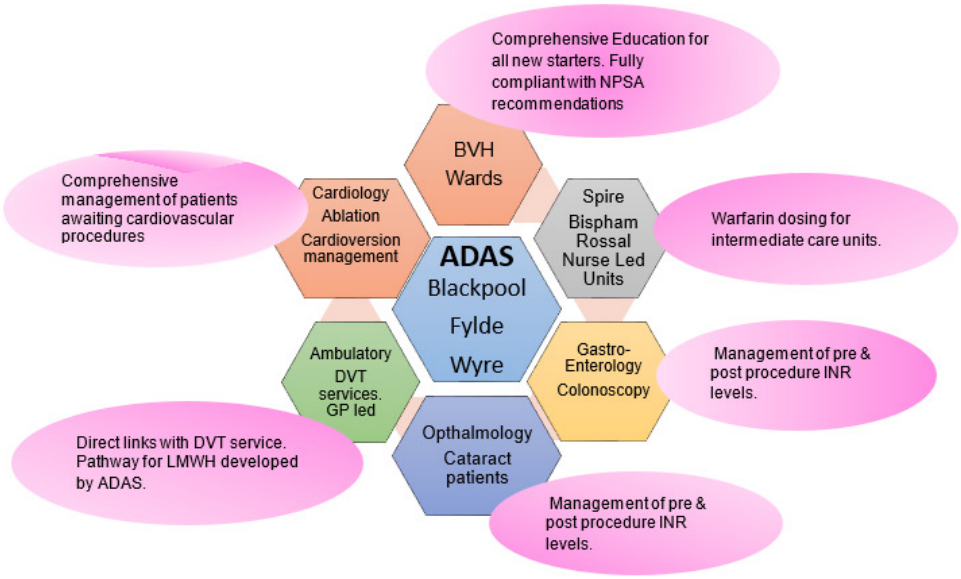
An evaluation of the Blackpool Victoria Hospital initiation of warfarin for DVT

Sean O'Brien, Biomedical Scientist, Blackpool Anticoagulation Dosing Advisory Service (ADAS)

Blackpool ADAS is a Consultant-led service managed by the Pathology Directorate and provides point of care testing (POCT) and computer assisted dosing advice to 7,000 registered patients on oral anticoagulant therapy.

Delivered by Biomedical Scientists, Nurses and Medical Laboratory Assistants, with all clinics (apart from Initiation) being community based alongside a daily housebound patient service, the ADAS service has grown exponentially over the last 15 years. This growth and additional provision (see below) has led to a continued increase in staffing levels as the service enhances its offering to patients.



The Warfarin Patient's Journey – DVT/PE

- The patient presents at A&E with suspected DVT/PE
- The Primary Care Assessment Unit confirms diagnosis of DVT/PE
- A DVT nurse sees the patient and starts them on Warfarin 5mg for four days
- The patient is referred to ADAS electronically and an appointment is made for day 5
- The patient attends ADAS on day 5 for an INR test and following the result is dosed for three days using the locally agreed Induction Algorithm
- At this point the patient also receives a counselling/education session and a follow-up appointment to attend a community clinic on day 8

Why evaluate the protocol?

Despite using it successfully for the previous 15 years, the initiation protocol had never been formally evaluated.

The purpose of the evaluation was to determine if in fact the protocol was working, supported by evidence, and to establish the safety of the protocol through an assessment of patient events for those who had followed the Induction Algorithm.

In addition, if the results of the evaluation were positive then a rollout of the protocol across the Trust to standardise initiation practices and dosing was a real possibility.

It was hoped that the evaluation process would also highlight any areas of the protocol that could be improved.

Study design

One hundred patients who had been initiated with the DVT protocol were randomly selected, retrospectively, from the DAWN AC database, with any patients who had missed days or taken the wrong dose excluded to prevent variation and ensure the integrity of the results.

The demographics of the patient population that were randomly selected covered an age range of 24 – 94 years with a split of 63 males and 37 females.

Where multiple episodes were recorded in the patient's treatment plan, the first episode only was included for the purpose of the study.

INR results were taken from the DAWN patient record for day 5, day 8 and when the INR was <2 or the patient had reached therapeutic range.

Finally, Fragmin usage was not included as it was presumed that any patient who was sub-therapeutic in the study stayed on Fragmin until their INR was greater than 2.

Results

Result	*Comment*
Average INR on day 5 = 1.9	
Average INR on day 8 = 2.4	*The average results on day 8 show that the target is achieved overall and as this result is after ADAS has intervened with the protocol, indicates that the induction algorithm being used does indeed work.*
Average time to therapeutic range = 7.9 days	*Due to the INR only being tested at day 5 and 8, this result has its limitations. As the average INR at day 5 is 1.9, it is likely that should the INR be tested at day 6 or 7 instead of day 8, the average time to therapeutic range would actually be less than 7.9.*
Average dose of stable warfarin = 4.7	

Conclusions

The positive results from the evaluation exercise show that the protocol that is being used works and is safe. From the selected patient population, one patient had a greater than 8 INR at day 5. However, after prescribing VitK, their INR on day 8 was 2.5, so within range and with a stable dose of 1mg, further supporting the efficacy of the protocol.

In terms of potential improvements to the protocol, one possibility would be the change of testing days from day 5 to day 4 and day 8 to day 7 as this offers the possibility of bringing patients to within target range a day quicker and also getting them off Fragmin earlier.

As to the question of Trust-wide adoption of the protocol, an evaluation is currently taking place within the haematology department to assess the possibility of implementing the initiation protocol throughout the Trust for AF and DVT patients. This would however require a mind-set change across departments as patients on wards are currently initiated using a variety of approaches. It is hoped that the evidence that the protocol works and is safe, will facilitate this Trust-wide adoption.

Future developments

A recent assessment within Blackpool Victoria Hospital looking at inappropriate blood testing showed INR tests high up on the list with around 26,000 inappropriate INRs taken the previous year for patients coming through A&E and the wards.

As such, a pilot scheme is due to start at the end of October 2015 which will see ADAS operating an early discharge scheme for cardiac patients. Once the patient has been deemed medically fit for discharge, ADAS will attend the ward, take the patient's INR, complete the patient education and dose the patient up until the first clinic session, enabling speedier discharge from the ward.

This scheme is aimed at dramatically reducing the number of INRs taken and with the intention of rolling out the activity across the hospital, leading to ADAS eventually managing all inpatient dosing.