



**2019**

**Main Abstracts**

## **1. Research priorities, barriers and solutions towards stroke research in Wales**

Dr Abdul Seckam  
Cardiff Metropolitan University

### **Introduction**

Stroke research is a critical enabler for the health of our nation, contributing to the effective delivery of evidence-based medicine in the NHS, attracting investment and high quality research talent, and vital for laying the foundation to the next phase of health and social care delivery in Wales. The aim of this survey was to explore the research priorities, barriers, and solutions for stroke research in Wales.

### **Method**

A Qualtrics.XM survey link containing a mixture of closed and open-ended questions was sent to stroke executive and research leads, Allied Health Professionals (AHPs), and researchers throughout Wales.

### **Results**

The data generated was analysed using a mixture of descriptive and content analysis. Twenty-seven participants (n=27) including: 11 (41%) academics, 7 (26%) AHPs, 4 (15%) nurses, 3 (11%) other professionals and 2 (7%) stroke clinicians responded to the survey. Participants ranked End of Life Care (17, 63%) and both Living Well (10, 37%) and Fast Effective Care (Well (10, 37%) as the three main priority areas in stroke research in Wales. Content analysis revealed that there was much research still needed in the following areas: Living well, Rehabilitation, Recovery and Life after Stroke, Stroke Prevention, evidence-based practice and self-management and strategies after stroke. An extensive list of barriers and solutions for stroke research in Wales amongst the participants was also identified.

### **Discussion**

Research priorities, their associated barriers and solutions need addressing amongst Welsh Government (WG) and research bodies. This report will inform the aims and objectives of SHW in discussion with WG and research funding bodies.

## **2. The use of Graphic Communication in persuading the Welsh population to 'Get Involved' in Stroke Research**

Ben Conod, Kieran Traas, Callum Solley, Carys Mathews, Maria Korkonea & Wendy Keay-Bright

### **Introduction**

Stroke is one of the top three causes of death and the leading cause of adult disability in Wales. Stroke research is therefore a critical enabler in the health of our nation. Research saves lives, prevents strokes and improves the lives of stroke survivors. Stroke Hub Wales is Wales's leading Stroke Research Centre, based at Cardiff Metropolitan University, where second year BA Graphic Communication students at the School of Art and Design have been collaborating on a live project called Get Involved.

### **Method**

See below

### **Results:**

See below

### **Discussion**

The aim of Get Involved is to encourage people in Wales with a personal interest in Stroke research to take an active role in the pioneering work of SHW. This paper reports on the design methods, techniques and ideas developed by a team of four students, including animation, interactive posters and print media. The campaign focused on translating patient experiences and reflective accounts into powerful information design. The first stages of the Get Involved graphic communication will be presented in order to demonstrate how this creative collaboration could bolster participant representation and involvement. Ultimately, through the Get Involved project SHW aim to build a rich database that can enable person-centred approaches to be applied in future research for partner Higher Educational Institutions (HEIs), Health Boards (HBs), clinicians, Allied Health Professionals (AHPs).

### **3. KNOWLEDGE AND ATTITUDES TOWARDS APHASIA**

Delyth James

Katie Earing, Cardiff Metropolitan University

#### **Introduction**

Aphasia is a communication disorder that's caused by damage or injury to the brain, most commonly from a stroke. Aphasia affects a person's ability to use language; understanding, speaking, reading and/or writing. The aim of the study was to establish whether participants' knowledge and attitudes (KAA) towards aphasia were different after watching an educational video describing the impact of aphasia on stroke survivors.

#### **Method**

An aphasia friendly KAA questionnaire was designed and disseminated amongst the public attending a Stroke Symposium (November 2018). A quantitative, descriptive design was chosen to objectively measure, describe and document KAA towards aphasia after watching the video. Fourteen questions pertaining to the KAA towards aphasia were generated in line with the constructs of the Capability, Opportunity and Motivation Behavioural (COM-B) model and Theoretical Domains Framework (TDF). Results: Data were collected, collated and entered into SPSS. A 90% (n=90) response rate was achieved. Participants included nine (10%) stroke survivors, 12 (13.3%) family member or carer of stroke survivors and 69 (76.6%) others, comprising academics, researchers, students and members of the public. A reliability analysis was conducted to determine the level of internal consistency for the attitude statements. All alpha coefficients were above 0.7 (alpha=0.933) indicating good internal consistency of the scale.

#### **Discussion**

The results highlight that this is a reliable questionnaire, with an aphasia friendly approach, which can be used in practice. The questionnaire will now be amended to create pre and post questionnaires to understand changes in people's KAA towards aphasia in future stroke symposiums and educational workshops.

#### **4. Ludic Artefacts Using Gesture and Haptics Evaluation and Making: Playful Objects for Wellbeing Emotional Regulation and Engagement for Dementia and Post-Stroke Cognitive Impairment (LAUGH EMPOWERED PSCI)**

Cathy Treadaway, Benjamin Jelley

##### **Introduction**

See below

##### **Method**

See below

##### **Results**

See below

##### **Discussion**

Stroke is a public health concern and can result in a variety of symptoms including weakness, numbness, speech disturbances or a degree of visual loss or a combination of these. Patient recovery is important to ensure the best possible quality of life for that person. LAUGH research has been developing playful objects that are designed to provide pleasure, comfort and something meaningful to do, help non-verbal communication and build empathic relationships that are imperative for boosting a person's quality of life. 'HUG' is a soft wearable interactive object, reminiscent of a baby, with a beating heart and the facility to play a person's favourite music. It has been shown to have a positive impact on the quality of life of the person it was designed for. The LAUGH EMPOWERED PSCI is a two-year collaborative project with NHS and Sunrise Senior Living, funded by the Welsh Government. The LAUGH EMPOWERED PSCI study is designed as an interventional randomised control trial with the participants being selected from those being admitted to the Stroke Rehabilitation Centre of Cardiff and Vale University Health Board over a twelve months period. During the recruitment period the trial team will aim to recruit forty individuals who meet the inclusion criteria. Half of these individuals will be randomly allocated to the intervention group (receiving a 'HUG' device) and the others to the control arm. Positive results from the larger study will endorse the need for the product and the new Welsh Government funding will scope the next steps in ensuring the design is more widely available. We aim to discover whether 'HUG' has a positive effect on the rehabilitation outcomes for patients with PSCI.

## **5. Young Mums have strokes too.....**

Jo Prior,  
Community Stroke Team  
Swindon Community Health Services

### **Introduction**

2 in 100,000 pregnant women have a stroke during pregnancy or post-partum. There are few published recommendations for this patient group. Additionally, it is well known that young stroke patients often receive insufficient support during recovery. We sought to identify unmet needs in young women following stroke, and to evaluate whether a 6-week rehabilitation programme would allow them to lead fulfilling lives as new mothers.

### **Method**

All 4 patients had a formal stroke diagnosis (1 during pregnancy, 1 young mother, 2 post-partum) and had been through the stroke pathway. They had poor improvement of functional ability; their mood was deteriorating, and reported a feeling of failing in their role as mothers. A bespoke Life after Stroke group was devised to meet their individual needs. The structure of this group was altered and adapted from the structure of groups which already exist. The sessions varied from relaxation techniques, Pilates, mindfulness, and to how to carry babies using slings. Pre-course mood and concerns were established to aid design of the programme. Post-course questionnaires and feedback meetings took place.

### **Results**

Results showed that 100% of attendees felt their life had improved from attending the group, from feeling "desperate", and feelings of "despair" to "feeling alive", "relieved", "feeling in control", and "not alone in this". The group improved their functional abilities from beginning to take their pushchair out of the house to using the bus again, to driving again, returning to work earlier than anticipated. 1 mother who stayed with her parents moved back into her own home alone with her baby.

### **Discussion**

The programme met the needs of the participants. Recommendations were made to improve joint-working between local maternity and stroke services; these services now meet regularly to discuss patients and service development. The programme has become a recognised tool in Swindon. This work has been identified by the trust as an area of outstanding innovation.

## **6. An Analysis of the Impact of Establishing an Ambulatory Stroke Team**

Menagh C, Wilson D, Dynan K, Power MJ, Hull K, McCallion C, Matthews M  
Ulster Hospital  
Belfast  
Northern Ireland

### **Introduction**

The South Eastern Trust established an Ambulatory Stroke Team (AST) in October 2017. This consisted of Stroke Nurses and a Specialty doctor with Stroke consultant support. During the initial pilot the AST team worked Monday – Friday 9-5pm. The majority of assessments took place in the emergency department. The overall aims were to improve length of stay for TIAs / stroke mimics and improve the percentage of strokes being admitted directly to the Stroke Unit.

### **Method**

Using quality improvement methodology we worked through several PDSA cycles. The most significant intervention was the introduction of a protected direct to stroke unit bed. A database was kept of all patients seen, including final diagnoses and patients discharged after assessment, preventing admission and saving bed days.

### **Results**

A 6 month period was analysed from April to September 2018. 312 patients were reviewed – 159 (51%) stroke mimics, 108 (35%) strokes and 45 (14%) TIAs. 54 patients were identified for early discharge and appropriate follow-up. Bed days saved was estimated at 110 days. Direct to stroke unit percentage improved from 30% in October 2017 when the AST was introduced to 82% in January 2019.

### **Discussion**

A dedicated Ambulatory Stroke Team can prevent hospital admissions and save bed days due to rapid identification and specialist assessment of suspected TIAs and strokes. Multidisciplinary team working as part of a quality improvement project can improve the percentage of strokes admitted directly to the stroke unit.

## **7. Attitudes and current practice of End of Life Care in Stroke Patients: A Questionnaire service evaluation**

Sharon Storton, Jaspal Mann, Elizabeth Birch, Mohammed A Baker, Sophie Picton, Sarah Yeap, Tal Anjum, Peter Slade, Manju Krishnan, Mushtaq Wani  
Swansea Bay University Health Board

### **Introduction**

End of life care is a major aspect in the management of acute stroke, presenting challenges for both medical and nursing staff. The aim of this service evaluation was to investigate staff experiences of end of life care in acute stroke setting at a teaching hospital in South West Wales.

### **Method**

The study involved the use of a questionnaire, composed of 16 close-ended questions using a likert-scale for the staff responses. Participants were asked to complete the questionnaire before and after 'a tailored end of life care for stroke training session'. The data from the questionnaires were quantitatively analysed to identify staff attitudes, management practices, perceived barriers in end of life care and impact of targeted training.

### **Results**

The respondents included 16 doctors, 18 nurses, 20 healthcare support workers (HCSW) based on the stroke ward. The biggest differences observed in the staff responses were in their readiness to support families and in decisions around appropriate medication management and nutrition/hydration. Out of all staff groups, Nurses appeared to be more confident in these areas. In other domains such as satisfaction with basic training and confidence in delivering end of life care, little differences were observed between doctors, nurses and HCSW.

### **Discussion:**

The results of our study indicate that end of life care is not straightforward. The biggest impact of specific end of life training was observed in staff confidence in dealing with families and management of medication and nutrition during end of life care.

## **8. Encouraging, Empowering and Expanding**

Sarah Jones  
Bronglais General Hospital  
Hywel Dda University Health Board

### **Introduction**

The Lead Research Nurse for two hospital sites in Hywel Dda University Health Board accepted the role of Stroke Research Lead for the Health Board in 2016, with the aim of maintaining and improving access for patients with stroke to be able to participate in stroke research and to ensure all four hospital sites were research active. Historically one site (Bronglais General Hospital), where the Lead is based, has performed well with the number of stroke research studies on the portfolio and the number of patients consented. The Lead felt that she could share her expertise and knowledge of stroke research to be able to engage with the other sites in the Health Board.

### **Method**

This has been facilitated by the Lead and achieved by research being driven from the research teams at each hospital who have worked hard to engage with the stroke multidisciplinary teams and with Welsh Ambulance Service Trust (WAST), to enable stroke research to be embedded in clinical care. The research teams have worked closely with the teams and not only have medical personnel as Principal Investigators, but also now have the Stroke Clinical Nurse Specialists at each site working as Principal Investigators. This has encouraged all team members to be engaged and enthusiastic about stroke research, thereby benefitting patients and shaping the future of stroke care.

Results: The outcome is that Hywel Dda University Health Board is the highest recruiting Health Board in Wales for stroke research and has been since 2016. This is due to the hard work and determination of the Stroke Research Lead in her vision to have all four hospitals working on stroke, being able to share knowledge and experience and to facilitate and empower the local research teams to deliver stroke research.

Discussion: The success of this way of working could work in other Health Boards with the outcome of involving more patients with stroke in research.

## **9. A retrospective analysis of stroke readmissions at the Royal Cornwall Hospital, Truro**

Sarah Snow, Sarah Ingram, R Barrett, K Adie

### **Introduction**

Stroke is a common cause of morbidity and mortality. The nature of stroke means that a high proportion of patients are discharged with a new significant disability and complex needs. Unplanned readmission to hospital is considered to be a useful indicator of outcome and may be reflective of quality of care. This audit aims to assess the rates and causes of readmissions at Royal Cornwall Hospital.

### **Method**

The RCH stroke database was obtained with consecutive data pertaining to stroke admissions between 01/01/17 and 31/07/18. A search was conducted to find patients who had been readmitted within 30 days of initial discharge from hospital. Admission characteristics were compared between readmission and non-readmission groups. We compared time to stroke ward admission, swallow screen, time spent on the stroke unit. Diagnoses for readmission stay were grouped and the most common causes identified.

### **Results**

Of the 1212 study patients, 147 (12%) were readmitted within 30 days. The median length of time before readmission was 10 days (IQR 4-19) and the median length of readmission stay was 3 days. Patients in the readmissions group were less likely to have been admitted to the stroke unit, spend less time on the stroke unit and had a delay in swallow screen. The most frequently recorded reasons for re-hospitalisation included recurrent stroke, infection, stroke complications, cardiac problems. There was no significant increase in readmission rate over time.

### **Discussion**

This audit shows the trust should focus on providing best care to all stroke patients to minimise the chance of readmission.

## **10. Scoping exercise on the provision of diet and lifestyle prevention advice to Stroke and TIA patients attending outpatient consultant clinics**

Jones, A and Wardle, I  
Cardiff and Vale University Health Board

### **Introduction**

From the moment a person has a stroke or TIA they are at substantial increased risk of further events; 26% within 5 years of a first stroke and 39% by 10 years. Diet and lifestyle issues contribute significantly to cardiovascular risk, including the risk of first and recurrent stroke. Therefore modification of these risk factors provides an important mechanism for influencing recurrent events. At present there is no specialist dietetic input to Stroke/TIA clinics across Wales

### **Method**

Dietitians attended 7 out of 9 Stroke/TIA clinics across 2 different hospital sites over a 3 week period. Patients were identified as being eligible for dietary prevention advice by considering relevant indications/contraindications, e.g. age, cognition, quality of life, disease related dietary needs, receptive/expressive dysphasia etc. Of those suitable the following demographics and risk factors were collected;- sex, age, weight, height, BMI, waist circumference, BP, smoking status, diabetes, family history of CVD, lipid profile and 10 year CVD risk.

### **Results**

From 45 patients, 33 patients were eligible for inclusion, 12 patients were not eligible. 35% were classified as having metabolic syndrome, 47% had a high waist circumference; 33% increased risk, 12% normal and 6% declined. 48% had dyslipidaemia, 52% were hypertensive, 79% were overweight or obese. 81% patients eligible for CVD risk scoring were high risk. 94% were suitable for cardio-protective diet and lifestyle advice e.g. Mediterranean diet

### **Discussion**

Having a Dietitian in Stroke/TIA clinics would be of clear benefit to patients. It would enable RCP guidelines to be met. It would help to reduce potential risk factors improving the long term health and well-being of patients. It would be good to have the opportunity to run a pilot project therefore funding is being sought.

## **11. The efficacy of recanalisation treatment in wake-up strokes**

Sophie Wilson

### **Introduction**

Wake-up strokes account for 20% of all ischaemic strokes, but patients are currently ineligible for recanalisation because of unknown onset time. Between the hours of 6.00am and noon, stroke risk is 55% higher, because of circadian rhythm changes which alter blood flow, increase blood pressure and heart rate, and terminate atrial fibrillation, causing cardiac embolism formation. Despite unknown onset time, research has shown a high proportion of wake-up stroke patients to have similar clinical baseline and brain images to those with a known onset time of 3-6 hours. In addition, patients waking up with new onset of neurological symptoms could be a biomarker for stroke onset time because symptom onset can prompt patients to awaken. Therefore, wake-up strokes patients could be eligible for recanalisation and a great number of stroke patients could benefit from this treatment.

### **Method**

Databases searched: Ovid MEDLINE® without revisions from 2009 to 2019; Trip Database; Cochrane Library. In Ovid MEDLINE, 17 results were found, and Trip Database produced 12 results, which contained some replications. No relevant literature was found on the Cochrane Library database.

Results: Results from several recent trials showed thrombolysis and thrombectomy to be effective in wake-up strokes. Treated patients had good functional outcomes with low mRS scores, low rates of sICH, and low mortality rates at 90 days.

### **Discussion**

A large double-blinded RCT is needed to assess the efficacy of intravenous alteplase in wake-up strokes, as well as tenecteplase. The most effective method at identifying eligible wake-up stroke patients still needs to be determined.

## **12. What is the outcome of rehabilitation of stroke patients in South Gwent/Wales?**

Dr. Amer Jafar, Steven Everson, Joshua Pluck Rose, Aneurin Bevan University Health Board  
Henry Dewhurst, Cardiff University, College of Medicine

### **Introduction**

Stroke rehabilitation is the 'act of relearning skills' to improve the area of brain which has been affected by a stroke. It works to improve patients' quality of life by allowing them to regain their independence. This study aims to look at the outcome of stroke rehabilitation by analysing data from patients in Royal Gwent Hospital/St Woolos Hospital (Regional Stroke Rehabilitation Unit).

### **Method**

Stroke patients were retrospectively assessed over the last two years from 1st March 2016 – 1st March 2018 using the Admissions book from the stroke rehabilitation ward. The Clinical Workstation and the online patient database, was then used to create a spreadsheet showing the demographics of patients with strokes, the type of stroke they had, based on the Bamford system, the length of admission and the outcome of the patients rehabilitation. Using this spreadsheet, the data was statically analysed to formulate results using Microsoft Office Excel 2013 to help identify areas for improvement in this field.

### **Results**

353 patients were analysed over a two year range, with an average age of 78 years old and an equal gender ratio of 1:1. 46% of patients were discharged home after successful rehabilitation, 50% were transferred to an alternative placement (Residential or Nursing Homes) for further rehabilitation/care in the community and 4% passed away. Of the 46% patients who were discharged home; 52% were female, at an average age of 75 years old, with most having suffered from a Lacunar Stroke and having stayed in hospital for an average of 42 days. Of the 50% who were transferred to an alternative placement; 52% were male, at an average age of 81 years old, with most having suffered from a Total Anterior Circulation Infarction (TACI) and having stayed in hospital for an average of 50 days.

### **Discussion**

While St. Woolos Hospital (Ruperra Ward, Regional Stroke Rehabilitation Ward) was performing well in the field of stroke rehabilitation, there is still room for improvement, including; more resources and therapies used in rehabilitation and more efficient referrals to the stroke rehabilitation ward. To improve the outcomes of Total Anterior Circulation Strokes, greater resources can be used by the multidisciplinary teams to improve prognosis.

### **13. A Summary of projects funded by the Welsh Stroke Implementation Group**

Phil Jones, Hywel Dda University Health Board  
Fiona Jenkins, Cardiff and Vale University Health Board  
Stephen Davies, Aneurin Bevan University Health Board

#### **Introduction**

The Welsh Stroke Implementation Group (SIG) is one of several groups established by Welsh Government to promote and advance care in various areas of disease. Each group is allocated £1m to assist in service improvements. SIG has representation from each of seven health boards in Wales (executive, clinical and stroke management) together with Welsh ambulance service trust (WAST), primary care, Welsh government and stroke association.

#### **Method**

Each year bids are invited against the allocated £1m funding from stroke teams in Wales. Bids need to be innovative and to be scalable where successful so that positive findings can be replicated across Wales. There is encouragement for projects that have a research basis to assist in promoting stroke research in Wales. All bids are scored by a panel of SIG representatives and research leads and successful bids identified. A second round of bids may be held for unallocated monies or slippage monies. We present a summary of successful bids from the last three years.

Results: The results will be presented as a table of successful bids identifying clinical leads and host health boards. One or two will be expanded as space and layout allows to highlight particularly successful projects.

#### **Discussion**

The availability of a relatively small amount of money being made directly available to clinicians working within a discrete service area (stroke) has led to a large amount of interest and engagement from clinicians across Wales working together to promote stroke care. The access to this money by “working” clinicians without a lengthy process to navigate has encouraged innovation and has had a far greater impact we believe, than other methods of allocating funding.

## **14. Impact of Seven Day Working on Stroke Physiotherapy Services (Wrexham Maelor Hospital)**

Cathy Williams, Richard Hayes  
Betsi Cadwaladr University Health Board

### **Introduction**

With targets such as SSNAP being developed a need has arisen for timely assessment by physiotherapy for patients suffering from stroke. With the pressures of unscheduled care finance was made available to increase Community resource teams to longer hours 7 days a week. It has become apparent that the physiotherapy profession is required 7 days a week. The time was right to review and develop the physiotherapy service to ensure that patients receive physiotherapy in a timely manner. In January 2018 all areas of physiotherapy with the exception of MSK out Patients and some of the class based services moved onto a 7 day working pattern. On weekends there is now cover provided to the Stroke and Rehab unit. This is via one qualified member of staff working with one member of support staff. Method: We reviewed SSNAP data from July 2017-June 2018 (6 months pre and post implementation). Focusing on median minutes of Physiotherapy received by patients and % of Physiotherapy target achieved. We then looked back at our statistics over the same period to collate data for patient contacts and discharges.

### **Results**

The SSNAP data did not show significant changes after the introduction of seven day working. We found that while there was an increase in total discharges, this was proportionate to an increase in overall patient numbers (18% increase in total new patients and 18.5% increase in discharges). More concerning was that our "Not Seens" had risen by 57% in the same period. Total patient contacts (follow-ups) had risen by 25%. The Stroke team currently also documents the number of double, triple and quadruple patients that we see. We have also noticed an increase in the numbers of these patient groups in that time period.

### **Discussion**

We need to investigate the level of assistance required by our patients who were not seen, to establish if there are any links to length of stay. It would also be useful to record overall length of stay and length of stay post discharge from therapies. This could be used to analyse potential causes for patient flow/discharge rates/reasons for increased length of stay. We frequently see these more dependant patient groups with other MDT members. This needs to be considered with any future plans to move other MDT members to 7 day working. Without adequate MDT back-fill on rest days, we are likely to see further increases in "Not Seens".

## 15. A systematic review and meta-analysis of risk factors for pregnancy-associated stroke

Rebecca Green, Nikola Sprigg, Laila Tata  
University of Nottingham

### Introduction

Stroke in younger women is rare, however, pregnant women have a significantly increased risk around delivery and in early postpartum, especially non-haemorrhagic stroke. Despite known risk factors, such as high blood pressure, the contribution of female-specific factors to women's stroke risk are poorly understood. Whilst there are pathophysiological reasons for increased stroke in pregnancy, it is of vital importance to determine the extent to which these strokes can be pre-identified by background risk and pregnancy-related factors. We conducted a systematic review to identify risk factors for pregnancy-associated stroke; this included risk factors pre-existing (to pregnancy) and those developing during pregnancy and labour.

### Method

An electronic search of PubMed, MEDLINE and EMBASE databases, without language, study design or publication date restrictions, was performed in November 2018. Study inclusion criteria were reported risk factors/characteristics for women with stroke during pregnancy or up to 12 months after delivery and for a comparison group of pregnant/postpartum women without stroke. Stroke timing (antenatal, perinatal, postnatal), diagnostic type and fatality were assessed. Data were extracted and, where possible, a random effects meta-analysis was conducted, heterogeneity quantified using I<sup>2</sup>. Methodological quality was assessed using an adapted Newcastle-Ottawa scale.

### Results

Of 3784 papers screened, 9 studies met the inclusion criteria comprising 11,398 women with stroke and >85 million comparison women across 4 countries. Eight studies reported effect measures for at least one risk factor. Of fourteen risk factors reported, 8 showed a statistically significant increase in pregnancy-associated stroke; pooled odds ratios with 95% confidence intervals: maternal age  $\geq 35$  years 2.66 (1.83-3.87), black ethnicity 1.56 (1.38-2.78), smoking 1.96 (1.64-2.34), alcohol use 2.32 (1.41-3.81), drug abuse 1.96 (1.19-2.77), hypertension 4.80 (3.26-7.06), pre-eclampsia 10.30 (8.26-12.84) and cesarean delivery 3.09 (1.21-7.86). Parity, body mass index, obesity, diabetes, infection, and migraine were not associated. Studies provided limited data to assess risk factors according to stroke timing, type and fatality.

### Discussion

Our findings improve current understanding of the relative contributions of different risk factors for pregnancy-associated stroke. However, our work highlights the very few existing studies in this area. The available studies assessed a limited number of risk factors, and many were similar to those known to increase stroke regardless of pregnancy. Studies including detailed risk assessment in relation to pregnancy, delivery and postpartum complications as well as women's background risks are needed. Additionally, future research should establish whether risk factors differ according to stroke type and time-period in relation to pregnancy.

## **16. BCUHB Stroke Care Questionnaire**

Marie McCarthy, Stroke Association

Dr Walee Sayed, Betsi Cadwaladr University Health Board

### **Introduction**

The survey was produced by BCUHB Stroke Coordinators and was derived from a BCUHB patient feedback form. It is used by the Stroke Association coordinator to gain feedback about a patients stay on the stroke unit in The Maelor, Glan Clwyd and Bangor hospital.

### **Method**

A paper document was taken on a home visit shortly after discharge. The stroke survivor is advised that it is anonymous and no names are provided. They are given the option to complete it independently or the coordinator can read the out the questions and tick the boxes on their behalf. It consists of eight tick box questions and an opportunity give comments on things that were done well or areas they would like to see improved.

### **Results**

From the snapshot of twelve months the majority completed for the Maelor gave positive feedback. Most felt their care was excellent with only a small number feeling it was poor. It highlighted a number of areas that could be improved.

### **Discussion**

Feedback is given to the stroke team at our monthly improvement meetings held on the stroke unit at the Maelor. Positive feedback is given as well as any complaints, where actions can be created and followed up. Stroke survivors are also made aware of how they can use the Community Health Council to investigate any concerns.

## **17. Morbidity Prevalence Estimate at Six Months Following a Stroke: A Cohort Study.**

Dr Jonathan Hewitt, Aneurin Bevan University Health Board  
Alexander Smith, Cardiff University

### **Introduction**

The aim of this All Wales study is to determine the prevalence of morbidity following a stroke, predictors of morbidity and trends using a 15 question Patient Reported Outcome Measure (PROM), cognitive and functional assessments.

### **Method**

500 participants will be recruited across Wales and England within 14 days following an admission to a stroke unit with an ischaemic or haemorrhagic stroke. Participants are assessed at baseline  $\leq 14$  days post stroke and subsequently at 90 ( $\pm 14$  days) and 180 ( $\pm 14$  days) post-stroke. At each time point a range of data will be collected relating to the following domains; demographic, routine clinical, patient-reported, cognitive status, emotional well-being and functional ability.

### **Results**

Outcome measures: The primary outcome is the prevalence of morbidity at six months following a stroke. Further analysis will consider temporal changes in the data between the baseline, 3 months and 6 month time points.

### **Discussion**

500 participants will be recruited across Wales and England within 14 days following an admission to a stroke unit with an ischaemic or haemorrhagic stroke. Participants are assessed at baseline  $\leq 14$  days post stroke and subsequently at 90 ( $\pm 14$  days) and 180 ( $\pm 14$  days) post-stroke. At each time point a range of data will be collected relating to the following domains; demographic, routine clinical, patient-reported, cognitive status, emotional well-being and functional ability. Trial status: Recruitment commenced in October 2018 with 19 sites open. Recruitment set to close in August 2019. As of 30th April 2019 245 participants are recruited.

## **18. The Feasibility of Incorporating Virtual Reality Mediated Repetitive Task Training for Upper Limb Rehabilitation Within the Stroke Rehabilitation Centre (SRC)**

Chris Rees, Claire Butterworth, Hannah Carpenter and Cath Partridge  
Cardiff and Vale University Health Board

### **Introduction**

Although it has been well established through a number of clinical trials, that the dose of upper limb rehabilitation is central to patient's recovery post stroke, the actual dose delivered within hospital settings is typically too low and often delivered too late to allow maximum recovery potential. NICE guidelines call for 45 minutes of upper limb rehabilitation per day, however studies have shown that on average patients spend less than 13% of their time undertaking therapeutic activity. The use of technology within rehabilitation is now becoming more prevalent, especially in research, due to it becoming more accessible and affordable, however the use of virtual reality is still not yet commonplace in clinical rehabilitation settings.

### **Method**

The MindMotion Pro (Virtual Reality system) was evaluated over a 3 month period (6/3/18 – 4/6/18) with 10 patients on SRC. There were no restrictions to patient inclusion, other than having enough cognitive ability to follow instructions on the visual display.

### **Results**

A total of 34 sessions were delivered using the Mindmotion Pro with an average active therapy duration of 18.4mins. As a single patient case study, 10 individual sessions were delivered with an average of 69 repetitions of upper limb movement achieved per session. Advantages and challenges to implementation have been explored and will be discussed on the poster.

### **Discussion**

The MindMotion Pro is a useful adjunct for increasing specific upper limb rehabilitation, however the ongoing challenge is how to deliver increased intensity of upper limb therapy within a discharge focused environment.

## **19. Improving activity opportunities for patients in an inpatient stroke rehabilitation ward**

Hannah Carpenter and Claire Butterworth  
Cardiff and Vale University Health Board

### **Introduction**

Evidence suggests that patients in rehabilitation settings spend a substantial amount of time alone, inactive, or sleeping. Low levels of physical, cognitive, and social activity in rehabilitation are associated with deconditioning, low mood, and a loss of independence. National audit tools for stroke measure compliance with standards of care but are ineffective at measuring 'activity participation'.

### **Method**

The Multidisciplinary team on the 38 bedded Stroke Rehabilitation Centre (SRC) have no capacity to provide additional opportunities for patients to be more active or attend social groups outside of therapy sessions. Thinking of innovative ways to provide a more enriched environment for patients is required. Various external agencies and the volunteer service of CAVUHB has been used to capitalize on activity and social time for patients to help improve mood, well-being and recovery.

### **Results**

Currently, patients on SRC can access: One-hour a week Rubicon Dance; One afternoon a fortnight music therapy session provided by a volunteer; One-hour a week art group provided by an ex-patient volunteer; Two afternoons a week with four volunteers providing social opportunities, bingo and games; 'InterAct' stroke support sessions with actors reading to patients; Linking with the Community Pay Back Scheme to develop the ward courtyard area; Developing use of volunteers as meet and greeters during visiting times; One session per week of interactive music sessions from Harmoni Cymru. Patient, carer and volunteer satisfaction has been recorded.

### **Discussion**

An additional 7 to 9 hours per week of structured activities and social opportunities are available to patients outside of therapy sessions as a result of MDT links with external agencies and volunteers. High levels of satisfaction have been reported by patients, carers and those providing the sessions.

## **20. The Application of the REX Bionics exoskeleton in Neurological Rehabilitation**

Claire Butterworth, Claire Guy and Jo Pearse-Jones  
Cardiff and Vale University Health Board

### **Introduction**

Cardiff and Vale UHB had the opportunity to trial a 'REX bionics exoskeleton' between January and May 2019 in three neurological rehabilitation specialties, stroke, spinal cord injury and brain injury. One of only four prominent exoskeletons available in the UK, the uniqueness of the REX is that it provides a very stable upright position to weight-bear, facilitating progress and enhancement of rehabilitation and exercise programmes safely.

### **Method**

The aim was to explore the scope this device has in neurological rehabilitation. Postural alignment for sitting, sitting to stand, standing and walking is the core of rehabilitating a patient's upright progress. This often will involve up to 4 staff until a patient has gained the control they need to progress with less support and the time this takes is variable. The REX can provide a safe standing position, also being dynamic, enabling safe weight bearing, core strengthening and upper limb function. The three specialties will audit the suitable patients during the trial period alongside case studies.

### **Results**

The three specialties have treated a variety of patients in the REX and documented changes during the trial period to help evaluate whether this utilises staff time efficiently, has beneficial outcomes and satisfaction and assists shorter length of stay by assisting achievement of patient goals. Three case studies are described from Stroke, Spinal Injury and Brain Injury Rehabilitation.

### **Discussion**

The outcome of the REX trial has given an indication on how this device can assist in improving patient outcome, efficient staff utilisation and potential change in length of stay, especially considering all three teams will be based on one hospital site, Llandough, in the future.

## **21. Stroke in young adults: quality of life and rehabilitation goals of young adults following stroke**

H JARVIS<sup>1</sup>, S BROWN<sup>1</sup>, R GROENEVELT<sup>2</sup>, M PRICE<sup>3</sup>, C BUTTERWORTH<sup>4</sup>, K JACKSON<sup>5</sup>, L WALKER<sup>6</sup>, N REES<sup>6</sup>, A CLAYTON<sup>7</sup>, N REEVES<sup>1</sup>

1 Research Centre for Musculoskeletal Science and Sports Medicine, Manchester Metropolitan University

2 Hywel Dda University Health Board, South Pembrokeshire Hospital

3 Powys Teaching Health Board, Newtown Hospital

4 Cardiff and Vale University Health Board, University Hospital Llandough

5 Betsi Cadwaladr University Health Board, Ysbyty Gwynedd, Bangor

6 Cwm Taf University Health Board, Keir Hardie University Health Park

7 Abertawe Bro Morgannwg University Health Board, Morriston Hospital

### **Introduction**

The affect a stroke has on the quality of life of young adults is relatively unexplored, and there are no rehabilitation guidelines that are specifically tailored for them that takes into account their aims post-stroke. The aim of this research study was to establish key themes of the difficulties faced by and rehabilitation goals of young adults who have had a stroke.

### **Method**

Participants who had experienced a stroke (18-40 years: n=6, 41-54 years: n=20, 55-65 years: n=15) were recruited from six health boards in Wales, UK. Data were investigated using interpretative thematic analysis of feedback from participants who were asked to complete a questionnaire asking them to name three things they find difficult and three aims they have since they had a stroke.

### **Results**

Two key themes of difficulties emerged: Independence and communication. Sub-themes of difficulties within independence included walking (walking fast, loss off endurance, walking outside and up/down stairs), and inability to complete activities of daily living (washing, dressing and cooking/preparing food). Sub-themes within communication included talking, writing and reduced concentration during a conversation. Regain independence and participate in social activities were key aims with sub-themes of these including return to work and to be able to "walk normally."

### **Discussion**

Understanding the effect of stroke on young adults' quality of life is critical to successful targeted rehabilitation and in enabling a greater proportion of individuals to return to work and participate in social activities.

## **22. The implementation of a group exercise session as a part of the discharge from hospital stroke rehabilitation programme**

Nia Rees

Cwm Taf Morgannwg University Health Board

### **Introduction**

A work based project attempting to decrease stroke survivors' sedentary behaviours, during the initial six weeks of their home based stroke rehabilitation programme by introducing a group based exercise session in the community.

### **Method**

A Physiotherapy led exercise group was set up and run once a week alongside the already set up home rehabilitation programme.

### **Results**

The patients that took part in this project not only reduced their sedentary behaviours but also improved their physical outcomes such as balance and timed walk test.

### **Discussion**

Getting the patient out in the community directly improved sedentary behaviours but also had a direct positive effect on motivation, mood and feeling of achievement. The patients involved also made positive behaviour changes in relation to smoking and alcohol consumption, which could have been down to advice giving and peer support

## **23. The role of Rubicon Dance Class on patient's mood in the Stroke Rehabilitation Centre**

Sereana Chima, Cardiff and Vale University Health Board

With assistance from:

Tabitha Mansel-Thomas and Alun Walters, Cardiff and Vale University Health Board

Anwen Davies, Rubicon Dance Group

Benjamin Jelley, Cardiff and Vale University Health Board

### **Introduction**

Post stroke depression is common and can occur in up to 30% of patients (Paolucci, 2008). Mood disturbance may also present as anxiety which can affect patient's mental and physical wellbeing and can limit functional recovery (Morris et al.,1993). A dance intervention was provided by a local community organisation, with an aim to increase patients' overall wellbeing.

### **Method**

Dance classes were held once a week for one hour. 20 patients rated their mood on a scale of 1-10 before and after each class, and informal questions were asked to gather qualitative feedback. If a patient attended 3 or more classes, a more in depth set of questions were asked.

### **Results**

The key themes from the qualitative data included: enjoyment of the music, increased social interaction and having the structure of a regular class to look forward to. There was a significant positive difference between the pre and post mood scores:  $t(29)=3.7364$   $p=0.0008$ . This shows there is a clear improvement in patients' moods before and after the dance class.

### **Discussion**

These results show that the dance class is clearly helping patients' moods, especially as all patients stated they would like to go again. The qualitative data was encouraging and supported the significant quantitative findings. It also emphasises the importance of third party interventions alongside hospital therapies. Whilst further data would need to be obtained to establish longer term impact on mood, preliminary data highlights the importance of this class in boosting mood in the Stroke Rehabilitation Centre.

## **24. Stroke Rehabilitation Centre (SRC) modified food and drink challenge: what did we learn?**

Tabitha Mansel-Thomas and Sereana Chima  
Cardiff and Vale University Health Board

### **Introduction**

Around 50% of people will experience some degree of swallowing difficulty (dysphagia) after a stroke (Stroke Association, 2018). Texture modification (such as pureeing food and thickening drinks) is a commonly used intervention to reduce risk of choking and aspiration in people with dysphagia (PWD). However, recent literature (O'Keeffe, 2018) has highlighted an increasing need to consider the wider implications texture modification may have on this population. The aims of the project were to increase awareness of the multifaceted impacts of modification, and of the International Dysphagia Diet Standardisation Initiative (IDDSI).

### **Method**

15 members of the SRC MDT participated in a twenty four hour challenge: to eat and drink only modified consistencies assigned to them by the Speech Therapy team. Quantitative and qualitative data was collated via feedback questionnaires. A thematic analysis of the qualitative data was undertaken.

### **Results**

91% of participants reported their knowledge of IDDSI improved following the challenge. 91% reported finding the process difficult. Several key themes were identified: negative impact on emotional wellbeing, the challenge of compliance, the value of choice, and promotion of person-centred care.

### **Discussion**

The challenge succeeded in increasing awareness of IDDSI and the wider impact dysphagia can have on patients and carers. Several participants described the experience as 'powerful'. Findings mirrored the recent literature: modification of food and drink should be considered carefully, ensuring information is provided regarding the rationale, risks and benefits, and ultimately respecting patient choice. A future consideration could be utilising this person-centred approach to MDT education in other aspects of stroke care.

## **25. Assessment of staff awareness of radiation dose and risks at Morriston Hospital**

Dr M.Gibril, Dr. Ayesha Ansari, Supervisor: Dr.P.Slade  
Swansea Bay University Health Board

### **Introduction**

Between 2008 and 2009, nearly to a quarter of a million CT scans were done in wales which are expected to increase by at least 30% in 2020. Appropriate use of radiology is vital in providing stroke services. Accurate knowledge of the risks of ionizing radiation when assessing the potential benefit of performing a radiological examination is vital not only for staff, but also for patients

### **Method**

The level of awareness among IR(ME)R practitioners in the neurology and stroke department was established through a questionnaire on the relevant radiation doses of common radiological procedures and whether they could make reasonable estimates of the increased relative risk of the associated radiation dose. They were then provided with a teaching session on the topic, following which, they were re-questioned to assess the impact of the teaching session.

### **Results**

25 practitioners were questioned (Ten from Stroke and fifteen from Neurology) Overall accuracy with answers was 47% Poor knowledge of: CT brain (16%), CT carotids (12%), CT intracranial vessels (8%) Results of the post-intervention impact will be available at the conference.

### **Discussion**

There is generally poor understanding of the risks of ionizing radiation in these populations – in particular with regards to CT imaging. This is concerning as stroke physicians and neurologists request a large number of these investigations. Interventions such as structured teaching sessions could improve this lack of knowledge

## **26. Outcomes of elderly people admitted to ICU with acute cerebral stroke**

James Orr, Htin Aung Sabine Grundler  
Cardiff and Vale University Health Board

### **Introduction**

Until recently, it was unusual to admit patients with acute cerebral stroke to the intensive care unit (ICU) for invasive ventilation. However, such admissions have become more common in recent years. We present the outcomes of patients aged over 65, admitted to the ICU of a tertiary neurosurgical centre, University Hospital of Wales over a five year period.

### **Method**

Using ICNARC data (Intensive care national audit and research centre), we established the initial indication for admission and outcomes including in-hospital and in-ICU mortality, morbidity and discharge dependency. Patients were stratified by WHO performance status prior to stroke, type of stroke, gender, length of ICU stay and pre-existing use of anticoagulants and antiplatelets.

### **Results**

A decline in mental status was the most common reason that patients with acute stroke who were admitted to the ICU, along with the need for intubation, largely for airway protection. Despite good performance status at admission, the majority of patients admitted to the ICU for invasive ventilation fail to gain a significant survival or morbidity benefit.

### **Discussion**

This poses interesting questions regarding how we select patients for admission to critical care, and suggests it is difficult to predict outcomes by using these measures of co-morbid status in the patients with acute cerebral stroke. A large number of patients with ICH were prescribed anticoagulation or antiplatelets prior to ICU admission, this highlights the importance of risk and benefit analysis before prescribing them in this age group.

## **27. Automatic lesion detection and segmentation in sub-acute stroke survivors using artificial intelligence**

Azam Hamidinekoo, Maryam Afzali, Reyer Zwiggelaar, Federico Villagra Povina, Otar Akanyeti

### **Introduction**

Anatomical and functional changes in the brain can be captured by Magnetic resonance imaging (MRI), which facilitates detailed assessment of stroke severity (e.g. by measuring the location and volume of the damaged area, lesion). In this study, we propose an AI based computer-aided approach for automatic lesion detection and segmentation in sub-acute ischemic stroke survivors.

### **Method**

Our approach is based on training a conditional generative adversarial network (cGAN) using a publicly available data set. The data set includes multi-modal MRI sequences from 28 sub-acute ischemic stroke cases and is part of the Ischemic Stroke Lesion Segmentation (ISLES) challenge presented in the 2015 International Conference on Medical Image Computing and Computer Assisted Intervention. The segmentation performance is evaluated using Dice Score (DC) and Hausdorff Distance (HD), measuring overlap and contour matching between predicted and actual lesion areas, respectively.

### **Results**

Preliminary results on the training dataset show that on average cGAN is able to detect stroke lesions accurately in more than 80% of the cases (24/28). Among these cases, DC and HD are 0.520.33 and 36.081.52, respectively. The model is currently under evaluation by the ISLES review committee using a benchmark data including 36 unseen cases.

### **Discussion**

Future work includes characterization and classification of the segmented regions to differentiate between core (irreversibly damaged brain tissue) and penumbra regions (surrounding brain tissue at risk). Our ultimate goal is to develop an automatic MRI data analysis pipeline to assist clinicians in decision making, stroke outcome prediction and management.

## **28. Automatic and objective gait assessment using wearable technology**

Arshad Sher, Luke Ian Lunn, Einar Dogger, Brandon Stennett, David Langford, Federico Villagra Povina, Otar Akanyeti  
Aberystwyth University

### **Introduction**

Automatic gait assessment using wearable sensors has key benefits in stroke care. In contrast to observer-rated clinical measures, wearable sensors have the potential to provide multi-dimensional and high-resolution data to quantify gait impairments objectively and monitor recovery over time.

### **Method**

We created a mobile app to simultaneously track hand and body movements using a standard smartwatch and a mobile phone. So far, we have tested our system on 35 healthy community dwelling adults (age >65). The subjects performed Time Up and Go (TUG) test, consisting of series of movements associated with daily activities of living (sit to stand, walk, turn and stand to sit). To evaluate whether cognition plays role in TUG performance, the subjects were also asked to participate in Trail Making (TM) A and B tests, assessing visual search ability working memory and attention switching.

### **Results**

Our preliminary results show that average completion times for TUG and TM tests were  $8.5 \pm 2.3s$ ,  $31.2 \pm 12.1s$  (A) and  $83.6 \pm 50.9s$  (B), respectively ( $\pm$ standard deviation). There was a strong correlation between TUG and TM completion times; one increased with the other ( $P < 0.01$ ). Our initial investigation on few data sets also suggest that TUG movements can be recognized successfully by analysing acceleration and angular velocity of body movements.

### **Conclusion**

Our results provide a reference against which we will compare the performance of hemiparetic stroke survivors. Future work also includes quantifying body movements in more detail. The long-term goal is to develop a smart gait monitoring system which can assist clinicians in personalized stroke management.

## **29. Stroke in Childhood Pathway**

Dr A Saxena, C Thirsk, Cardiff and Vale University Health Board

Dr M Barber, Aneurin Bevan University Health Board.

Dr J Natarajan, Cwm Taf Morgannwg University Health Board

Dr D Ratnasinghe, Hywel Dda University Health Board

Dr G Thomas, Swansea Bay University Health Board

Dr P Juhari, Betsi Cadwaladr University Health Board

Dr Y Bhat, Aneurin Bevan University Health Board

### **Introduction**

RCPCH published recommendations for the management of Paediatric Stroke in May 2017. This clinical guideline aims to provide directions about how stroke care should be provided, covering the whole care pathway from identification, diagnosis and management of children and young people with arterial ischaemic stroke and haemorrhagic stroke until their transition to adult care.

### **Method**

Since 2018 the Paediatric neurology team, based in Children hospital for Wales, Cardiff, have been leading a national programme supporting Health Boards across Wales to initiate a stroke care pathway for in children and young people, in line with NICE guidance. This is being done with close collaboration with the existing adult stroke service in each health board. The project aim is to develop a network of centres across Wales who would work closely with the adult stroke services in each health board. The focus has been on sharing the guideline, education for professionals, and raising awareness that stroke can affect children and should be managed with a similar urgency as adult stroke is managed. The timely recognition of childhood stroke across Wales using the Guideline will make sure these children receive fast and effective treatment and care, so they have the best chance of returning to a healthy childhood.

Results: N/A

Discussion: The poster will outline the key milestones for the successful delivery of the project and describe the audit to evaluate the implementation of the recommendations of the guideline.

## **30. 10-10-10 Think Thrombolysis! Improving Thrombolysis Delivery at the University Hospital of Wales**

Mastafa, H., Pitchforth, D., Turner, N. and Hughes, T.  
Cardiff and Value University Health Board

### **Introduction**

Following the NHS Wales Delivery Unit's All Wales Thrombolysis review, Cardiff and Vale University Health Board's stroke team identified a number of improvement opportunities in the provision of stroke thrombolysis. In October 2018, thrombolysis rates were 9.3% with a median door to needle time of 95 minutes. There was variation between in- and out-of-hours services.

### **Method**

As part of the Stroke Services Transformation Programme, a Thrombolysis Improvements Task and Finish Group was set up. Actions included: • Developing a "10-10-10 Think Thrombolysis" drill protocol, introduced using PDSA cycles; • Reviewing roles and responsibilities in a thrombolysis call; • Reorganisation of out-of-hours bleep cover to include neurology core medical trainees; • Reviewing training provision for all doctors involved in thrombolysis

### **Results**

By April 2019, median door to needle time reduced to 55 minutes and thrombolysis rates were at 10.9%. Feedback from the stroke team included the "10-10-10" drill raising awareness of the urgency of thrombolysis in the emergency department, with improved communication between the stroke team and emergency department colleagues. Weekly training sessions with the neurology core medical trainees have been established and wider medical training is planned.

### **Discussion**

Actions implemented in this improvement work have demonstrated significant reduction in the variation of our practice and in benefits to patients. Engagement with key team members has been crucial to the success of this work; these relationships need further investment through training and feedback to ensure the improvements are sustained over time.

### **31. Early Mobilisation after Thrombolysis: Exploration of Current Physiotherapy Practice.**

Turner, N, Cardiff and Vale University Health Board  
Jones, K, Cardiff University

#### **Introduction**

Thrombolysis is a mainstream treatment for ischaemic stroke in hyperacute stroke settings. There is no evidence based guidance for physiotherapists related to early mobilisation (<24 hours post stroke) following thrombolysis. This exploratory study investigated current physiotherapy practice of early mobilisation after thrombolysis in hyperacute settings.

#### **Method**

A qualitative study with interpretative paradigm, using a phenomenological methodology. Semi-structured interviews were conducted with a purposive sample. Thematic analysis was managed by NVivo software and triangulated by peer and member checks. A reflexive diary was maintained. The study aligned with all research governance processes.

#### **Results**

Data saturation was reached after 14 interviews. Participants ranged in experience and frequency of exposure to thrombolysis. All reported experience of early mobilisation after thrombolysis, with the amount varying substantially. There was no report of harm or serious incident. Main themes included internal and external drivers for implementation, perceived benefits and harms of early mobilisation after thrombolysis and its management. Current practice was described as cautious with implementation based on risk assessment and risk management, with a strong focus on the avoidance of falls.

#### **Discussion**

Early mobilisation after thrombolysis is currently practiced by physiotherapists in hyperacute settings and in this sample, no serious incidents are recorded. In the absence of evidence based guidance, physiotherapists act autonomously by reducing risk. Common factors identified for inclusion in a risk assessment prior to early mobilisation after thrombolysis could form the basis of an initial expert opinion guide. However further research is required to develop evidence based guidelines to support physiotherapy practice.

## **32. Paediatric strokes in South Wales: a case series**

Anna klimach, Prerna Choudhury, Nikit Shah, Anurag Saxena

### **Introduction**

RCPCH launched guidance on Paediatric stroke in March 2017. We present a series of paediatric patients who presented with stroke following this publication. We audited this group of patients against the key standards of the RCPCH guidance.

### **Method**

We retrospectively analysed cases between April 2017 and April 2019. We identified cases from a neurology database and audited acute management using RCPCH guidance 2017 as standard.

### **Results**

We identified 11 children with stroke in the last 2 years. Ages ranged from 21 months to 16 years with a mean age of 8 years at presentation. 7 children had haemorrhagic stroke and 4 had ischaemic stroke. The majority involved the anterior cerebral circulation (10/11). Underlying aetiology was identified in 6 patients, 5 of whom had haemorrhagic stroke. 2 of the patients died. Only 2 out of 11 patients had brain imaging within an hour of presentation. Only one patient was eligible for thrombolysis, however due to contraindication she underwent thrombectomy.

### **Discussion**

Stroke pathways are well developed in adult services. Due to the rarity of stroke in childhood and challenges with recognising symptoms, treatment is often delayed. Symptoms in children need a high index of suspicion. The findings of this audit support the development of an all Wales paediatric stroke pathway. We aim to facilitate activation of the stroke pathway when children present with the FAST symptoms. We also hope to increase awareness of stroke in childhood.

### **33. A longitudinal study of anticoagulant prescribing in patients with Atrial Fibrillation in Wales**

Fatemeh Torabi (1,2), Ashley Akbari (1,2), Daniel Harris (1), Ronan Lyons (1,2), Mike Gravenor (1), Julian Halcox (1,2)

1: Swansea University 2: Health Data Research UK Wales and Northern Ireland

#### **Introduction**

Anticoagulation (AC) reduces the high risk of stroke in patients with Atrial Fibrillation (AF). We have developed algorithms to monitor patients' AC status and stroke risk scores based on electronic health records (EHR's) in order to create a dynamic prediction model for evaluation of the impact of AC treatment on clinical outcomes at an individual and population level.

#### **Method**

We identified AF and stroke risk factors in Welsh longitudinal primary and secondary care datasets held in SAIL (Secure Anonymised Information Linkage databank). Temporal trends of AF prevalence, CHA2DS2-VASC scores and anti-thrombotic therapy prescriptions were compared over the study period of 2012 to 2018.

#### **Results**

The prevalence of AF increased from 51,492 to 64,852 between 2012-18, representing a rate of increase of  $0.9 \pm 0.1\%$  per quarter. The mean CHA2DS2-VASC of the study population increased from 3.0 to 3.8. The numbers (%) of the population with CHA2DS2-VASC  $\geq 2$  who were treated with anticoagulants increased over study period from 18,578 (36.1 %) to 33,448 (51.6 %) , representing an increase of  $2.3 \pm 0.2\%$  per quarter over the study period. Numbers (%) treated with AP therapy alone decreased from 10,792 (21.0%) to 3,839 (5.9%).

#### **Discussion**

The proportion of Welsh patients with AF receiving appropriate thromboembolic prophylaxis increased substantially over the period 2012-18. This was on the background of increasing numbers of patients with AF with increasing thromboembolic. Risk. These data will be used to create a multivariable model to evaluate the impact of changes in AC treatment on incidence of AF-associated adverse outcomes in the Welsh AF population.

### **34. Case study evaluating the use of assistive technology and virtual reality (VR) treadmill training for gait re-education in a chronic stage stroke patient**

Sarah Harling, Jakko Brouwers  
Morrello Clinic  
Newport

#### **Introduction**

Gait re-education for improved functional mobility is often a patient's highest priority post Stroke. Intensive rehabilitation past 1 year of Stroke is not routinely provided by statutory services due to a belief in a plateau of functional improvements. The Objective of this study is to evaluate whether significant gait changes and functional improvements can be made in chronic Stroke using Motek C-Mill Virtual Reality (VR) treadmill training with Augmented Feedback (AF) and other assistive technology.

#### **Method**

Retrospective single case study of a right hemiplegic patient, 37 years old, who suffered brain haemorrhage 3 years ago. On initial presentation mobilising short distances indoors with elbow crutch, AFO, knee hyperextension, leg circumduction, severe right sided sensory impairment. Treatment included: Bioness L300 FES system, initial gait re-education with a TAP splint progressed to custom lycra shorts, intensive Motek C-Mill VR treadmill training using gait adaptability programmes with AF for sensory impairment. Evaluation of treatment records with Motek C-Mill force-plate recordings of step length, stance time, speed, distance, SiliconCoach software gait video analysis.

#### **Results**

Retrospective single case study of a right hemiplegic patient, 37 years old, who suffered brain haemorrhage 3 years ago. On initial presentation mobilising short distances indoors with elbow crutch, AFO, knee hyperextension, leg circumduction, severe right sided sensory impairment. Treatment included: Bioness L300 FES system, initial gait re-education with a TAP splint progressed to custom lycra shorts, intensive Motek C-Mill VR treadmill training using gait adaptability programmes with AF for sensory impairment. Evaluation of treatment records with Motek C-Mill force-plate recordings of step length, stance time, speed, distance, SiliconCoach software gait video analysis.

#### **Discussion**

Evaluation of treadmill force-plate data shows increased speed, step length, stance time, distance and steps taken. SiliconCoach analysis demonstrates overall improvements in posture and gait pattern using the FES system. The patient's functional goal of mobilising 5km unaided was also achieved. Possibly the AF technology allowed this patient with sensory deficits to improve further. Results from this single case review highlight that intensive practise with VR / AF treadmill training using assistive technology enhances motor learning, leading to significant functional gait improvements.

## **35. Enhancing patient-centred care in acute stroke MDT goal planning**

Sarah Cleary  
Bronglais Hospital  
Hywel Dda University Health Board

### **Introduction**

Our acute stroke team invite individuals and families to attend an 'MDT meeting' in the first week following admission. MDT meetings focus towards care-planning, diagnosis and prognosis. Therapeutic rehabilitation is addressed in weekly 'MDT goal planning meetings'. To inform MDT goal planning, multi-disciplinary professionals communicate separately with individuals and/or families. Where individuals, are unable to participate, such as, where an individual presents with aphasia, goals are agreed with individuals' best interests in mind; and, family are not consistently included. National stroke guidelines, and current practice standards, all endorse person-centred approaches to care and rehabilitation, as key to improving individuals' outcomes. Collaboratively as an MDT, we have identified a service improvement initiative to enhance patient-centred care in our MDT goal planning.

### **Method**

A qualitative approach through:- benchmarking our MDT goal planning process against other acute stroke units; monitoring therapeutic treatment times; measuring length of acute stay; and gathering staff perspectives. This initiative will be held within a plan, do, study, action (PDSA) cycle.

### **Results**

We anticipate that including individuals and/or families in their first MDT goal planning meeting, will help better understand what individuals would value working towards in their rehabilitation. Providing person-specific anchors for MDT professionals in future MDT goal planning meetings.

### **Discussion**

Scheduling MDT goal planning meetings that include individuals/families require dedicated MDT time. Qualitative outcomes require careful reasoning in-balance to care needs of individuals, and service time pressures. Framing this initiative against the PDSA cycle enables future review and developments.

### **36. Talking about mood in acute stroke care: preventative strategies to help equip individuals and families to sooner identify if mood becomes a problem during and post acute care**

Sarah Cleary  
Bronglais Hospital  
Hywel Dda University Health Board

#### **Introduction**

Anxiety, depression and emotionalism are understood to be mental health conditions that detrimentally impact upon individuals' bio-psycho-social engagement in everyday living and connectedness with others. Mood disorders are regularly diagnosed secondary to stroke. It is recognised that where individuals are more engaged in stroke rehabilitation, that longer term prognosis is improved. Thus, suggesting that timely diagnosis and treatment of mood disorders may improve the overall outcomes for individuals.

#### **Method**

This service improvement project will be shaped by a plan, do, study, action (PDSA) cycle. A poster presentation aims to illustrate this service improvement project, including:- key details of the discussion points held with patients and families, and notes from an accompanied concise information leaflet; relevant skill growth relating to mood within the multi-professional team. Outcome measures will include a review of assessment methods, diagnosis and treatment in this acute stroke unit, prior to, and during this project; and staff skill set and satisfaction surveys.

#### **Results**

This service improvement project focuses towards improving how health professionals working in an acute stroke team talk with individuals and families about mood in stroke. It is anticipated that equipping individuals and families to identify warning signs, and knowing how to respond, will enhance coproduction that could help improve timely recognition, assessment, treatment and overall outcomes for individuals.

#### **Discussion**

Mental health is a separate specialism to stroke. Indicating that a challenge for this project will be to achieve and maintain standards of care when assessing and treating mental health conditions within a specialist stroke service.

### **37. Effectiveness of 'Code Stroke' calls for stroke thrombolysis**

Dr V Singh (Lead), Dr H White, Dr H Alosaimi, Dr A Milligan, Supervising Consultant: Dr D Mukhopadhyay  
Princess of Wales Hospital, Bridgend

#### **Introduction**

In order to improve the efficacy of stroke thrombolysis service our District General Hospital operates 'Code Stroke' calls. Code stroke-1 call aim to inform the concern service provider about the potential stroke thrombolysis opportunity. No local data was available to investigate the effectiveness of these calls and whether this concept is helping us providing the high standard care or just a gimmick.

#### **Method**

We performed a one-year retrospective study where we looked in to all the code stroke 1 calls activated between September 2017 and August 2018 and analysed them closely for the various standard as per RCP and NICE guidelines for stroke thrombolysis.

#### **Results**

Out of total 1200 Code Stroke calls, 235 were code stroke-1 calls (20%). 223 had all the required date and were analysed. 53 out of 223 received thrombolysis (24%). Average onset to door time was 85 minutes, door to CT time was 13.5 minutes and CT to thrombolysis time was 53 minutes. Majority of then 89% have no complications, minor 11% have complications related to haemorrhage. Average hospital stay was 14 days, Majority 90% (48) were discharged home and 6 % (3) died in the hospital.

#### **Discussion**

This study proved that the high standard of care received by the stroke patients admitted to our hospital. This also proved that code-stroke calls do works and works effectively. To make even more effective we are going to recommend the changes to involve the duty radiographer and Radiology consultant on call in to this code stroke system.

### **38. Prevalence and Outcome of Acute Stroke Patients with AF, a comparison with non-AF group.**

Dr V Singh(Lead), Dr H White, Dr H Alosaimi, Dr A Milligan, Supervising Consultant: Dr D Mukhopadhyay  
Princess of Wales Hospital, Bridgend.

#### **Introduction**

AF is the most common rhythm disorder in Wales and one of the three recognised risk factors to develop the stroke and it increases the risk to develop the stroke by fivefold. AF related stroke will likely to have worse outcome with high mortality and morbidity.

#### **Method**

We have done a retrospective one-year study to find out how many of the total stroke patients admitted within the thrombolysis window were related to AF. We also investigated the total length of their stay as compared to non-AF stroke patients and outcome.

#### **Results**

42 (19%) out of total 223 (code Stroke-1) patients admitted to our hospital between September 2017 and August 2018 had AF diagnosis on admission. 29 (69%) of them were started on anticoagulation on discharge, 11 have contraindication for anticoagulation and 2 (5%) have no clear explanation. Average length of stay for these patients were 18 days as compared to 11 days for non-AF related stroke, they also performed worst as only 29 (69%) were discharged home as compared to 88% non-AF related stroke. 4 (9.5%) were discharged to care home as compared to only 5% in non-AF group, 8 (19%) died as compared to 5.6% among non-AF related stroke group.

#### **Discussion**

As expected, our study has proved that AF related stroke have worst outcome as compared to non-AF related strokes. We emphasised the national guidelines that all the new AF patients should promptly be assessed for the risk of stroke to prevent the development of the stroke in the future.

### **39. Fast Brain MRI Protocol: Use of limited-sequence Brain MRI to confirm the diagnosis of stroke and identify 'Stroke Mimics' after negative initial neuroimaging following stroke thrombolysis**

Dr V Singh (Lead), Dr H Alosaimi, Dr H White, Dr A Milligan, Supervising Consultant: Dr D Mukhophadyay  
Princess of Wales Hospital, Bridgend  
Cwm Taf Morgannwg University Health Board

#### **Introduction**

Various studies have shown that a significant proportion of patients presenting as acute ischaemic stroke and thereby receiving stroke thrombolysis may have 'Stroke Mimics'. Due to the time constrain in differentiating the true stroke from stroke mimics and limited availability of the timely MRI head made it difficult to exclude.

#### **Method**

We evaluated all acute ischaemic stroke patients receiving thrombolysis in a DGH over a period of 12 months. All thrombolysis patients received a routine CT Head 24 hours after receiving thrombolysis. Those patients with negative neuroimaging for an infarction received MRI Brain.

#### **Results**

53 patients received stroke thrombolysis in the 12-month period. Total of 14 out of 53 patients (26%) were neuroimaging negative (CT) ended up having MRI of their head. Out of this 14 thrombolysed but initial neuroimaging-negative 6 patients (11% of total thrombolysed cases) were noted to have DWI-negative MRI Brain scan and hence identified as 'Stroke Mimic'. Out of 14 thrombolysed but initial neuroimaging-negative cases 64% (9 out of 14) were confirmed to have stroke after MRI scan and 36% (5 out of 14) were negative for any recent infarction.

#### **Discussion**

In our study we noticed that majority of patient with suspected acute ischaemic stroke and thereby receiving stroke thrombolysis were true stroke. Only 11% of thrombolysed stroke were confirmed as 'Stroke mimic'. Unless a 'Fast Brain MRI' scan protocol is readily available it would not be possible to completely exclude the stroke mimics as there is always anxiety that we might deny the thrombolysis to the genuine patients.

## **40. Expansion of Stroke ANP Team at NBT**

Lucy Austin  
North Bristol NHS Trust

### **Introduction**

Our aim at NBT is to make our stroke thrombectomy team a 24 hour service. With this, work load has increased for all those within the service. In order to facilitate this, we have expanded our stroke ANP team, so that it can release time for the stroke consultants' and registrars' to concentrate on ward patient care and other commitments.

### **Method**

Our role has expanded within the TIA clinic and we now see patients 7 days a week including over weekends and bank holidays. Our role includes taking a history, performing a neurological examination and interpreting investigations. As the service has expanded, we have avoided delays in TIA patient appointments. Therefore cerebral vascular stroke prevention treatment has been started with NICE guideline recommendations.

The ANP plays a fundamental role in the Thrombectomy service and has enabled North Bristol to perform the 3rd largest number of thrombectomy procedures in the country despite only running 8am till 5pm, 5 day a week service. The ANP is involved not only in the logistical movement and transfer of patients but also care following the procedure up to 10pm.

### **Results**

The ANPs have taken a lead in improving SSNAP results and recently targeted mood and cognition screening. We recently improved our compliance results from 13% to 80%.

The role of the ANP is continually developing and expanding as the service expands in order that we provide the best service possible for our patients.

### **Discussion**

The role of the stroke ANP within an expanding service.