

# Thrombosis

## INNOVATION AWARDS 2012



Supported by



Boehringer  
Ingelheim

UK/DBG-121563b Date of preparation December 2012

Copyright © Hayward Medical Communications 2013. All rights reserved. No unauthorised reproduction or distribution. For reprints or permissions, contact [edi@hayward.co.uk](mailto:edi@hayward.co.uk)



The fourth *Thrombus* Innovation Awards were held at Chandos House in London on Tuesday 20 November 2012. *Thrombus* is now entering its 17th year of publication and

continues to provide a multidisciplinary educational update for clinical staff providing haemostasis and anticoagulant services. This year's awards saw a large number of applications from primary and secondary care, reflecting the changing models of service delivery and the engagement in oral direct inhibitors. As always, the judges have sought novel ideas that can be applicable to services on a wider scale. My thanks go to all who took the time and effort to apply to the awards, of which five teams were invited to attend the ceremony; two were highly commended and three received prizes of £1,000, £2,000 and £5,000.

The ceremony is always an exciting experience and it was no different this year. I am grateful to all those who contributed, particularly this year's guest lecturer, Mary Murray, Anticoagulation Nurse Specialist at Alder Hey Children's Healthcare Hospital, Liverpool, for her excellent presentation on 'Warfarin and children'. I would also like to thank the *Thrombus* Editorial Board, who formed the judging panel, for their time and contribution in making the difficult decisions around the short list for awards. Abstracts of the successful entries are included in this supplement.

It is encouraging to see that many of the applicants from this year had applied for the first time and I would encourage others to apply in the future. Finally, I would like to thank all my colleagues, many of whom have been on the Editorial Board for *Thrombus* for several years, for their continued support and enthusiasm. The rate of change and innovation has never been so great, with the future prospect of safer and more effective delivery of services. We hope to continue to provide you with practical and up-to-date information in the field of Thrombosis.

**Peter Rose**, Editor

## Winners and highly commended entries

### 4 1st place

Prevention of embolic stroke from atrial fibrillation through mass education

*Raigmore Hospital, Inverness*

### 5 2nd place

Using radiological records to identify positive VTE events, providing real-time feedback to clinicians

*Plymouth Hospitals NHS Trust*

### 7 3rd place

GP Care Community DVT Service

*GP Care UK Limited, Bristol*

### 8 Highly commended

Rapid access thrombosed arteriovenous fistula salvage pathway (**F**ailed **A**ccess **S**alvage **P**a**T**hway) **FAST**

*Manchester Royal Infirmary*

### 8 Highly commended

Development of 24-hour, seven-day thrombolysis services in acute stroke

*Shropshire and Staffordshire Heart and Stroke Network*

*Thrombus* and the *Thrombus* Innovation Awards are supported by an educational grant from Boehringer Ingelheim Ltd

Published by Hayward Medical Communications, a division of Hayward Group Ltd, The Pines, Fordham Road, Newmarket CB8 7LG.

Copyright © 2012 Hayward Group Ltd. All rights reserved. Printed by Williams Press Ltd.



■ Mary Murray delivers her guest lecture

■ The team from Shropshire and Staffordshire Heart and Stroke Network receive their certificate for their highly commended project



■ Guests gather for a champagne reception before the *Thrombus* Awards ceremony



■ The team from Manchester Royal Infirmary receive their certificate for their highly commended project

ALL PHOTOGRAPHS: ROBBIE BECOMB

## 1st place

### **Project:** Prevention of embolic stroke from atrial fibrillation through mass education

*Raigmore Hospital, Inverness*

**Project lead:** Charles Bloe

**Team members:** Shona Fraser and Stephen Leslie

**One in four individuals aged over 40 years will develop atrial fibrillation (AF) and it is responsible for 15% of all strokes. AF-related stroke has a 30-day mortality of 25% and a one-year mortality of ~50%. Patients that suffer an AF-related stroke are more likely to be disabled as a consequence and they are also significantly more likely to go on to develop dementia.**

AF can be difficult to detect as 40% of chronic AF patients are unaware that they have it. Until their cardiac arrhythmia is detected, they remain at risk of developing embolic stroke. Tragically, for many, the first time their AF is detected is when they are admitted with an embolic stroke.

The Stroke Alliance for Europe study in 2011 showed that interpretative electrocardiogram (ECG) software missed 16.7% of AF cases.<sup>1</sup> It was concluded that many primary care professionals cannot accurately detect AF on an ECG, and interpretative software is not sufficiently accurate to circumvent this problem.

The primary objectives of this project were to:

- Raise awareness of the link between AF and embolic stroke
- Improve opportunistic diagnosis of AF and encourage early risk assessment, onward referral and implementation of evidence-based treatments to reduce the risk of embolic stroke
- Find a mechanism to take this message to large numbers of healthcare professionals across multidisciplinary healthcare settings.

### **Innovation**

It was self evident that prevention of AF-related embolic stroke would need to be underpinned by provision of evidence-based education. Equally, we were aware of the time constraints on the clinical workforce and the widespread dispersion of key staff across different healthcare disciplines. This, more than anything, influenced our methodology. Offering traditional face-to-face educational forums was unlikely to be efficient.

Our project team proposed that we embed the key educational messages within an innovative interactive e-learning programme, to be made available free of charge to all healthcare professionals. This would enable 'mass education' and compliance with Continuing Professional Development (CPD) requirements of healthcare professionals. Our objectives were to offer this educational programme to all medical, nursing and allied healthcare professionals, predominantly within the UK.

We utilised contacts at Royal College of Nursing Publishing, who agreed to alert healthcare professionals across the UK, and beyond, to the availability of this programme via their suite of healthcare journals. (Over 100,000 total weekly subscribers across 11 journals.)

The programme content was authored by the project team and reflects the current evidence base from national guidelines, such as those from the National Institute for Health and Clinical Excellence and the Scottish Intercollegiate Guidelines Network.

A time scale of nine months was set to complete the project, to include: authoring, peer review, graphics and animations acquisition, professional narration, validation and learning management



system (LMS) testing. The project went live in May 2011, two months ahead of schedule.

### Results

This programme was submitted, and subsequently approved, for independent accreditation through the Royal College of GPs EPASS mechanism. It was launched in May 2011, via an advertising platform in *Nursing Standard*, the UK's leading nursing journal.

In the first 12 months a total of 6,000 healthcare professionals finished the programme and received a CPD certificate on successful completion of the final assessment. The 'performance rating' of the course has been consistent, at approximately 94%. New registrations continue at a rate of about 400 per month. The course has achieved its primary objectives by providing CPD to an incredibly large number of people, who are now better placed to detect AF and, thereby, prevent disabling and fatal embolic strokes.

As professionals within NHS Highland developed the course there was, naturally, a more concerted campaign in this geographical area to highlight its availability. In our own elective AF cardioversion service we have seen the same number of AF patients referred in the first six months of 2012 as we had in all of 2011. This may be attributable to improved detection and referral as a consequence of improved education.

### Sustainability

This educational programme remains available free of charge to all users. It sits on an LMS that is easily accessible, has already provided large scale CPD and is on track to have 10,000 users within the next six months. It is an invaluable tool in helping detect AF and prevent embolic stroke.

### Additional comments

The project group that developed this successful programme all deal with AF patients in their daily work. They have all witnessed the profound disablement that AF-related stroke victims, and their families, have to live with. We were delighted that 6,000 healthcare professionals accessed this programme in the first 12 months and that we are on target for 10,000 users very soon.

We know that there are patients out there who have had their AF detected earlier as a consequence of the skills gleaned from the course. The tragedy of AF-related stroke has been avoided as a consequence. This award will bring the programme to the attention of even more people and further reduce the risk of AF-related embolic stroke. This course can be accessed at [www.cb-training.com](http://www.cb-training.com) ■

#### Reference

Mant J, Fitzmaurice DA, Hobbs FD et al. Accuracy of diagnosing atrial fibrillation on electrocardiogram by primary care practitioners and interpretative diagnostic software: analysis of data from screening for atrial fibrillation in the elderly (SAFE) trial. *BMJ* 2007; **335**: 380.

# 2nd place

## Project: Using radiological records to identify positive VTE events, providing real-time feedback to clinicians

*Plymouth Hospitals NHS Trust*

**Project lead:** Tim Nokes

**Team member:** Huw Rowswell

**Following the introduction of a venous thromboembolism (VTE) prevention team at Plymouth Hospitals NHS Trust, a reliable method was required to identify VTE events diagnosed within the Trust. After identification of positive VTE events, the plan was to decide which of these satisfied the criteria for hospital-acquired thrombosis (HAT), by performing a root-cause analysis (RCA). This determined whether risk assessment (RA) for VTE had occurred and whether the thromboprophylaxis (TP) being used was appropriate.**

Some organisations have used coding to collect this information. However, this is a retrospective process, so positive events would not be identified until patients have been discharged, making real-time feedback of such events difficult. There are also different codes associated with VTE and it is difficult to differentiate between acute and chronic events.

The trust computed radiological information system records all radiological investigations undertaken, including the date of investigation and the referring physician. Reviewing targeted scans for VTE would provide the accurate real-time VTE outcome data required. To utilise this information, it was necessary to work with the radiology department to enable access to the system. The Trust patient information management system (PIMS) was required to identify which VTE cases were associated with a previous or existing hospital stay, thus qualifying as HAT.

### Innovation

Radiological records were chosen to collect this VTE outcome data. The hospital covers a large geographical area and patients with suspected VTE events are referred from a large catchment area. Fortunately, Derriford is the only hospital covering

this area and, to our knowledge, there are no Doppler ultrasound scanners in the vicinity. Therefore, we are fairly confident that the VTE outcome data is very accurate.

The methodology consisted of reviewing all targeted investigations from the previous day or weekend to identify positive findings. These were then cross-checked against the PIMS to ascertain whether they met the criteria for HAT events. All positive events (HAT and non-HAT) were then investigated with some basic data collection, reviewing risk factors, D-dimer level and presenting symptoms. The HAT events received a basic RCA, but including data such as RA, appropriateness of TP (including missed doses) and mechanical TP. CT scan data were also searched to uncover any incidental finding of VTE events, using keyword search terms: 'deep vein thrombosis' and 'pulmonary embolism'.

Therefore, the population included in this innovative search consisted of both targeted investigations and incidental findings of all patients with a positive diagnosis of a VTE event.

## Results

In 2011, 4,660 targeted investigations were reviewed, of which 746 were positive for VTE events, giving a pick-up rate of 16%.

This innovation has improved early, and real-time, identification of VTE events, meaning that they can be investigated while notes are easily available and treatment is ongoing. Information on the HAT events is collected, looking primarily at whether RA was undertaken, appropriate thromboprophylaxis was given (mechanical and/or chemical) and whether errors or omissions are identified (inappropriate TP). Incident forms are then raised, in the latter cases.

Feedback is given to clinicians concerning HAT events identified within their patients. This is particularly important if patients present

following discharge, as the VTE event is often treated by a different specialty. Monthly reports are produced on all HAT events by specialty, identifying any patients who did not receive appropriate TP. In addition, an annual report is produced, highlighting HAT by specialty, expressed as a percentage of the number of admissions treated in that specialty over the year. This identified neurosurgery and cardiac surgery as experiencing the greatest number of HAT events, expressed as a percentage of the patients treated in their services. Such information was used to target those areas to improve TP and RA, resulting in a reduction in 2011, compared with the previous year.

The VTE outcome metrics produced in this innovative way have had a huge impact on both appropriate RA, as well as TP over the entire hospital. While the commissioning has supported RA for the CQUIN payment framework initiative, our ability to give real-time feedback on VTE events has improved the Trust RA rate to over 90% of patients admitted. It has also impacted on the number of HAT events that did not receive appropriate TP, from 26 cases in 2010, to only 12 in 2011.

The improvements seen in appropriate RA, coupled with suitable TP, would be expected to lead to a reduction in the number of HAT events in total and, particularly the number associated with inappropriate prophylactic treatment.

Any reduction in VTE would also provide cost savings, as the national tariff quotes an average of £1,000 for DVT treatment and £2,000 for treating pulmonary embolism (PE), as well as additional costs that may be needed to treat cases of post-thrombotic syndrome. Improvements to TP would also reduce the likelihood of litigation arising when patients develop HAT without appropriate TP.

## Additional comments

Although this initiative focuses primarily on improving VTE prevention strategies, it also allows a focus on patients who are diagnosed with VTE, to ensure they are receiving appropriate treatment.

Mortality associated with VTE is also of crucial importance. We have identified that the one-year mortality following a hospital-acquired VTE event is nearly double that following a community-acquired VTE event. Outcome data are also focused on review of fatal PE events from post-mortems, which are very low in our Trust, and very rarely associated with inappropriate TP ■



## 3rd place

### Project: GP Care Community DVT Service

GP Care UK Limited, Bristol

**Project lead:** Neil Crichton

**Team members:** Patrick Nagle, Lina Bridges and Teresa Caddick

**GP Care provides a community deep vein thrombosis (DVT) service, currently available to patients living in Bristol and South Gloucestershire. By employing the skills and dedication of primary care clinicians with special interests in anticoagulation disorders, GP Care developed a DVT diagnostic and treatment pathway that helps patients to avoid the anxiety, inconvenience and high costs that can be associated with hospital treatment.**

#### Innovation

GP Care is an innovative provider of NHS services and currently operates across the wider Bristol area. In 2008, GP Care was approached by a number of primary care doctors and asked to work up a community-based alternative to hospital-based diagnosis and treatment of DVT. GPs were becoming frustrated by the long waits that patients were experiencing in secondary care, by the lack of communication from hospital providers regarding outcomes from investigations and treatment, and by the high costs of DVT care, which could potentially be offered outside an acute environment.

GP Care proposed an original solution that can be broken down into three distinct phases.

#### GP assessment

The GP calculates a two-level Wells score and performs a near patient D-dimer test to aid their decision-making in assessing the risk of DVT. If ultrasound is required, this is guaranteed on the same, or next, working day and the GP immediately administers pre-scan low molecular weight heparin (LMWH).

#### Ultrasound

The patient attends a community clinic and an ultrasonographer provides a full scan of the leg. A report is faxed to the GP within four hours of the appointment and, if positive, the patient is seen by anticoagulation clinicians at the scan location within one hour.

#### Anticoagulation

The patient receives education about their condition and tailored warfarin counselling. They are also offered a choice of five locations to attend for daily LMWH injections and alternate day international normalised ratio (INR) testing. When the INR is stable they are discharged back to their GP, with a full record of treatment and a management plan reported to the GP on the same day.

The Community DVT Service was commissioned by South Gloucestershire Primary Care Trust (PCT) in September 2008, covering a population of 258,000 patients. Following a successful first year, it was then also commissioned by Bristol PCT in November 2009, to cover an additional 312,000 patients. To date, the service has seen over 5,000 patients, carrying out 2,800 ultrasound scans and safely anticoagulating over 760 DVT patients in the community.

#### Results

The outcomes of the innovative Community DVT Service model are immensely positive, including an estimated 10,000 hospital attendances avoided and savings to the NHS of approximately £1.8 million. There are also fewer patients experiencing sub-therapeutic INR levels following discharge. Based on these savings, the project carries enormous potential benefit for the local health economy.

Having seen over 5,000 patients from referral through to a safe discharge, GP Care strongly believes that, if implemented and managed carefully, the

Community DVT Service model is replicable in any area of the UK.

This model can grow, from concept to delivery, in weeks.

The enormous benefits to patients, the robust governance model and the significant savings that can arise from offering patients a community-based alternative to hospital treatment, should make this an appealing opportunity to any commissioning group ■



## **Project:** Rapid access thrombosed arteriovenous fistula salvage pathway (Failed Access Salvage PaThway) FAST

*Manchester Royal Infirmary*

**Project lead:** Sandip Mitra  
**Team members:** Milind Nikam, Nicholas Chalmers, Helen Hurst, Lorrie Wright, Ann Connolly, Anand Vardhan and Alastair Hutchison

**Functioning arteriovenous fistulae (AVFs) act as a lifeline for patients with kidney failure on haemodialysis. A care model for urgent restoration of thrombosed AVFs in the Greater Manchester Kidney Care Network was designed. The objectives were to restore thrombosed access patency, minimise catheter use, restore dialysis schedules, evaluate and improve patient outcomes and reduce waste and hospitalisation.**

A fast-track patient referral pathway using a multidisciplinary set-up was based at Manchester

Royal Infirmary with access to renal day care and radiology. A prospective database was set up to capture patient experience and outcomes.

### **Results**

Over 400 referrals were scheduled through this pathway during a four-year period. The immediate clinical success rate has been high at 85–90%, thus restoring the patient's dialysis lifeline. The majority of patients were treated as outpatients, or with minimal stay. This has reduced the cost burden on the NHS and improved liaison between the two centres. The service has seen a significant reduction in temporary catheter use and there has also been much improvement in restoring patency in thrombosed AVFs in regional dialysis units. The estimated cost benefit of the pathway is £1.16 million over four years. The patient benefit of sustaining AVFs with urgent declotting pathways is clear in terms of reduction of hospital stay and minimal disruption to the dialysis routine. This project describes the largest cohort outcome analysis of thrombosed AVFs salvaged through an innovative care model of rapid access to radiological intervention designed using lean principles and existing resources ■

## **Project:** Development of 24-hour, seven-day thrombolysis services in acute stroke

*Shropshire and Staffordshire Heart and Stroke Network*

**Project lead:** Indira Natarajan  
**Team member:** Robert Campbell, Sarah Crawford-Thomas, Eunice Foster, Bhaskar Mukherjee and Mary Porter

**This project used teletechnology to help support the delivery of 24-hour, seven-day thrombolysis within district hospitals. A multidisciplinary, out-of-hours, on-call thrombolysis rota was developed, staffed by voluntary healthcare professionals.**

It was necessary to develop an educational programme to create a skilled stroke workforce. Delivery of alteplase was an area that required a different teaching approach, due to the rotational nature of medical staff. An e-learning tool was developed, consisting of a podcast, a DVD and a multiple-choice questionnaire, covering the National Institutes of Health Stroke

Scale assessment, consent, administration of alteplase and aftercare.

Multisite approaches were adapted from geographically similar areas, so that a stroke-skilled multidisciplinary team could deliver a local service.

An intertrust agreement was made with each executive board that committed them to sustaining the project after the first year of network funding.

In 2011, joint host providers were identified to purchase the system on behalf of stakeholders and clinical leads. The system was subsequently installed in trusts. In 2012, the Shrewsbury and Telford Hospital NHS Trust assumed clinical responsibility for telemedicine and hosted an administrator responsible for audit, data collection and patient-experience feedback.

### **Results**

The network thrombolysis rate has increased since the telemedicine system started being used alongside the on-call rota.

The technology is such that the project is easily transferable and sustainable. The service will soon involve a neighbouring trust joining the rota to deliver a local service to patients, instead of them being transferred to the nearest tertiary centre ■