A6S during 2014/15 giving a monthly average of 53. From April 2015 to March 2016 there were 737 admissions giving a monthly average of 61. This admission rate will include 71 TIA’s and some would have been stroke mimics although the majority of these are triaged out in the ED/AU. Some patients may have been admitted to non-stroke beds due to their clinical need, such as ITU & trauma.

6.2. Stroke mortality rate

This tells us how many people die from stroke each year. If we are successful, over time we would expect to see:

- A continued fall in the rate of deaths from stroke.
- A reduced gap between the most and least deprived areas of Wales.
- Mortality rates comparable with the best in Europe.

Fig 3: Stroke mortality rate - Deaths from stroke: Age standardised mortality rate per 100,000

The Cardiff and Vale stroke mortality rate continues to reduce and appears to be reducing at a faster rate than the all Wales trend. Cardiff and Vale is lower than all Wales.

This needs further exploration but it is suggested that the faster flow to A6S and timely access to MDT will be a factor in this.

In addition the thrombolysis eligibility and widening of the criteria for thrombolysis may also be impacting.

6.3. 30 day hospital survival rates

This measure shows us how many people are alive 30 days after they have been admitted to hospital with a stroke. It is an indicator of the overall effectiveness of treatment as well as the general health of the population. If successful, over time, we would expect to see:

- An increase in 30 day hospital survival rates.

5 Expressed as an age standardised rate to allow comparisons between years and countries
- A reduced gap between the most and least deprived areas of Wales.

30 day hospital survival rates for stroke
Under 75 years

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<td>2014/15</td>
<td>89.6%</td>
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Source: PEDW
Stroke cases included where primary diagnosis = I61, I63 or I64

Survival rates within Cardiff and Vale UHB during 2015/16 continue to improve with survival in the under 75 year age group (figure 5) having risen year on year and is in keeping with the all Wales trend. Faster door to needle times for thrombolysis and provision of Intrarterial interventions for clot retrieval could all be a contributory factor for the continued rise in survival rates.
30 day hospital survival rates for stroke
75 years plus

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<td>2015-16</td>
<td>82.6%</td>
<td>78.8%</td>
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</table>

Source: PEDW
Stroke cases included where primary diagnosis = I61, I63 or I64

The survival rates in 2015/16 for those aged over 75 has reduced slightly to 82.6% but is still above the all Wales figure of 78.8%. There is a possibility that the change in guidance for eligibility for thrombolysis for patients >80 yrs is having an impact on survival rates.
7. Preventing Stroke

Overall, health is improving and our population is getting older. Improvements in health have not been achieved equally for all people. Life expectancy for the most deprived fifth of the population has risen more slowly than for other groups.

Many of the causes of poor health are deep-rooted and difficult to tackle. Obesity is widespread in Wales and rates of smoking, drinking and substance misuse continue to cause concern. These root causes of poor health contribute directly to the risk of having a stroke. Health Boards need to systematically identify those at risk of a stroke.

We are working closely with local government, Public Health Wales NHS Trust, GPs, pharmacists, dentists, opticians, the Third Sector to tackle these root causes of poor health.

We have three assurance measures in this area. They are:

- Increasing the percentage of our population with cardiovascular risk conditions being managed
- Increasing the percentage of patients with hypertension who have had their blood pressure checked in the last 9 months
- Increasing the percentage of people with atrial fibrillation who are treated with anti-coag drug therapy or anti-platelet

Progress against these assurance measures is highlighted below:

7.1 Smoking

Smoking prevalence rates have declined in Cardiff and Vale of Glamorgan between 2009 and 2015, a trend which is reflected in Wales generally (figure 3).

Fig. 3; Percentage of adults who reported to be a current smoker, age-standardised:
The smoking prevalence in Cardiff and Vale of Glamorgan is now 18% - and is projected to meet the Welsh Government target of 16% by 2020.

Support for people to quit smoking has contributed with national and local programmes offering community and hospital based support. However today, less than 1.5% of Cardiff and Vale of Glamorgan smokers access support with evidence suggesting that 47% of smokers are likely to attempt to quit smoking with no support at all - ‘cold turkey’. But we know that smokers who use support services are more likely to successfully quit - 37% of those setting a firm quit date in Cardiff and Vale of Glamorgan, have successfully quit smoking at 4 weeks during 2015-2016 (Figure 4).

**Fig. 4: The percentage of treated smokers quitting smoking at 4 weeks, Cardiff and Vale of Glamorgan 2006-2016**

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### 7.2 Obesity

Obesity levels within Cardiff and Vale have decreased slightly in the last reporting period (figure 5). Currently, obesity is at 19 per cent; at the previous four reporting periods, it was 20 per cent. Levels have remained consistently below the Welsh average.

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7.3 Physical activity

In the last reporting period, participation in physical activity increased slightly from 26% to 27% across Cardiff and Vale. Overall participation rates remain consistently low (see figure 6).

Fig. 6 Percentage of adults who are physically active on 5 or more days a week (age standardised)

7.4 Alcohol consumption

The Welsh Health Survey records data on adults who report both drinking above the recommended daily guidelines on their heaviest drinking day in the preceding week, and the number who report binge drinking (at least twice the daily recommended amount) on their heaviest drinking day in the preceding week. At an all-Wales level for 2014-15 the percentages remained constant for consumption levels (figure 7), at 40% and binge drinking rates remained at 24%. For Cardiff and Vale UHB for the same period the figures were 42% for consumption (a reduction from 44% in 2013-14) and 24% for binge drinking (down by 2% from 2013-14). With regard to the data
by local authority area, the percentages have decreased slightly in both Cardiff and the Vale of Glamorgan.

Fig. 7: Percentage of adults who drank more than the recommended Government guidelines of units of alcohol per week - Age standardised:

7.5 Management of AF Project

A multidisciplinary team including Secondary Care consultants, an expert pharmacist, Primary Care Managers, GP and Primary Care Quality representatives and The Heart Foundation was set up to develop a model of providing general practice with the knowledge, skills and confidence to review high risk atrial fibrillation (AF) patients for suitable anticoagulation to prevent the occurrence of a stroke in line with current NICE guidance.

The Consultants leading this work saw the potential for using AF AuditPlus to identify those patients whose treatment does not comply with current NICE guidance who are at high risk of stroke due to having atrial fibrillation and being treated with either aspirin monotherapy or no treatment and implement the appropriate management in line with NICE guidance.

The Audit plus tool has been updated in line with the latest NICE guidance for the management of AF.

All GP practices in Wales can now identify those patients requiring anticoagulation using Audit plus

Data on 380,509 (74.5%) patients in C&V have been collected which identified 6023 patients in AF of which 28% were not on any anticoagulation

The project splits the interventions into 3 groups to test which intervention will be most effective to anticoagulate the stroke risk group;

- Group A – consultant and pharmacy support
- Group B – collaborative teaching event & cluster pharmacist interventions
- Group C- no intervention (control group)

The project is aiming to see the conversion of non compliant patients who are now being anticoagulated appropriately; the aim being to reduce the stroke risk by 70%. It is hoped that there will be some preliminary data in September
7.6 24 hour BP Monitoring [http://guidance.nice.org.uk/CG127](http://guidance.nice.org.uk/CG127)

Wider C&V we could include the purchase of Ambulatory (24hour)BP monitoring in the clusters, work on the inverse care law and ACS pathways AF pathway.

National Institute for Health and Clinical Excellence (NICE) are recommending ambulatory monitoring as part of routine practice for the diagnosis of hypertension in primary care.

Use of Ambulatory Blood Pressure Monitoring may rule out 25% of patients currently misdiagnosed and treated for high blood pressure (BP).

Two measurements per hour are taken during the person’s usual waking hours (for example, between 08:00 and 22:00)

**Sensitivity – 100%**

**Specificity – 100%**

EG: for 100 patients with one high clinic reading:

- 48 patients correctly identified with high BP
- **52 patients correctly identified as normotensive**

The benefits include;

- Reduction in the incidence of TIA/Stroke
- Reduction in secondary care referrals for diagnosis
- 20% less BP work due to correct diagnosis
- Significant Drug/Prescribing saving

7.7 ACS Pathways

Building upon the priorities as identified by the cluster plans, with a focus on unscheduled care a set of evidenced based pathways have been developed to support patients more safely and closer to home.

To ensure ongoing sustainability of quality improvement 8 ACS pathways have been developed which includes a pathway for Atrial Fibrillation.

58 of 66 GP Practices across Cardiff and Vale have agreed to adopt the pathways as good medical practice. The work will be driven through Clusters with the aim of improving quality of care and access for patients, Clusters who will deliver this through a variety of ways including:

- supporting Practice’s to develop enhanced care plans (including acute on chronic exacerbation management), ensuring key skills/resource can be targeted to support embedding the new pathways
- providing appropriate education and training support
- Develop IT templates for care plans embedded within GP systems (potentially transferable on an All Wales basis).

This approach will also strengthen collaborative working at cluster level with evidence of impact through read coded data.
7.8 Partnerships

We continue to work in close partnership with the Stroke Association. They have delivered the following initiatives during 2015/16;

7.8.1 Health Promotion/stroke prevention – general public awareness

Information boards & Information centre notice boards in UHW and SRC Llandough. These are continually updated.


Leaflets/publications on all aspects of lifestyle changes are displayed on the SRC, Information Centre, UHW notice boards and are updated on a regular basis.

7.8.2 Blood Pressure Awareness sessions or Information Talks held this year:

The Stroke Association carried out 18 ‘Know Your Blood Pressure’ prevention events. A total of 900 blood pressures were taken across these events.

2 Health & Wellbeing Event at Star Leisure Centre Splott
Over 50s Group in Barry
BP and Information Day, Concourse UHW
2 BP sessions at Royal Mail in Cardiff
2 BP sessions at Royal Mail Barry

7.8.3 Hard to Reach Communities;

Staff attended the Minority Ethnic Communities Fair, Cardiff City Stadium, Women’s health day (targeting asylum seekers) and a Health and Wellbeing event, Splott.

Both events were used to raise awareness of Stroke and carry out blood pressure checks.
8. Detecting Stroke Quickly

Rapid diagnosis and treatment not only improves survival but also the quality of life of survivors. Our priority is to ensure that wherever possible the early signs of stroke are detected and acted upon without delay.

The UHB has implemented a model called code stroke which is a way of activating a dedicated Multidisciplinary team to attend patients who have been admitted to Emergency Dept. or Assessment Unit with a possible diagnosis of stroke. The call is activated by an ASHICE call to ED and the switchboard then sends a group bleep out to all the key members of the code stroke team. This development was implemented in October 2015 but only on a 9-5 Monday to Friday basis and has seen the following improvements in compliance with standards;

- Decision to admit - average 2 hours since Stroke Physician has had physical presence into ED/AU footprint.
- CT Radiography Resident 24/7 service in EU with 100% compliance with 12 hour CPI. Median time from Door to CT Scan 17 mins.
- All Stroke Physicians have undertaken ASTROCAT training which enables them to act immediately on the CT scan without waiting for formal reporting from a Radiologist.
- Median clock start for thrombolysis 57 min and have delivered below 30 mins for 40% of eligible patients.
- Thrombolysis rate for July is 17% preceded by May 10.4% April 24.5% and May 18.2%.
- Achieving thrombolysis for 100% of eligible patients. This position has been sustained since October 2015
- Stroke mortality data shows UHW below the Welsh National average (13.9%) at 11% with an SMR of 0.98. This trend is in line with having a dedicated MDT team in the acute stroke unit.
- Additional consultant – currently out to advert. Replacement Consultant appointed and is currently in place in SRC. Additional Clinical Nurse specialist and B6 nurse as part of Code Stroke team has improved processing time in hours.

The out of hours rota has changed from 8th August 2016 to provide 24/7 code stroke with Core Medical Trainees for Neurology supporting the medicine registrar and on call Stroke consultant to deliver service between 17.00 -09.00. Our modelling and analysis of patient flow consistently shows the majority of patients present with stroke between 08.00 and 22.00. Weekend code stroke will also be provided.

This improvement work will start to address the lack of full compliance with the 4 hour SSNAP standard and QIM and it is anticipated that these key indicators will start to show improvement from Q3.

Transient ischaemic attack (TIA)

TIAs (or mini strokes) serve as an early warning sign of stroke and require immediate medical attention. The window of opportunity to do this effectively is small and requires such patients to have a specialist assessment as early as possible following the event.
Recognition and management of Transient Ischaemic Attack (TIA) is a priority within the overall stroke prevention programme. High risk TIA patients stratified by the ABCD2 require assessment within 24hr and low risk patients seen within a week

Timely referral of patients with symptomatic carotid stenosis and subsequent carotid endarterectomy within two weeks is required.

The UHB currently deliver 6 TIA clinics that run daily 5 days a week, supported by same day imaging (Carotid Doppler) to ensure high risk patients are reviewed within 24 hours. On weekends high risk patients are referred to the Medical Assessment Unit (MAU) at UHW or UHL for initial assessment and management, which is supported by the TIA pathway.

During April 15 till March 16 within the UHB 1200 new TIAs patients are seen annually, with 1500 follow ups/year.

Education initiatives - The Stroke Physicians continue to deliver teaching sessions within primary care to GPs across clusters with a rolling programme planned during 2016/17.

In addition they have delivered sessions to the Welsh Cardiac Network meeting and to the Palliative Care consultants’ conference in 2015.

The Stroke Association continue to promote the FAST Campaign to the general public through partnership with WAST including:

- FAST strap line on local ambulances and rapid response vehicles.
- FAST information leaflets are present at all awareness events.

The remaining ‘Lower your Risk of Stroke’ campaign material continues to be distributed across Cardiff and the Vale of Glamorgan at all Stroke Association run or attended events.

9. Delivering Fast and Effective Care

Stroke services within Cardiff and Vale are planned to deliver effective evidence-based stroke services through well-organised multidisciplinary teams. These are in line with national standards and guidelines, such as those produced by NICE, the Royal College of Physicians and from the all Wales clinical advisory structures. Every individual is placed at the centre of their care so they have a smooth journey and confidence in the direction and quality of their care.

Clinical audit and outcome review is critical to continuous service improvement. We participate in all relevant National Clinical Audits and Clinical Outcome reviews, set out in the Welsh Government’s National Annual Audit Programme and then act on the findings.

We have four assurance measures in this area:
9.1 Improving the percentage of eligible stroke patients who receive thrombolysis, and those receiving thrombolysis within the optimum time

9.2 Increasing the percentage of stroke patients who spend more than 90% of their time on an Acute Stroke Ward

9.3 Reducing mortality within 30 days of admission

9.4 Continuous improvements of the stroke pathway Quality Improvement Measures (QIMs)

Progress against these assurance measures is highlighted below:

**Fig 8:** Improving the percentage of eligible stroke patients who receive thrombolysis, and those receiving thrombolysis within the optimum time

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The introduction of the code stroke team has improved compliance with this standard and has shown consistent and sustained compliance since August 2015. This improvement was also as a result of more robust data collection and monitoring by the SSNAP audit coordinator which ensured completion of records in a timely and to consistent standards.
9.2 Percentage of strokes who receive thrombolysis

Fig 9  Percentage of strokes who receive thrombolysis

Since April we have seen an improvement in the rate of thrombolysis rates in the UHB and this is consistent with the introduction of a senior decision maker at the front door. The physical presence of a consultant rather than on call has improved decision making for those patients with complex presentations.

In addition there is weekly scrutiny of all thrombolysis cases by the MDT in the Stroke Operational Group which has had an impact on rates.

Fig 10 shows April, May and July 16 have been the busiest months ever with 13, 10 and 10 cases respectively. August is reporting 8 confirmed tPA cases so far. One more case before the end of the month would mean that we have been in double digits for 3 out of the last 4 months. If we look back at the same period in both 2014 and 2015 we can see a definite increase in the number of cases 23 in 2014 to 28 in 2015 and up to 38 in 2016.

Fig 10  Thrombolysis
In addition 15 patients a year have received Intra-arterial Interventions for mechanical clot retrieval.

**Fig 11 Thrombolysis rates**

Fig 11 shows the rolling 12 month average; 3 month and monthly actual thrombolysis rates and further illustrates the increase in provision of tPa to patients admitted to ED.

**Fig 12 Time to Thrombloysis**
Fig 12 and 13 clearly demonstrate a trend of improved compliance in both the door to needle times and time taken from CT scan to administration of clot busting therapy (tPa). The median time of 59 mins from door to needle is reflective of the complexity of some of the patients seen within the ED where a decision to administer tPa is often complicated by co morbidity or uncertainty around onset of stroke. The presence of the consultant at the front door has added additional rigour and scrutiny to the decision making process which although has probably increased thrombolysed rates has also meant that decisions are being made on more marginal cases which introduces slight delays in processing time to ensure all appropriate investigations such as CT Angiograms are undertaken.

9.3 Increasing the percentage of stroke patients who spend more than 90% of their time on an Acute Stroke Ward

Fig 14 Percentage of stroke patients who spend more than 90% of their time on an acute stroke ward
50–60% of people are seen by the stroke service that end up not having a diagnosis of stroke but benefit from the diagnostic scrutiny and timeliness of assessment. We have seen a reduction in the time spent on the acute stroke ward.

9.4 Reducing mortality within 30 days of admission

**Fig 15 Percentage of mortality within 30 days of hospital admission for stroke**

The 30 day mortality is showing a reducing trend in the last quarter. The confounding variable of admitting the severe strokes out of area for the clot retrieval service, may have an impact on the 30 day mortality.

9.5 Continuous improvements of the stroke pathway Quality Improvement Measures (QIM)

Health Boards migrated from intelligent targets to the Quality Improvement Measurements in September 2015. For the purposes of consistency and to reduce confusion this report will provide an overview of the QIMs only.

**Fig 16 Percentage compliance QIM Bundle 1 within 4 hours**
The above bundle comprises of direct admission to acute stroke unit and swallow screen within 4 hours of arrival.

This is by far the most challenging standard to deliver with compliance affected by a number of factors. The EU to acute stroke unit is monitored using a daily compliance report and 30 day rolling report which tracks in and out of hours performance. In hours performance has shown marked improvement since the introduction of code stroke with compliance reaching over 75% at times. Out of Hours remains consistently below standard which is attributable to the lack of a dedicated code stroke team 24/7. It is worth noting that while the UHB has some way to go to have sustained compliance this is within the context of previous annual performance of 2013/14 0.3% and 2014/15 14.5%.

Fig 17

Median clock start to arrival has shown improvement on 2013/14 9.38 hours and 2014/15 9.45 hours. Fig 18 consistently shows median arrival time below 4 hours since April 2016.

Fig 18 Percentage compliance with QIM Bundle 2 within 12 hours
This bundle relates to the completion of CT scan within 12 hours of arrival and has shown consistent compliance since June 2015. The delivery of an effective thrombolysis service which aspires to deliver all thrombolysis below 30 mins is reliant on a responsive CT scan and Fig 20 shows a significant reduction in door to CT scan times with a median of 10 mins. This has meant that the UHB has at times been able to deliver up to 40% of thrombolysis under 30 mins and on a number of occasions in much less time.

Fig 19

**UHW 3 Month Rolling Median Clock Start to CT Timings**

Aug-15 to Jul-16

![Graph showing door to CT scan times](image)

**Fig 20 Percentage compliance with QIM Bundle 3 within 24 hours**

This bundle relates to assessment by a consultant, a specialist nurse and one of either OT, PT or SLT within 24 hours. Compliance has been variable during 2015 and has been down to consultant availability over 7 days and Therapies over 7 days. There are some instances where the patients was not deemed fit to be seen by therapies or wasn’t admitted to ward in time which can impact on therapies assessment time.
The UHB has seen a shift in compliance with this QIM following the introduction of 7 day therapies pilot in June (Fig 22) and changes to the referral process to SLT whereby they screen all patients following admission to A6S.

**Fig 21 Acute QIM Bundle 24 hour compliance**

![Acute Stroke Quality Improvement Measure Performance](image)

**Fig 22 Percentage compliance with QIM Bundle 4 within 72 hours**

![Percentage compliance with QIM Bundle 4 within 72 hours](image)

This bundle comprises of 4 components, assessment by OT, PT, formal swallow assessment and formal communication assessment by SLT. Compliance with the overall QIM has been consistently poor up until May 2016. PT and OT have been compliant and fluctuates between 95-100% so are within compliance target set by the QIM.
The main challenge has been delivery of SLT standards of formal swallow and formal communication assessments within 72 hours. Fig 25 and 26 shows that SLT have consistently failed to deliver the required standard up to and including April 2016. The UHB provided significant investment in SLT including short term funding to commence a 6 day service in May, prior to the main 7 day therapies pilot (Welsh Government Flexible funding) which saw an immediate improvement in compliance. This improvement has continued to be sustained over May, June and July 2016.
10. **Supporting Life after Stroke**

Some people are able to go home very quickly after a stroke, although for many a full recovery may not happen for some time. Others will never recover fully and will have to adapt their lives accordingly. Working with patients and families, multidisciplinary team try to achieve the best levels of recovery prior to discharge home. Therapy often continues after leaving hospital and is provided by ESD or community stroke team.

The Stroke Association have continued to deliver a Life after Stroke Service across Cardiff and Vale. The service is delivered Monday-Friday, by two Local Authority coordinators both working on a full time basis.

All referrals through ESD have a home visit from the Stroke Association Life after Stroke Coordinator. This is a needs-led service and the stroke survivor and family are supported up to a year following their stroke and can refer back in if necessary. A total of over 296 referrals were made and accepted to the Local Authority service.

Stroke survivors are signposted to appropriate statutory and other third sector organisations as required, including attendance at the Stroke Association Day Service where they are encouraged to attain their maximum social independence and integration back into their communities, including returning to work.

The Stroke Association Local Authority coordinators have worked closely with clinical psychologists to introduce and develop peer support group, which is held in SRC. A number of stroke survivors that have attended this peer support group have moved on to become stroke association ambassadors.

A number of volunteers have been recruited, trained and matched with stroke survivors within the community to provide social 1-1 befriending support. Working closely with the Speech and Language Therapy team we have been able to provide low level communication support through these volunteers.

The Stroke Association Life after Stroke coordinators have worked closely with student therapists who have shadowed them during the working week. Both coordinators have also actively supported the education and learning of the new rehabilitation assistants who have joined ESD.

The Stroke Association have provide over £3000 worth of recovery grants to stroke survivors across Cardiff and Vale, as a means of assisting and supporting their recovery post stroke.

The Stroke Association have made a number of changes regarding impact measurement, as a means of ensuring we are meeting the outcomes of every individual referred to the service.

To measure the difference our services make and demonstrate the outcomes we support people to achieve we are using two approaches.

**Validated measures**
All of our services will be asking people to complete the Warwick Edinburgh Mental Wellbeing Scale at the start and the end of the service where this is possible and appropriate. This validated tool measures mental wellbeing and includes 14 items.

**Demonstrating outcomes**

Recording specific identified needs, desired and actual outcomes will enable us to show the areas in which we make most impact by relating this directly to our outcomes framework; for example ‘95% of people increased their understanding of stroke.’

In conjunction with these changes the Stroke Association has also introduced a number of new quality improvement measures to ensure that the life after stroke services that we are delivering are operating at the highest level of quality possible.

**11. Targeting Research**

**Fig 26 Number of stroke patients participating in clinical trials**

![Graph showing number of stroke patients participating in clinical trials](image)

It is recognised within the stroke team that the level of research and recruitment of patients into clinical trials has been very low as reflected in Fig 26. This is in the main down to the focus of the team on service improvement and redesign projects.

Notwithstanding this there are a number of clinical staff across professions who continue to participate in research trials, mostly as part of UK wide multicentred trials including

- **EXTRAS** is a clinical trial to evaluate a new longer term stroke rehabilitation service. One third of patients have long term disability after stroke but specialist stroke rehabilitation usually lasts no more than a few months. Patients who have ongoing rehabilitation needs once specialist stroke rehabilitation finishes may be referred to a range of other healthcare professionals or services, but most do not offer specialist stroke rehabilitation. One of the reasons why specialist stroke rehabilitation is not provided over a longer period is because it is not yet known if it is beneficial. The EXTRAS clinical trial will determine whether a new extended stroke rehabilitation service is beneficial to patients and carers.
EXTRAS is now in its 4th year, the first sites opening in 2012. Recruitment was completed in June 2015 and randomisation in October 2015. Cardiff and Vale UHB were the last site to join the trial and have recruited and randomised 10 patients.

- **PISTE** – The UHB was a centre for the PISTE (Pragmatic Ischaemic Stroke Thrombectomy Evaluation) study for clot retrieval. This study has now been completed
- **The stroke psychology department has recently been involved in 2 D.CLin Psy research projects based at the South Wales Clinical Psychology Training Course, Psychology Dept, Cardiff University.** Both projects centred on evaluating the course - ‘ACTivate Your Life after Stroke – Acceptance and Commitment Therapy for people and carers living with stroke’. This was a community based course – 4 weekly sessions. 2 cohorts were run – in April and July this year and the results are currently being evaluated. One researcher is carrying out a qualitative analysis of the results and the other is carrying out a quantitative analysis.

  The stroke psychology dept were involved in providing participants, consultation in design of the project and also facilitated the groups.

- **Improving drug prescribing for patients on feeding tubes - A quality improvement project;**

  Medication administration for patients on feeding tubes was noted to be significantly longer than patients on normal diet and fluids. It was also apparent that medical staff were generally not aware of the additional time required to administer medication via a tube and did not routinely alter prescriptions to aid administration.

  Staff were observed undertaking the drug round and the time taken to complete this task was recorded. Following the observation a prescribing tool was developed and implemented.

  A total of 36 drug rounds were observed. 11 in the morning and 25 in the evening. The mean total time to complete the drug round was greatest in the PEG group in the mornings (16.3 minutes) and NG group in the evening (14.5 minutes). The range of times was wide. However on average more drugs were administered to patients on normal diet. This resulted in a longer period per drug administered to patients via NG or PEG route than normal diet.

  Following the observation period a multifaceted approach to improving prescribing was considered:

  Guidelines for prescribing for the SRC have been produced using the principles of:
  1. Medication review to ensure that all medications are still indicated.
  2. Consider alternative formulations of drugs to make administering easier.

  Implementation of the prescribing aid will be studied to record whether prescriptions are changed in light of the new advice.
• **Service Improvement projects;**

Service evaluation of front door neurology and stroke - review of diagnosis.
Prospective data collected from 17 days over 4 weeks
65 patients seen

The conversion rate from suspected to confirmed stroke is collected and reviewed on a regular basis and tends to be between 40-50% converting. This is an important measure as it provides an indicator of the total demand on the stroke service. Some of the patients presenting with suspected stroke and who do not convert have eminently more treatable conditions and therefore benefit from the scrutiny afforded by the stroke team.

Kaizen 1 and 2; A number of projects were undertaken which arose from the Kaizen events that were held in partnership with an external consultancy from October 2015 to March 2016 including:

- Refinement of Code stroke and production of action cards for use in ED
- Implementation of Board Rounds in acute and stroke rehab centre
- Development and testing of integrated stroke documentation from admission to acute stroke ward. This included the development of an integrated therapies document.
- Key Worker
- Goal Planning
- Activity Board and timetable
- Stratification of patients
- Improving flow of complex patients from the SRC
- An Audit into the Secondary Prevention of Stroke at UHW compared to current NICE guidelines.

The UHB has recently identified joint R&D leads for stroke from Stroke Consultants and Physiotherapy. These leads will represent the UHB at the recently developed Stroke R&D group.

We have recently been successful in securing R&D support officer to assist in the administration of the PASTA study in Cardiff and Vale which also present an opportunity to commence development of our research portfolio.
12. Improving Information

Improving Information for People

People affected by stroke have significant information needs, not just in terms of their treatment but in terms of their financial and emotional needs. They consistently highlight the need to improve communications between themselves and all relevant agencies.

Over the past 12 months Cardiff and Vale University health board has;

- Stroke Website has been redesigned in line with corporate identity.
- Information leaflets available from admission and posters outlining expectations for patients on SRC
- As part of the Stroke Association Life after Stroke service, Purple Packs (6 core Stroke Association leaflets, plus local service leaflets include contact information) are distributed to all acute stroke patients at UHW – these are also available within SRC.
- the Stroke Association has delivered PREPS with the Stroke rehabilitation team
- The Stroke Association have been engaged with the integrated workshops held by the Head of Workforce and delivered a session on a “Patients Journey”.
- Step Out for Stroke was held in Cardiff, which is used not only as a fundraising event but also for stroke awareness and as a means of celebrating Life after Stroke. Around 180 people attended the event, including Health Colleagues from SRC.
- As part of Action on Stroke Month, the Stroke Association ran a three day pop up shop from 10th to the 12th of May in St David 2 centre. The event was used to raise awareness, promote early detection of stroke via the FAST message and also used as a prevention event in the form of carrying out blood pressure checks.

Improving Clinical and Service Planning Information

The Stroke service has embedded a robust governance process which includes;

- Development and implementation of a live data capture system in EU Work Station.
- A weekly Stroke Operational Group (SOG) and SSNAP validation hour is well embedded which reviews SSNAP and QIM compliance.
- Daily and weekly dashboard has been developed to manage stroke services and measure service improvement with weekly Stroke Operational Group. This includes a 30 day rolling report of direct access to ward in 4 hours.
- Piloted use of Rehab complexity score in SC to support rehab support worker pilot
- Daily Board rounds implemented in A6S and SRC
- Integrated pathway documentation developed for ED and A6S which includes integrated therapies record
13. Conclusion and focus for the next 12 months

We are showing an upward trajectory in compliance in the majority of our SSNAP standards. Unfortunately the delivery of direct access to acute stroke unit within 4 hours continues to be by far the most challenging. Delivery of Code Stroke over 24/7 is dependent on having similar level of resources available out of hours and weekends. This should now be addressed by the medical workforce changes that have been made in August which should help improve compliance. A bid has been submitted to pilot 7 day Consultant working which should enhance the work already underway with therapies.

There is also a significant amount of work commencing in the SRC with the Stroke Team working with the Delivery Unit to improve flow.

We are showing some good traction with improved performance in the acute bundles but will be more assured once we have consistent run of improvement over the Quarter 3.

Public Health and Prevention of stroke

Smoking

- Smoking cessation support to be routinely offered to all patients who smoke on 'first contact' with NHS services (to include primary and secondary care)
- Smoking Cessation services to be available in all settings – targeting our most disadvantaged communities by increasing the number of participating Communities Pharmacies in the Level 3 Smoking Cessation service and ensuring support is available in community settings

Healthy Early Years Settings and Healthy Schools – food/physical activity

- Recruit 10 new settings to the Healthy and Sustainable Preschool Scheme in the Vale and provide additional support for food and physical activity related activities
- Disseminate findings of a Health Impact Assessment and undertake research into the impact of length of lunchtime on food purchasing choices in Cardiff secondary schools
- Continue to promote the nutritional and physical activity elements of the schemes to all settings and ensure that pupils have access to healthy and nutritious food and physical activity opportunities during the school day and during the school holidays through the delivery and expansion of the School Holiday Enrichment Programme in Cardiff and Vale.

Workplace settings

- Continue to improve compliance with the Hospital Restaurant and Retail Criteria Standards and Welsh Government healthy vending directive.
- Promote the Healthy Options Award to increase the number of food businesses participating.

Obesity
- Deliver against the Cardiff and Vale Eating Well and Physical Activity plans
- Alcohol:
  - Deliver against the Cardiff and Vale Alcohol Action Plan, including focus on education, awareness raising, alcohol brief intervention training

Detecting stroke quickly

Code Stroke has been implemented on 24/7 basis from August 2016. The process will be monitored on a daily basis to ensure changes are embedded and compliance is on a sustainable basis.

Delivering fast, effective care

There is an upward trajectory for swallow screen which has been consistently low in previous months. It seemed that we had reached a plateau in swallow screening in Q1 of SSNAP. Recent changes in tracking individual breaches and promoting swallow screen as part of ABC assessment in the EU has seen an upturn in compliance to 73%. This will be monitored on a daily basis to ensure a sustainable service is embedded.

Assessment by stroke consultant and one of the therapies shows improvement in June. Introduction of the pilot for 7 day working for therapies in the acute stroke unit in UHW has commenced which is starting to address 24 and 72 hour bundles with improvement in formal swallow and communication assessment.

7 day therapies pilot has been implemented in the acute stroke unit in UHW and early indications are showing an impact on Length of stay, increased therapies time over the weekend and improved patient experience. Work is ongoing to evaluate the outcome of this test and develop a sustainable service model. The pilot for the consultants working over 7 days will be implemented during September and run for 6 months.

However the UHB continues to fail in delivering a number of SSNAP standards. These include;

- 4 hour bundle; direct admission to acute stroke unit within 4 hours. The implementation of code stroke 24/7 should improve processing times within the ED/AU footprint. Success of the service development will be dependent on good flow throughout the pathway. The work currently underway within SRC and the interface with the community and Local Authority will be critical to flow.
- 24 hour bundle; Assessment by Consultant. The UHB has been successful in securing flexible funding from Welsh Government to run a proof of concept of Consultants working 7 days. This will run over 6 months commencing in September 2016.

Improvement work which has already been described has been started to address the above and it is anticipated that these key indicators will start to show improvement from Q3.
There will be significant planning and development work to deliver a plan for HASU and Mechanical Clot retrieval which will require close collaboration with local partners and WHISSC.

**Supporting life after stroke**

Work with the Stroke Association to recruit and deliver 6 months reviews. In addition implement processes to capture 6 monthly reviews that happen within the outpatient setting.

**Improving Information**

Implement revised operational and strategic governance arrangements

**Research and Development**

Cardiff and Vale has a large cohort of service users and therefore a rich source of experience and outcomes with which to conduct research trials. It is our aim to significantly increase our portfolio and patient recruitment during 2016/17.