DAWN® AC

ANTICOAGULATION SOFTWARE

Proceedings of the 24th DAWN AC User Group Meeting

3rd/4th October 2016

"An excellent use of time, providing invaluable resources and networking"

Newcastle Community Health

4S DAWN® CLINICAL SOFTWARE

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Chairperson's Summary

The 24th DAWN AC User Group met in the sunny Lake District on 3rd and 4th October and once again it was good to see such a large number of delegates, incorporating a range of healthcare roles across anticoagulation from nurses and pharmacists to biomedical scientists and haematologists.

Anticoagulation choices and the numbers of patients with VTE and AF are increasing. Clinical trials with DOACs have demonstrated favourable efficacy and safety profiles compared with vitamin K antagonists and guidelines are now starting to recommend DOACs in preference to warfarin for DOAC eligible patients for stroke prevention (European Heart Journal 2016, epub Aug 27 ESC guideline) and for the initial and long term treatment of VTE in patients without cancer (CHEST ACCP guidelines for VTE 2016; 149:315-352).

The question whether anticoagulant management services will transition from mostly warfarin to mostly DOACs remains. Warfarin has recognised advantages with the surrounding monitoring infrastructure; it has a long track record of over 50 years combined with excellent efficacy and low cost. Anticoagulation clinics facilitate adherence monitoring, maintaining TTRs >60% and desired intensity of anticoagulation.

The multidisciplinary anticoagulation community shared experience of IT integration, transformation of anticoagulation working practices, the clinical nurse specialist role in anticoagulation, using Agent 59; an integrated phone system used in conjunction with DAWN AC, using telehealth in patient self-testing, the value of an anticoagulation multi-disciplinary team, the role of pharmacy in anticoagulation in primary care, time in range communication and liaison with primary care and the future of AF/stroke services as part of the 5 year forward NHS plan.

4S DAWN shared the product updates to DAWN AC from the past 12 months from Version 7.9.45 to 7.9.58 and the interactive workshop at the end of the meeting provided ample additional opportunity to share experience.

DAWN Clinical Software is a powerful anticoagulant and VTE management database and audit tool to inform local practice and benchmark against other centres.

Dr Jane Strong
Consultant Haematologist, University Hospitals of Leicester
Chairperson, DAWN AC Annual User Group Meeting

Introduction by Syd Stewart, Managing Director, 4S DAWN Clinical Software

Syd opened the 24th DAWN AC User Group by welcoming all of the delegates to the meeting and introducing the Chairperson, Dr Jane Strong. An excellent and varied programme of talks had been lined up over the two day meeting, the summaries of which, make up this Proceeding Document.

Integrating IT systems to optimise patient care pathways

Harry Crank, Anticoagulation Coordinator, Calderdale & Huddersfield NHS Foundation Trust

The Calderdale and Huddersfield NHS Foundation Trust serves a population of approx. 250,000. The anticoagulation service monitors around 4,600 patients who are managed by over 110 GP practices, 80% of which use SystmOne and the remaining 20% EMIS.

The anticoagulation service is made up of a multidisciplinary team of pharmacists, nurses, phlebotomists and MLAs, offering around 220 hours of clinics and taking 1,300 samples per week.

In 2014, Greater Huddersfield CCG stipulated an overhaul of the service and clinics.

Initially, sample process mapping was undertaken to determine the end-to-end process from the patient attending the clinic, to receiving their results. This enabled the team to identify the timescales involved in the process, including any barriers that caused unnecessary delays.

Greater Huddersfield CCG wanted a change in the service to improve the timescales of the process, particularly the latter part and outlined 3 key requirements:

- Patients to be seen in a 1-Stop-Shop
- GPs to receive results the same day
- 8 hub locations in Huddersfield

After discussions both internally and with 4S DAWN with regards to how the DAWN AC software could facilitate these changes, it was determined that interfaces between DAWN AC and SystmOne and COBAS IT1000 were necessary in order for the service to achieve the requirements of the CCG.

4S DAWN at the time, were working with a third party supplier, Inhealthcare, and together they were able to provide a bi-directional demographics and results interface between DAWN AC and SystmOne to ensure that GPs received the patient results on the same day. This interface reduced the time for this process from 48 hours to less than 60 mins.

In addition, 4S DAWN implemented an inbound results interface from the CoaguChek Pro machines to DAWN AC that automatically populated the results in the patient record in DAWN AC once the sample had been taken.

This interface reduced the time for this process from 4 hours to less than 5 minutes.
There was also an interface already in place that populated DAWN AC with patient results that came in from the laboratory system.

These interfaces removed barriers and bottlenecks within the process and enabled the service to meet the CCG's 3 key requirements.

The benefits of the GP system interface included:

- Patient INR and dose uploaded to the GP system the same day
- Prescriptions actioned by the GP quicker
- Notes re-coded in the GP system
- Improved patient safety
- The anticoagulation service are notified of address changes, deaths, admissions, medication changes etc.

The benefits of the CoaguChek interface included:

- Results sent straight to DAWN AC, with comments
- Reduction in transcription errors
- Simple data export – QC graphs, users, errors
- Certification of users
- Time saving

Moving forward, the anticoagulation service will be looking to work with 4S DAWN to set up SMS/text message functionality within DAWN AC so that patients are able to receive text message alerts for appointment reminders etc.

The Leeds Anticoagulant Service Transformation Journey

Brad Dickinson, Chief BMS/Service Coordinator, Leeds Anticoagulant Service

The Leeds Anticoagulation Service was originally set up in the mid 90's and in 2012 it was decided that the service needed to be looked at in terms of developing and moving forward, partly due to increasing patient numbers and less staff.

Initially, stakeholder meetings were held with the Primary Care Trust (PCT), some internal improvement projects and a single Coaguchek machine was introduced at the hospital clinic.

The team also visited other anticoagulation services to appraise their service models and see how they worked in other areas.

By 2014, the PCT had become Leeds West CCG and further meetings were held to discuss the development of the service. Investigations into alternative technologies such as PoC testing began and the first DOAC clinic was running on a weekly basis.

After putting forward proposals for the new service model to Commissioners, the project was officially started in April 2014 with the setup of a project board and working groups and working with the CCG and Pharma companies.

Old Model	New Model
• Venous sampling • Laboratory testing • Remote dosing • Contact by telephone • Posting results / doses	• Hub and spoke model (Hospital 'hub' and community 'spoke') • PoC testing • Near patient dosing • Face-to-face clinics • Hand back dose • Clinical intervention • Reduced admissions • Total connectivity • Patient self-testing (pilot) • Electronic dose advice

Each area of the project was separated into individual work streams and for each stream, a working group was set up of individuals focussed on that area and led by a 'Work stream lead'. Work streams included:

- Staffing and delivery
- Facilities and estate
- Costing and tariff
- Domiciliary visits
- IT and connectivity
- Engagement and communications
- Training and education
- Service management

A brief summary of the transformation of anticoagulation service project from the last two years is shown:

2014	2015	2016
MAY • First meeting of project board **JUN** • Workstreams established **JUL** • First meeting to discuss community site locations **SEPT** • Visits to potential pilot sites **NOV** • Service protocol validation – proof of concept • No agreement on sites	**FEB** • Sign off pathology Managed Service Contract • Still no agreement on sites **MAR** • Nurse Manager interview **JUN** • Project board disbanded • Nurse Manager started **JUL** • Hub site location opened at St James's Hospital • Refurbished 'spoke' clinic at Wharfdale General Hospital **AUG** • Additional staffing - nurse, BMS and clerical	**FEB** • First community site with new model **MAR** • Patient information leaflets designed and printed **APR** • Purchase of laptops and portable printers • Patient engagement begins • Still no final agreement on sites **MAY** • Communication to patients regarding new service and relocation of some services • Still no final agreement on sites **JUN** • Sites finalised! **JUL** • Sites and services transitioned • Huge influx of calls to service and Patient Advice Liaison Service • Issues with VPN connections – unworkable • VPN concentrators tested and purchased **AUG** • PoC testing rolled out to home case visits aswell **OCT** • Made it! - almost

What have we achieved?

Proposed Service Model Elements	
Hub and Spoke Model	☑
PoC Testing	☑
Near patient dosing	☑
Face-to-face clinics	☑
Hand back dose	☑
Clinical intervention	☑
Reduced admissions	☑
Total connectivity	☒
Patient self-testing	☒
Electronic dose advice	☒

The service is looking at connecting the DAWN AC system to their Coagucheks via an interface and a patient self-testing pilot was started in early 2016 which currently has around 25 patients self-testing.

Setting up emails from DAWN AC to patients is also something that the service will be looking at.

Issues

- **Staffing** – more staff were required to meet the demands of the new service model and extra BMS', nursing staff and pharmacy technicians were recruited.
- **IT and connectivity** – the VPN connections were difficult to get up and running.
- **Obtaining estate** – struggled to agree sites to be used for the community sites
- **Patient dissatisfaction** – with change in location of clinics
- **Synchronising a large project** – lots of different elements to bring together
- **Communications** – communicating to patients, service staff and other stakeholders

What have we learned?

- Communication! – communication is key!
- Patients do not like changing venues!
- Outside agencies are difficult to manage
- IT may take longer than you think
- VPN concentrators are sent from heaven
- Phlebotomists move on very quickly – staffing issues
- Band 6 BMS – struggling to recruit
- Use your suppliers – support from DAWN and Roche
- Inventory your equipment – know what you have, where it is and what contracts you have
- Portable equipment is not robust
- Take baseline measurements and review – to enable reporting of changes/successes
- Nurses rule! – reducing patient wait times and dealing with VitK
- Somethings are just outside of your control
- ALWAYS have a plan B

Introduction of Clinical Nurse Specialists to the Leeds Anticoagulant Service – Changing Perceptions

Karen Hodgkinson, Clinical Nurse Specialist/Team Leader, Leeds Anticoagulant Service

The Leeds Anticoagulant Service is led by Dr Lishel Horn who is supported by the rotating registrars. A Consultant Pharmacist, Katherine Stirling, is supported by a team of pharmacists and the Chief Biomedical Scientist (BMS), Brad Dickinson, is supported by a team of biomedical scientists who specialise in warfarin management.

Until now, there has not been any nurse specialists involved in the service.

The introduction of a new service model for Leeds Anticoagulant Service, prompted the recruitment of Clinical Nurse Specialists (CNS) with the following expectations:

- Clinical expertise
- Assessment of patients
- Home visits
- Patient education
- Administer injections/LMWH
- Administer vitamin K
- Additional manpower for dosing patients
- Fast, responsive service: improve patient care, particularly for INRs >8

The initial focus of the nurses was training as none of the nurses had much experience with anticoagulation. Therefore, most of their time was spent in clinic shadowing the pharmacists and dosing with the support of BMS

colleagues. The nurses soon also administered LMWH where required, provided patient education and intervened for patients who became unwell in clinic.

The nurses also took responsibility for onward referrals to GPs, district nurses and social services, and followed up patients for closer monitoring, including home visits which allowed a more complete assessment of the patient. Medicines management was also a key area of responsibility for the nurses.

It soon became apparent that more than the initial 3 nurses were required due to the challenges of the workload and this would enable a daily presence in both the clinic and the office, the ability to support the phlebotomy service, which at times was understaffed, filling in any service gaps and support the consultant with complex patients.

For Karen, who also took on the role as Team Leader, there were a number of personal challenges to face and these included:

- Time management – being pulled in a number of directions
- Clinically available/main point of contact
- Service development – moving forward with lots of change within the service
- Maintain clinically safe service
- Develop governance structure
- Build team with right skill mix – recruiting the right nurses
- Support team members to ensure work-life balance
- Provide fast response for patients
- Manage patient expectations, particularly throughout the changes the service was going through
- Continue own personal development

Developing a sense of team

- Education of wider team as to nursing role
- Managing expectations of colleagues
- Much wider remit that crosses boundaries of other healthcare professionals
- Recognising limitations – can't solve all of patient's health issues within their clinic slot
- Building professional relationships

Where are we now?

Point of care testing was launched across Leeds three months ago and the nurses are competent in dosing and are working well within the multidisciplinary team, with a real sense of team developing, much more than it was when the team were office based. The CNSs are able to respond immediately to clinical needs in the community which has led to a big improvement, particularly in regards to the management of INRs >8.0.

Nurses are involved in many more one-to-one discussions with patients about their dosing and this is building trust between the nurses and patients as the nurses now attend the same clinics each week. In addition, there are now two Clinical Support Workers in post to support the CNS role.

Importantly there has been a lot of very positive feedback received about the service and the CNSs from patients and their families.

What improvements have been made with the introduction of CNSs?

There have been a number of improvements to the service including a reduction in admissions due to the management of INRs >8.0 being immediate. Patients are also able to be assessed who would benefit from home visits.

Flexibility for the patient is increased as nurses are able to review the patients in the community and patient education is being reinforced.

In addition, the nurses are developing links with wider NHS services and are also able to support the administration team if and when required.

Where can the CNS team make further improvements?

There are some key areas where the CNS team feel they are able to make further improvements within the anticoagulation service as it moves forward and these include:

- Improving patient follow-up on hospital discharge
- Assessing referrals into the anticoagulation service
- Continued professional development that will enable practitioners to undertake a full range service within anticoagulation
- Developing seamless links with the Trust VTE service to improve patient pathways
- Development of practitioners who can support the clinical lead with complex patients
- Continued provision of nursing service for community clinics
- Care for individuals who require home visits

Have the CNS roles changed perceptions and reached expectations?

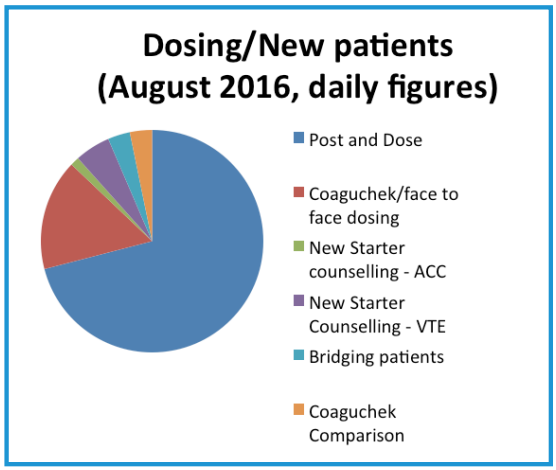
The CNSs feel that they have changed perceptions within the anticoagulation service and reached expectations through the provision of clinical leadership, ensuring patient safety, being proactive in developing the service, providing adaptability and flexibility within their role and in helping other healthcare professionals to view patients from a more holistic view point.

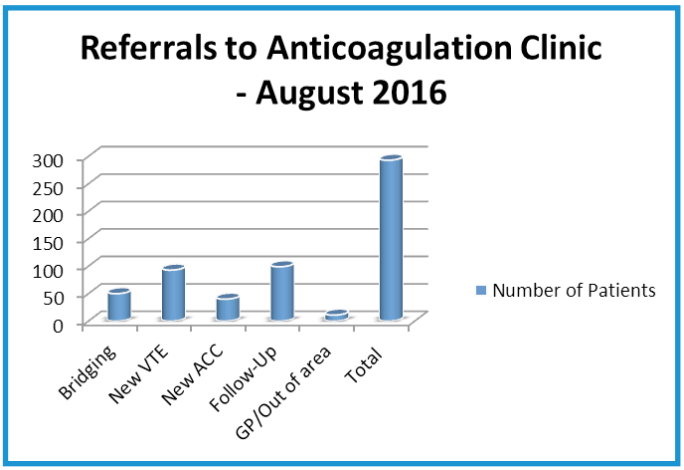
And their roles are still developing!

Agent 59: Improving Patient Experience through Technology

Claire Durkan, Clinical Nurse Specialist/Team Leader, Sheffield Teaching Hospitals NHS Foundation Trust

The anticoagulation service at Sheffield Teaching Hospitals is a nurse led service delivered from an outpatient clinic in the Royal Hallamshire Hospital. The service is made up of an anticoagulation and a VTE team along with an In-Reach service.





The service has 2,900 patients and is made up of a mixture of clinics including post & dose (250-300 patients per day); finger prick (50-70 patients per day); new starter counselling (2-4 AC and 6 VTE patients per day); bridging of GP patients and newly diagnosed VTE patients. The In-Reach service sees around 12-15 patients per day on the wards. Around 70 referrals are received each week and the helpline receives an average of 90 incoming calls per day, with 100-120 outbound calls made each day by the anticoagulation team.

The service is very busy and managing the volume of phone calls each day was particularly difficult and also impacted on the patient experience. Microsystems analysis, which is used in the Trust as a model for change and service improvement, and was applied to analyse the anticoagulation service, highlighted the following issues:

- Difficult to keep up with dosing and provide helpline service to patients – interruptions in dosing – worried about making mistakes when dosing difficult patients as phone ringing in same room
- Serious Untoward Incident – most of problem had been interruptions
- Missing calls about change of medication and patients not phoning
- Issues with incoming telephone calls:
    - significant number unanswered
    - not dealt with by most appropriate member of staff
    - voicemails left by patients creates considerable additional work
    - not meeting patients expectations
- The majority of dosing was postal and therefore the team were unable to speak to patients in a face to face clinic

Patients were complaining that it was always an answerphone message at the end of the line when they rang and that messages weren't always responded to. In addition, the respiratory ward at the hospital discharged many of the anticoagulation patients and whilst the two departments had a good relationship, the staff on the ward often had difficulty getting through to the anticoagulation team to inform them of new patients as only a third of calls were answered.

The solution? Agent 59

In 2013, the anticoagulation team developed a business case for a dedicated call centre to efficiently manage the large number of in-hours incoming calls, ensuring best use of existing staff resource and to reduce the number of unanswered calls. This was something that had been implemented in other areas of the Trust and so wasn't a new concept.

Data was collected to analyse the number and type of calls annually:

Clerical Officer – total calls received 3695; answered 2789; unanswered 906
Band 6 Nurse – total calls received 3781; answered 1735; unanswered 2046

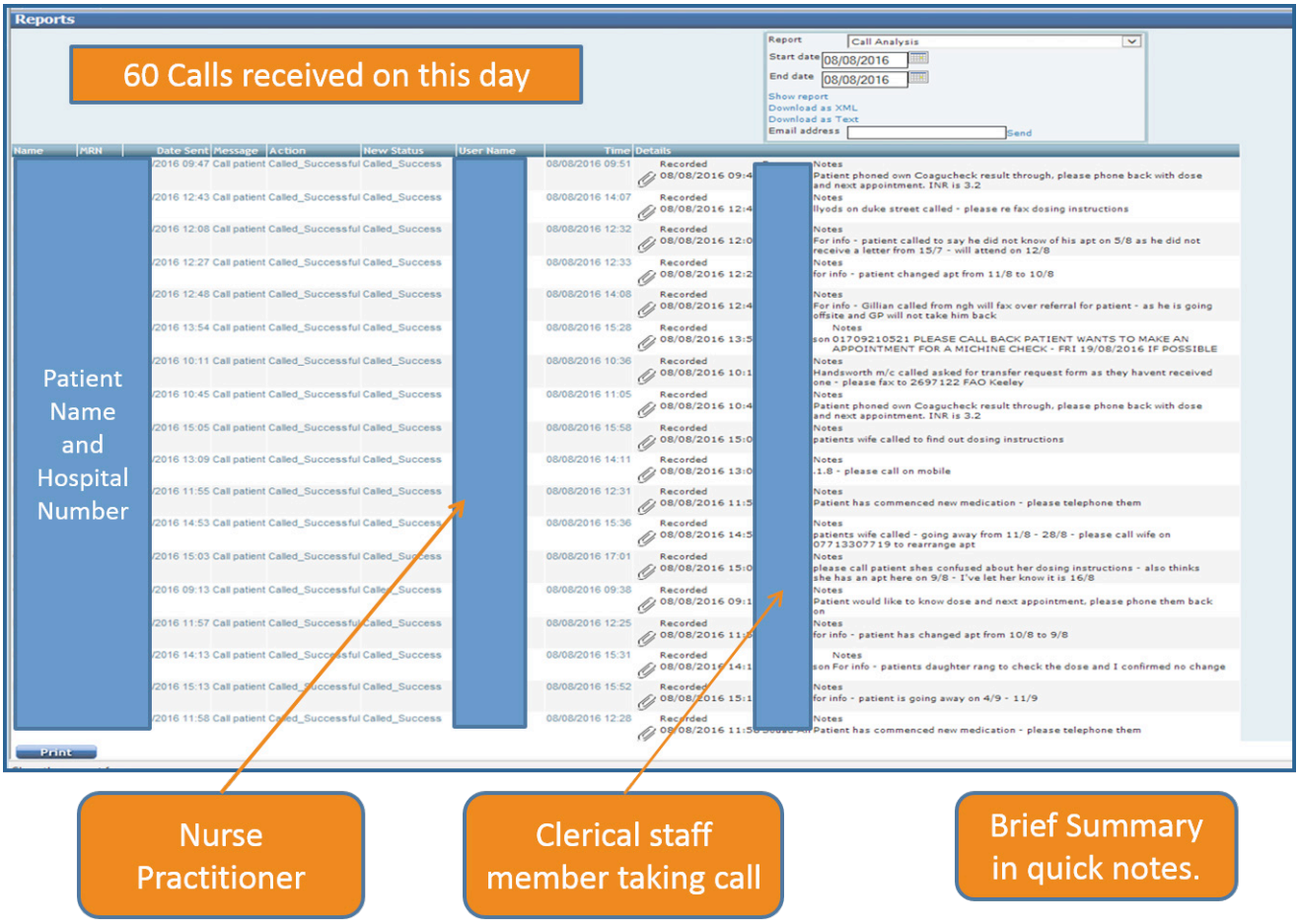
The business case and associated data was submitted in July 2013 and the Agent 59 Integrated Phone System used in conjunction with DAWN AC went live in January 2014 with the following aims:

- to improve the number of calls dealt with and by appropriate member of staff
- to decrease the number of unanswered 'in hours' calls to the "clinical line"
- to decrease the number of unanswered 'in hours' calls to the "patient line"
- to decrease the number of patients phoning the clinic out-of-hours to 0% (e.g. for advice on bleeding)

The clerical staff login to Agent 59 and have the contact centre on one screen and DAWN AC open on a second screen. Two clerical team members are on the contact centre who take calls continuously. The clerical team select 'call patient' on the letters tab within DAWN AC so that it is recorded that the patient has phoned in and a summary of the call is added to the patient record in DAWN AC.

The Agent 59 system provides information on how many calls were answered throughout the day along with a breakdown of the reason for the call which identifies particular training needs of the team or areas where patients are struggling to understand the information given etc.

A report in DAWN provides information on the number of calls received, who took the call, what type of call it was and the time of the call.



The feedback received from patients and staff regarding the introduction of the Agent 59 system has been positive although there are still some areas where service improvement is required:

Patients:

- Avoids engaged tone
- Know a nurse will ring them back
- Speak to the right person at right time
- Important for introduction of Coaguchek self-test patients.

Staff:

- Easier to manage, less frantic than answerphone.
- Able to see what type of calls dealt with and review message if we forget a name.
- Not infallible

Future plans

The service has a number of plans for moving forward including introducing email communications, starting with a small trial with intermediate care agencies using nhs.net email although there are some confidentiality issues that need to be addressed.

Introducing a new system for self-testing patients to email in their results is also being investigated, looking particularly at the County Durham and Darlington automated system.

Text message reminders to patients for their next appointment date is a new element of the system that the service would like to implement along with an automatic link to 'call patient' button in order to more tightly integrate the DAWN AC system with Agent 59.

Digital INR Monitoring: A model of remote INR testing

Ian Dove, County Durham and Darlington NHS Foundation Trust (CDDFT)

CDDFT is one of the largest integrated care providers in England, serving a population of around 600,000. The Trust set up NHS Health Call which is a telehealth service and working with digital health service provider, Inhealthcare, the Health Call INR Self-Testing Service was developed to provide anticoagulation patients the flexibility of remote INR monitoring.

The development of the self-testing service arose from the struggle within the anticoagulation clinics due to patient numbers, where staff were seeing 3 patients every 5 minutes. It was clear that the process within the clinics was designed for staff to manage the patient numbers as easily as possible rather than being designed around the needs of the patients.

Evaluation

In 2011 a pilot scheme was set up involving 200 patients across 2 cohorts. Cohort 1 was hand-picked by anticoagulation staff based on a narrow criteria, whilst Cohort 2 was recruited through adverts within clinic after the results of the first cohort were available. The increase in TTR for the first cohort was substantial.

Age was not a major obstacle when patients were given the choice to join the pilot and the average TTR in both groups was similar, at around 59%.

	Cohort 1	Cohort 2
Number of patients	100	100
Recruitment Selection Criteria	**Narrow** Most were hand-picked by staff	**Broad** Most were recruited from ads
Average TTR 6 months before study	60.4%	59.0%
Average TTR 3 months before study	58.9%	59.0%

Average TTR of the two cohorts after the self-testing pilot started:

	Cohort 1	Cohort 2
Number of patients	100	100
Recruitment Selection Criteria	**Narrow** Most were hand-picked by staff	**Broad** Most were recruited from ads
TTR - 6 months before study	60.4%	59.0%
TTR - 3 months before study	58.9%	59.0%
TTR - 3 months after study	**72.8%**	**71.0%**
TTR - 6 months after study	**74.4%**	**75.0%**
TTR – 24 Months after study	**75.6%**	**76.1%**

The patients became empowered to take responsibility for their care and to enjoy the lifestyles they wanted without the inconvenience of attending clinic regularly, hence the increase in the TTRs for the cohorts involved in the pilot.

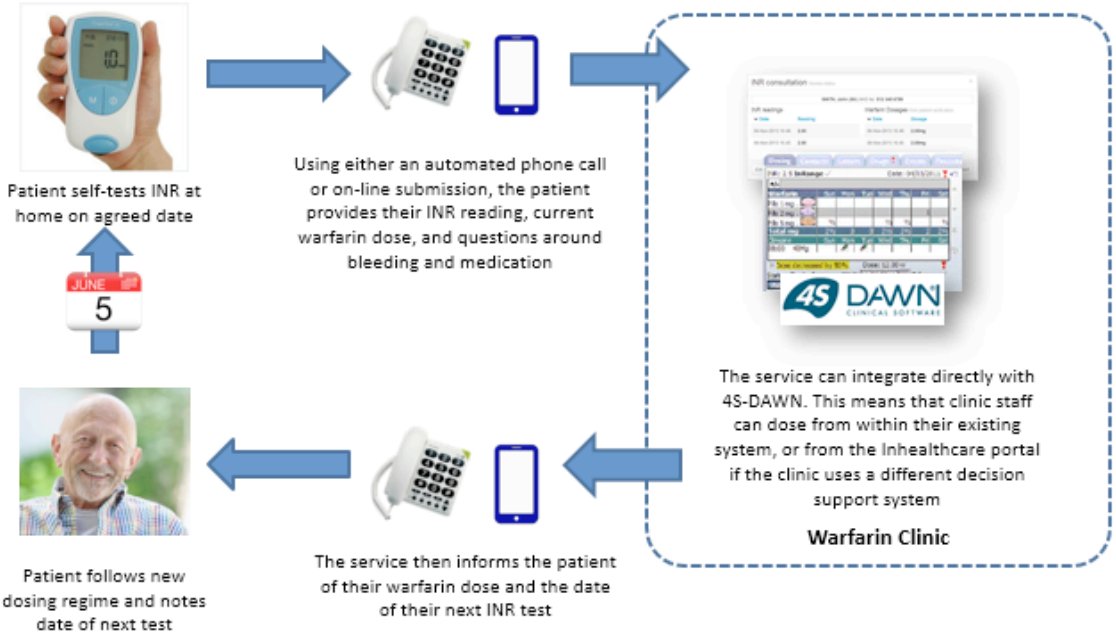
Due to the fact that 500 patients were taken out of the clinic setting giving more time to spend with the patients who attended clinic, other outcomes from the pilot included:

- As clinic capacity improved, the non-self-testers improved TTR by 3%
- 20% of patients remained uncontrolled – could this be down to warfarin sensitivity?
- Of the 80% that did improve, the average TTR improvement was 21%

Patients are overwhelmingly supportive of the service and some of the responses received from them on the perceived benefits include:

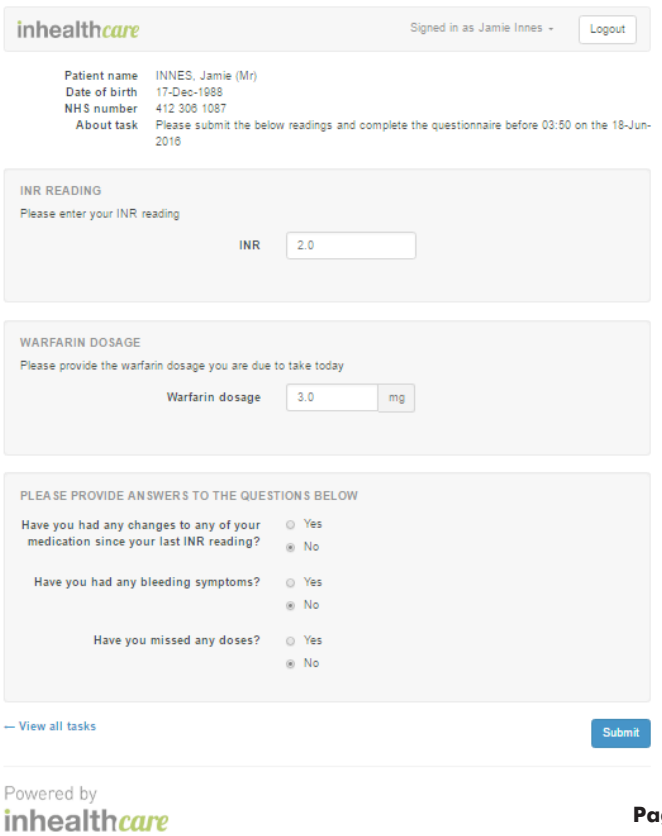
- Reduced time attending clinics
- Less impact on work disruption and money lost from taking holiday or no pay to attend clinic
- Money saved from travel costs and parking
- Able to test while working away from home or on holiday
- Flexibility for the patient

Patients have the option of communicating their results and receiving their dose and next test date via a number of communication channels including an online portal and via an automated phone call.

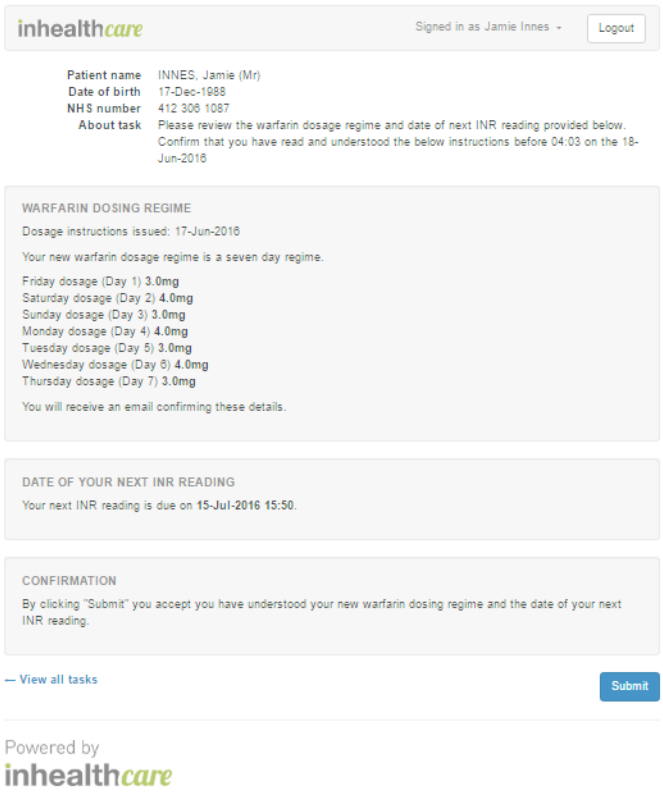


Online Portal

Patient submits their INR reading through an online portal:



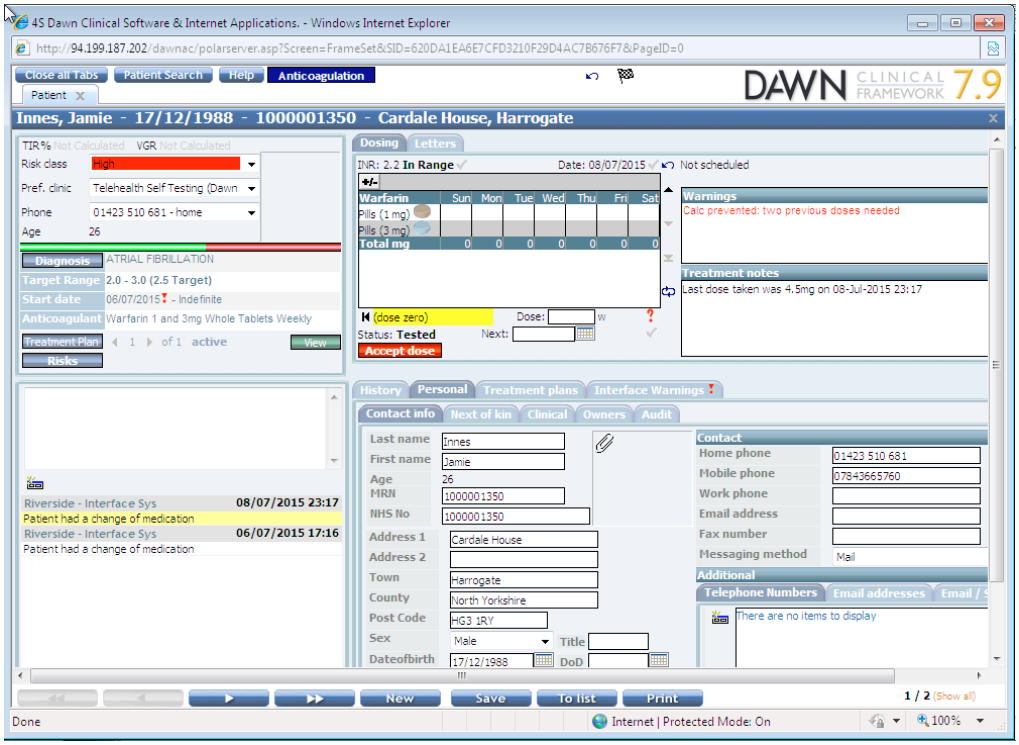
Patient receives their dose instructions and next test date through the online portal:



Automated Phone Call

1. The patient receives a call at a pre-agreed time
2. Patient enters INR reading into telephone keypad
3. Patient enters today's warfarin dose
4. Patient answers some general questions
5. Patient receives a second call later in the day with their new dosing instructions and next test date

Integration with DAWN AC



The patient's INR reading is available immediately in DAWN once submitted by the patient, regardless of the communication channel used. Once the dose has been calculated, it is sent to the patient by either email or automated phone call.

Does a weekly multi-disciplinary team meeting add value to the anticoagulation service?

Dr Caroline Shiach, Aintree University Hospital NHS Foundation Trust

History of anticoagulation services in the UK

Anticoagulation clinics were introduced in the 1970s with predominately valve replacement and VTE patients. Patient numbers were small and the first test was the Thrombotest, which was later replaced by the PT ratio which in turn was replaced by the INR in 1983.

The clinics were designed to monitor the effects of Vitamin K Antagonists and to advise on drug dose. They were hospital based, consultant led and used venous blood samples as the method of extracting the patients' blood. They were commonly run by the haematology department with blood analysis done by biomedical scientists.

The 1980s saw significant changes in Clinical Haematology with a clinical shift, whilst the 1990s saw the publication of trials in AF and significant changes in anticoagulation services.

Throughout the 1990s and 2000s clinics were becoming more nurse-led, pharmacy-led or BMS-led and saw the introduction of self-testing/self-dosing. There was also a move to have anticoagulant clinics available in the community, whilst LMWH was increasingly used, along with increasingly complex anticoagulant regimes.

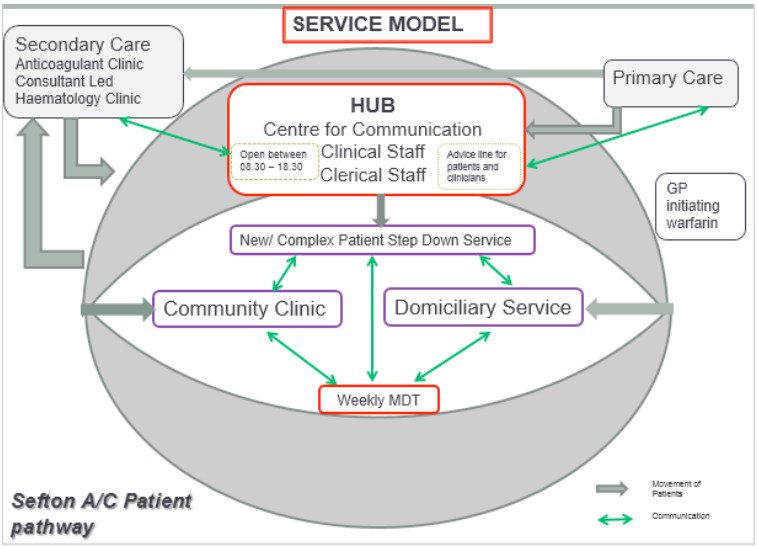
In addition, the NHS came under increasing financial pressure, the population was ageing, there were political and financial moves to increase general community healthcare and reduce time in hospitals, and DOACs were introduced.

Aintree University Hospital

In 2013, the community anticoagulation service for South Sefton, Southport and Formby was put out to tender and Aintree University Hospital decided to bid for the service. This gave them opportunity to consider what an anticoagulation service should look like.

There were also some constraints including a lack of knowledge of the current service; the CCG did not want hospital patients included in the bid; and they wanted the service for Vitamin K Antagonists only.

A service model for the patient pathway was drawn up:



The weekly multidisciplinary team meeting (MDT)

A weekly MDT meeting was set up as part of the service and attended by consultant, service manager, BMS staff, nursing staff, secretarial and clerical staff. Minutes are taken at all meetings and details of discussions are recorded in the patient record in DAWN. The meeting also doubles as a general team meeting.

The first meeting was held in April 2015 and as of September 2016 there were 406 entries into the DAWN AC patient record from roughly 60 meetings and with an average of 6.8 patients discussed per week.

Examples of some of the issues discussed at the MDT meeting are shown below:

Time in Range Issues:

- Mitral valve replacement. TR 3.0-4.0. Patient is 12% Time In Range. Recurrent DNA.
- Letter from Consultant Cardiologist requesting patients range to be 2.5 -3.0 discussed.
- Patient is not happy with her range. (3.0 - 4.0). She would like a range of 2.0 - 3.0 .
- M.D.T review requested by office team. Patient on DAWN with clinical details of AF. Currently therapeutic range is 2.5 - 3.5. Does this need to be changed?

Ethical Issues:

- Dementia patient in care home. On warfarin for AF. Twice in a row has refused finger-prick. Nursing staff have offered to hold her down. What should the community anticoagulant staff do?
- The patient has been taking a vitamin supplement the last few weeks. This has Vitamin K in the contents. Patient is unaware he has been taking this supplement, as the family have been giving it to him without him knowing.

Associated Medical Conditions:

- Patient is unstable. Given Vitamin K for high INR. Patient has cancer and has refused treatment for this. Patient is a DVT patient.
- Patient living in nursing home. Staff say he is on palliative care, so why is he still on Warfarin?
- Pregnant woman had a DVT last week, she needs to change to warfarin post-delivery.

DOACs:

- Patient requesting to be switched over to DOAC? The patient feels she is unstable on Warfarin and wants to be on DOAC instead.
- Patient becoming very forgetful. Brought to the MDT by an anticoagulant team member who asked if this patient is suitable for DOAC?
- GP asking team to change patient from VKA to DOAC

MDT meeting outcomes

A decision on the patient in question is made at the meeting, documented in DAWN AC and a request sent to the GP or Specialist for additional information if required. A letter is also sent to the patient and they are referred to either the nurse-led clinic in the community, in the hospital or the consultant-led haemostasis clinic.

All letters sent are saved in DAWN AC against the relevant patient record.

There are many advantages of holding the weekly MDT meeting:

- Everyone is there.
- Everything is documented.
- Clerical and secretarial staff important contributors.
- Easy communication between staff predominately in the community and predominately trust based.
- Allows short term plans with repeat review.
- Can flag up patients who require prescribing in the community.

The question is, whether the meeting adds value to the anticoagulation service:

- It has stopped 'corridor consults.'
- It allows patient concerns to be documented and addressed.
- It allows all clinical issues raised to be fully documented and accessible for review.
- It allows anticoagulant care to be reviewed in the broader context of a fuller clinical picture.
- It allows better integration of all anticoagulant care: VKA/ LMWH/ DOAC.
- It takes up at least 90 minutes of everyone's time every week.
- Is it cost effective?

From patient to prescriber: A pharmacist's journey into anticoagulation

Clare Clarke, M&M Pharmacies Ltd, Durham Dales, Easington and Sedgefield CCG

Anticoagulation clinics are run from both GP surgeries and community pharmacies. The pharmacies provide the flexibility of out of hours access to patients as they are open from 8am to 6pm and so enable patients to attend outside of their working hours if necessary.

Services often have an issue with communication in that they rely on the patient to inform them of any medications etc. that they are taking/have started. The advantage of running the service in this setting is that the full patient record is available to check for any contraindications when at the GP surgery.

In addition, the pharmacists received a report every 3 months from the GP to inform them of the patients' current medications so that the staff in the pharmacy also have access to key patient information relevant to warfarin management.

Patients are tested and dosed immediately at their appointment and the yellow books are used by the service.

The service level agreement for M&M Pharmacies, outlined by the CCG, requires the patient's TTR to be written into the yellow book at every visit, particularly to highlight patients whose TTR is <65% (NICE CG180). However, you can't use TTR alone, you need to know the back story of the patient to help understand why their TTR is low.

A pharmacist-led AF review clinic was set up to initially assess all NVAF patients with TTR <65%, along with providing dedicated consultant time. The clinic was developed to primarily target this group of high risk patients and newly diagnosed AF patient were also referred into the clinic for more in-depth discussion as to their choice of therapy.

All patients have CHA2DS2VASc and HASBLED scores calculated and explained to them using patient decision aids.

The clinic assesses patients, reviews treatment decision, provides patient education and ensures an individualised treatment plan. Medication adherence is reviewed and potential barriers to adherence are discussed with the patient, including a medication review to uncover possible reasons for low TTR and ways to overcome them:

- Dosette boxes
- Reminder charts
- Alarm
- Change to NOAC

Where possible, and if it is the best choice for the patient, they are kept on warfarin and measures are taken to try and improve their TTR. However, NOACs are offered and discussed if warfarin is not right for the patient.

Self-monitoring is also discussed as an option if it is felt that the patient is able to manage this method.

The Future?

Patients are given a second review appointment after 1 month and New Medicine Service (NMS) with community pharmacy.

A third review takes place after 6 months and thereafter annually, although bloods are done as per the Summary of Product Characteristics (SPC).

Sustainability and transformation plans: How AF/stroke services may evolve over the next 5 years

Dr Julia Reynolds, Innovation Agency, Academic Health Science Network for the North West Coast

What are sustainability and transformation plans (STPs)?

STPs are a route map for how the local NHS and partners make a reality of the 5 Year Forward View and are the basis for operational planning and contracting within particular geographic areas at population level. They are expected to provide the underlying structure to drive new models of care and system-wide change.

In terms of AF, it is a big change and may affect how departments are run. It focuses on promoting innovation, preventative and digital technologies whilst keeping patients at home and managing patients with long term conditions.

What can anticoagulation services do?

As more and more patients are diagnosed with AF, how will services manage? How can outcomes for patients with AF be improved?

Data is king and there are large amounts of data on AF patients held within the DAWN AC systems being used by many anticoagulation services across the UK.

Using the data held within DAWN AC, a number of questions can be answered

- Who is well coagulated?
- Who can we see less?
- How can we establish dose better?
- Who is doing poorly?
- Why are they doing poorly?
- How can we share, aggregate and benchmark?

By anonymously pooling the large amount of data from DAWN AC systems, what might services see?

- Patterns emerging in the data i.e. patient groups, geographics, demographics. Commonalities in groups of patients that affecting outcomes

- Who is having strokes?
- Could those patients be better managed?
- Could they be managed elsewhere
- How can issues be raised
- Analysis and presentation of the data can be very powerful

How can we use the data to be better?

- Good outcomes
- Efficiencies
- Can we save lives?
- New innovations to save across a system
- Redesigning and delivering better care
- Finding the right people to help
- What incentives exist?

Anticoagulation services need to ask themselves how they can be more efficient whilst focussing on patient outcomes and the patient experience e.g. self-testing, working more closely with GPs etc. and improving services through innovation and technology.

Review of time in therapeutic range – one way

Sue Bacon, Nurse Specialist, North Bristol NHS Trust

All anticoagulation services do daily review as part of the job e.g. ensuring patients are taking tablets as indicated; check compliance and concordance.

The anticoagulation service at North Bristol wanted to do a formal review of the patient population in terms of their time in therapeutic range (TTR), particularly those patients whose TTR was less than 65%.

As the South West Academic Health Science Network (AHSN) was providing support locally to GPs, the anticoagulation service became involved with them as part of the project.

One of the AHSNs area of focus was improving both the diagnosis and anticoagulation of AF patients which is why the anticoagulation service sought help from them. The review of patients was not intended to look at poor performing patients with the view to swap their anticoagulation to NOACs it was about improving the patients' outcomes.

A report was set up in DAWN to pull off the relevant data for the review and included:

- TIR <65%
- 2 x INR <1.5
- 1 x INR >8.0
- GP surgery

And a spreadsheet was set up in order to review and manipulate the data.
Pharmacists had been assisting GP surgeries with their patients' TTR and reviewed AF patients, ensured all AF patient were anticoagulated if appropriate and reviewing TTR. Two pharmacists assisted the anticoagulation service with the data that had been pulled from the DAWN AC system.

Working with Bristol and South Gloucestershire CCGs, the anticoagulation service made contact with practice managers and sent them a copy of the TTR letter below. It was agreed that the service could go ahead and contact GPs with the patient data with the view of improving the patients' outcomes and TTR.
The letters were sent out to GPs and the service waited for the responses. The plan was to re-run the report 3 months later to see if there had been any improvement in the TTR of the patient population.

The reality was that the GPs did not respond in a timely manner and the Local Medical Commissioning Group

(LMCG) refused to let the GPs do this as it was viewed as an audit and they had been advised that they were NOT to do uncommissioned work requested by secondary care.

This was resolved by the CCGs confirming that it is part of medicines management and it is in the GPs contract so the letters were sent out as planned.

Anticoagulation Management Service

Dear Dr Baldwin,

Re: Mr Bilbo Baggins
44, Oak Close
Yate
Bristol
BS37 5TW

Hosp No: 101010
NHS No: 4043642504
Date of Birth: 13/06/1964

Your patient is on Warfarin for Dvt.

The percentage time in range is: 63 %

Would you please review this patients anticoagulation, tick the appropiate box below and return to us (post, fax or email).

1. Compliance discussed (re-assess in three months) (...)

2. Warfarin stopped and changed to:-
(....) Rivaroxaban, (....) Dabigatran, (....) Apixaban, (....) Edoxaban,
(....) Low Molecular Weight Heparin, (....) Other .....

3) Anticoagulation treatment completed (....)

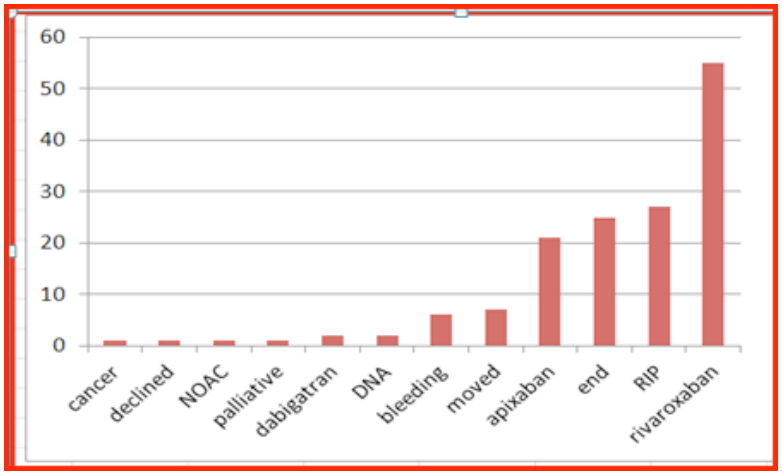
4) Other (please state).....

Yours sincerely

The report was re-run and found that there were a large number of patients who were on the previous report who were not on new one. Why?

Closer investigation highlighted the reasons for 149 of these patients as shown in the graph below.

The next steps will involve adding the data from these patients to the database and re-running the report to send out a new batch of letters to GPs however this time there will be liaison with practice clinical pharmacists as this falls into their remit of 'medicines review' and will hopefully facilitate a smoother and faster response than had been previously received.



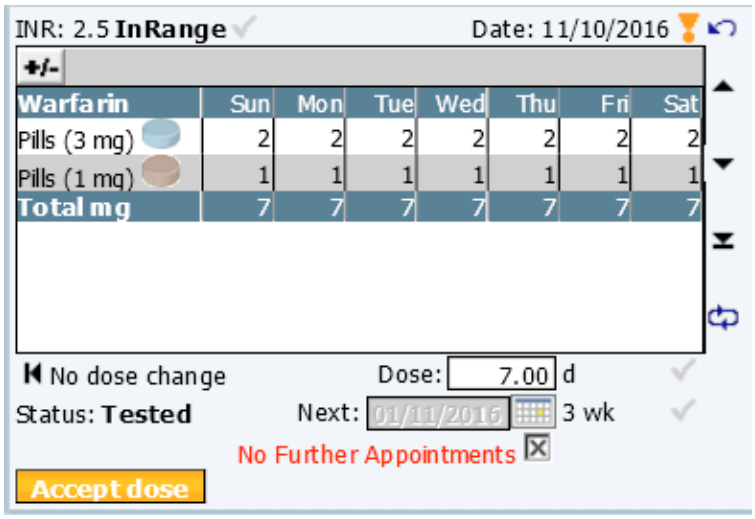
DAWN AC product update: new developments

Alistair Stewart, 4S DAWN Clinical Software

Alistair demonstrated to delegates some of the key product developments that have been released in the last 12 months since the 2015 User Group meeting. Highlights included:

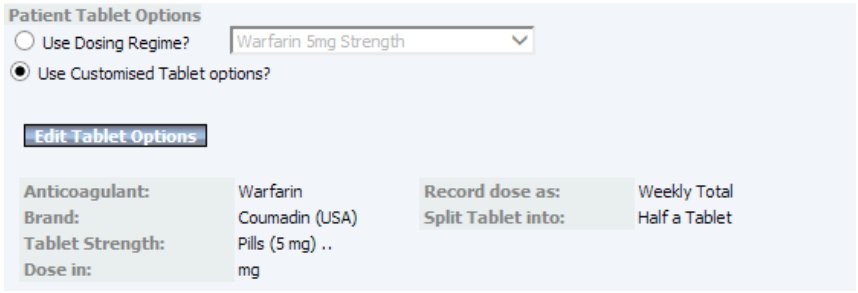
Version 7.9.45 – Dose a Patient without Issuing a Next Test Date

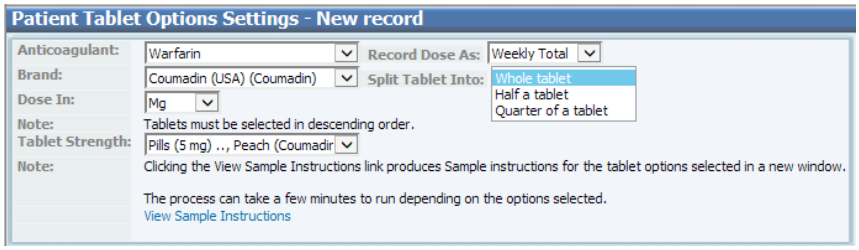
If a patient's treatment end date is approaching you can now issue today's instruction with no next test date.



Version 7.9.49 - Customised Tablet Options

In previous versions of DAWN, dosing instructions were created by looking up the relevant item in a set of predefined dosing instructions. Each set of standard instructions was called a dosing regime and was created for a specific anticoagulant and tablet strength (or combination of tablet strengths).





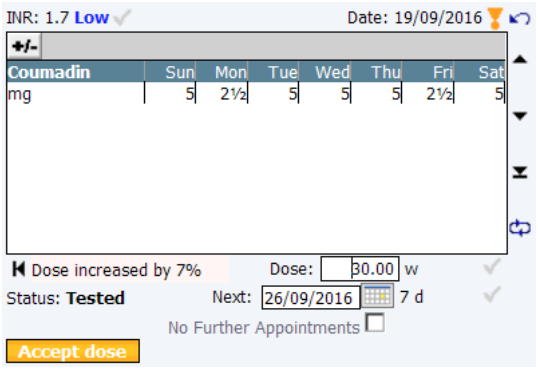
Customised Tablet Options offers a more flexible alternative. While you can still use your existing regimes (and will continue to do so by default when you upgrade), you now have the option to switch patients over to using patient specific tablet options which you can customise for each patient.

When custom tablet options are chosen, each dosing instruction is generated dynamically using the options selected rather than being looked up from a pre-set list. You can still edit individual instructions for a patient to change the doses they take on each day, but this approach gives you much greater flexibility as to which anticoagulants, tablet strengths, brands and dosing options you can use.

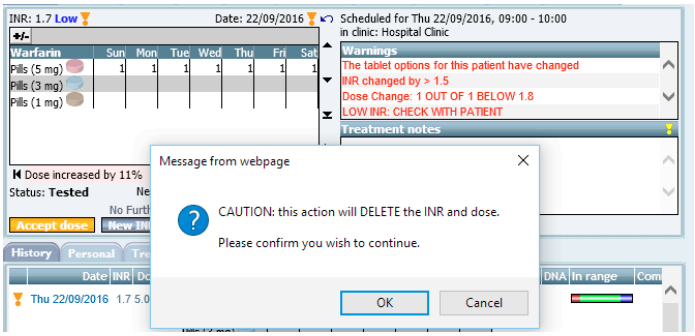
Version 7.9.50 – Undo Dose Made Easy

In Version 7.9.50 it is now easier to delete a next appointment for a patient.

In previous versions of DAWN AC this meant manually unscheduling and deleting the next test, then resetting the current INR and dose.



Now clicking the reset button against the next test resets everything back to how it was before you accepted the last dose. It automatically removes the next test record and makes the current INR and dose editable again (without removing existing INR, dose or next test date values).



On clicking the reset button and acknowledging the warning message the previous dose and next test date for the patient is removed from the record.

From version 7.9.58, only the most recent historic dose and next test date for the patient can be removed from the record this way.

Version 7.9.50 – Record More Than One INR for a Patient

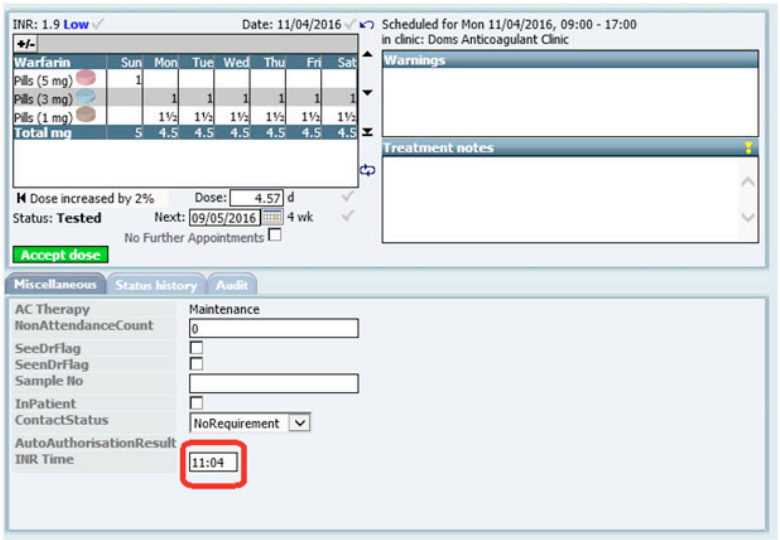
From 7.9.50 onward it is possible to record more than one INR for a patient to cater for the following scenarios:

- An INR for a patient is entered onto their record either manually or via an interface. A dose has not been authorised when a second INR is made available for the patient. It is now possible to dose against the second INR keeping the first for audit.
- An INR for a patient is entered onto their record. A dose has been authorised when a second INR is made available. It is now possible to dose the patient keeping the first dose and INR for audit.
- An INR is dosed however information becomes available that leads to a second dose being issued for the same INR. For strict record keeping the original dose can be retained.

Version 7.9.50 – Record an INR Time

Some customers need to dose INR results in the approximate order the INRs were received so as to meet patient expectations.

DAWN now has an additional field for INR time. This defaults to the time the INR is entered into DAWN (either manually or via the interface) and is updated automatically. Relevant list views can be ordered by date/time, enabling patients to be dosed in that order.



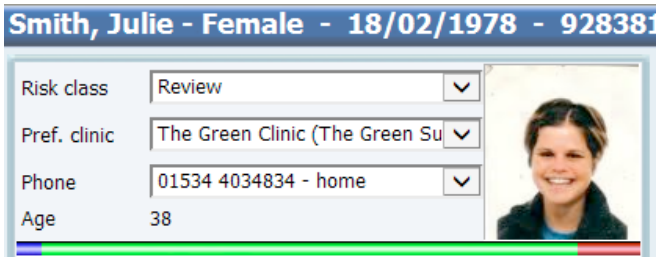
Version 7.9.53 – Dose a Patient Without an INR

The simplest way to handle a patient who fails to attend is to mark their appointment as a DNA (Did Not Attend). This method allows you to easily reschedule the patient's test while keeping track of the number of consecutive tests they have missed.

However, in some situations you may wish to call the patient and advise them on what dose to take until they next have their blood tested. In many cases, you may simply suggest continuing on the same dose and having a blood test as soon as possible but the fact you have spoken to the patient and actively advised them to do this may be something you want to record as a dose record in DAWN. This could be even more important if the patient informs you their circumstances have changed - perhaps they have started taking a concurrent medication that interacts with warfarin - and you suggest a dose change to compensate.

Version 7.9.57 – Show Patient Gender on Patient Screen

To aid accurate and easy patient identification, the patient's gender is now displayed in the caption for the patient screen.



For information on upgrading your DAWN AC system to the latest version, as covered under your annual maintenance contract, contact the DAWN team at support@4s-dawn.com.

For more information on DAWN AC Products and Services:
Please call from the UK: 015395 63091. Fax 015395 62475
Or Internationally 44 15395 63091. Fax 44 15395 62475

E-mail: sales@4s-dawn.com
Web Site: http://www.4s-dawn.com

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