



**Proceedings
of the 10th Annual
North American
DAWN AC
User Group Meeting
30th September 2016**

*"The meeting was great, a
wonderful learning experience"*
UCLA Healthcare



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Welcome and Opening Remarks

Jean M Connors MD, Co-Medical Director, Brigham & Women's Hospital Anticoagulation Management Service

Syd Stewart, Managing Director, 4S DAWN Clinical Software

Dr Connors & Syd welcomed all the delegates and highlighted the value of such a meeting in providing the opportunity for DAWN AC users to come together to discuss how each service uses DAWN AC differently for common challenges within their anticoagulation services and to learn from others experiences.

There were a range of DAWN AC users in attendance from across North America and Iceland.



Dr Connors also underlined the increasing popularity of DOACs and the importance of both monitoring patients and educating healthcare professionals to ensure consistency of care and prescribing across care settings.

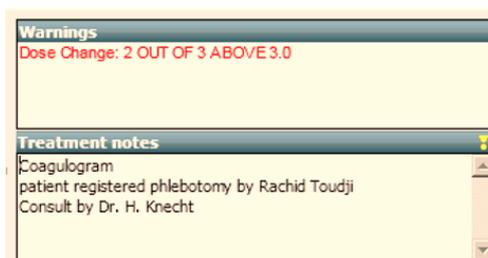
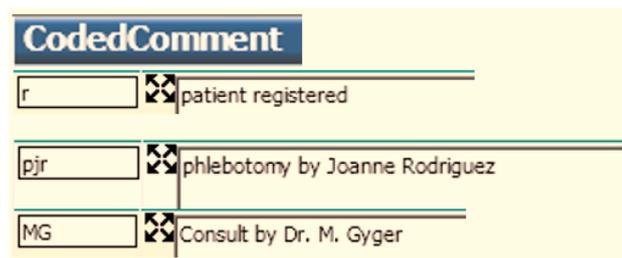
Adjusting DAWN AC to specific needs

Dr Blostein, Director, Coagulation Laboratories and Anticoagulation Clinic, Jewish General Hospital, Quebec, Canada

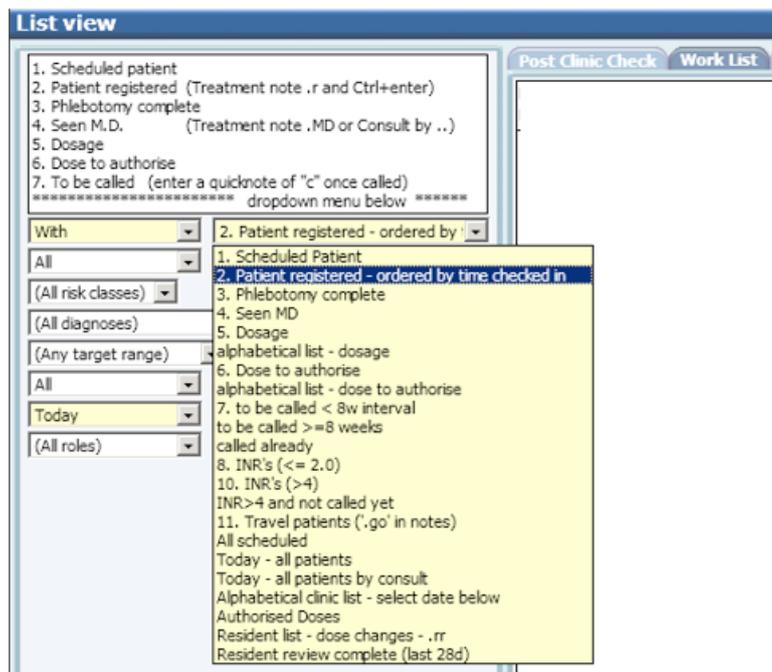
Dr Blostein opened the presentation with an overview of the anticoagulation clinic at Jewish General Hospital. As the second largest anticoagulation clinic in Quebec, it currently has just over 2000 active patients with around 350 patients seen per week. With an elderly population, patients are split roughly between Atrial Fibrillation [70%], VTE [15%] and artificial heart valve patients [15%].

All patients visit the clinic for their INR with stable patients seen on Mondays and Wednesdays, new patients and patient education on Tuesdays and emergencies seen on a Thursday and Friday.

DAWN AC has been specifically configured so that it fits the clinic workflow and coded comments within the notes fields are used for patient appointments in order to track the patient through their appointment and record that each stage has been completed. Coded comments are used in this way so that all healthcare professionals have visibility on what has been completed and can track that the patient has been through each stage required for their appointment.



The list views also play a key part in the clinic workflow and have been configured to match each stage of the patient appointment. Each time the patient completes a stage of their appointment they are moved to the next list view so the relevant healthcare professional responsible for seeing the patient at each stage can easily access the patient record, deal with the patient, insert the relevant coded comment and then save the patient record, automatically moving the patient to the next list view.



After the patient has been seen by the MD (Stage 4) they leave the clinic.

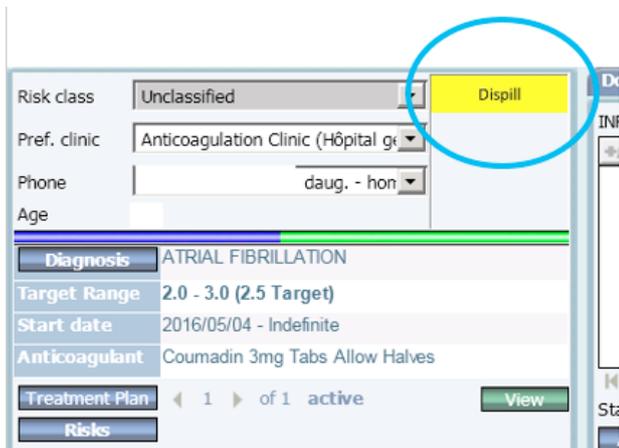
The INR is received into DAWN AC from the laboratory system and the patient record gets moved to the dosage list once the INR is ready (Stage 5) so that the doctors can easily see who needs their dose checking/setting and accepting.

Once the dose has been accepted, the patient is moved to the 'Dose to authorise' list view. This stage requires the dose to be authorised by a senior doctor and the list view enables quick access to these patients. Once the doses are authorised by the MD they are allocated into a number of other lists dependent on the results:

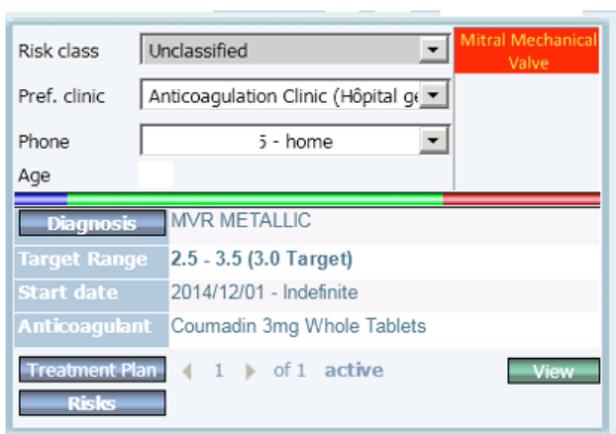
7. to be called < 8w interval
 to be called >=8 weeks
 called already
 8. INR's (<= 2.0)
 10. INR's (>4)
 INR>4 and not called yet

Quick notes are used by the callers for those patients who need to be contacted by phone. They are added to the appropriate list view for the callers to access. Coded comments are used (.c) to add to the quick notes which moves the patient to the 'called already' list view. This enables good visibility as to who has been contacted.

Another section of the DAWN patient record that is used specifically for clinic requirements is the area allocated to patient photographs. Rather than a photograph of the patient, this section is used by the anticoagulation clinic to highlight key groups of patients. For example, a yellow 'Dispill' image means that the pharmacist prepared the dose and this lets the clinic staff know to call the pharmacist.



This is also used to identify groups of patients who are classed as high risk, e.g. mitral mechanical heart valve, so that there is a highly visible warning for the doctor.



Another list view has been set up within DAWN AC that shows which healthcare professional set the dose, who authorised the dose and the next test date. This enables a quick review at the end of the clinic with each stage and responsible person easily identified. Dr Blostein uses this to check all patients have been treated appropriately and next test dates are adequate for the patients' requirements.

Two final list views are the 'Resident list – dose changes' and the 'Resident Review Complete' list views. Dr Blostein uses these to identify instances where the authorising doctor has made changes to the dose set by the residents, which enables Dr Blostein to go over the changes with the resident as part of their training. This list view means that it takes just 5- 10 minutes at the end of the day to sit down with the residents and go through this additional element of teaching.

The DAWN AC system has been configured to meet the specific requirements of the anticoagulation clinic workflow, to enable a smooth process for the patient to move through their appointment; a clear, visible, recorded pathway for all healthcare professionals involved to follow at each stage of the patients journey; and an easily accessible teaching tool for the MDs to use with the residents.

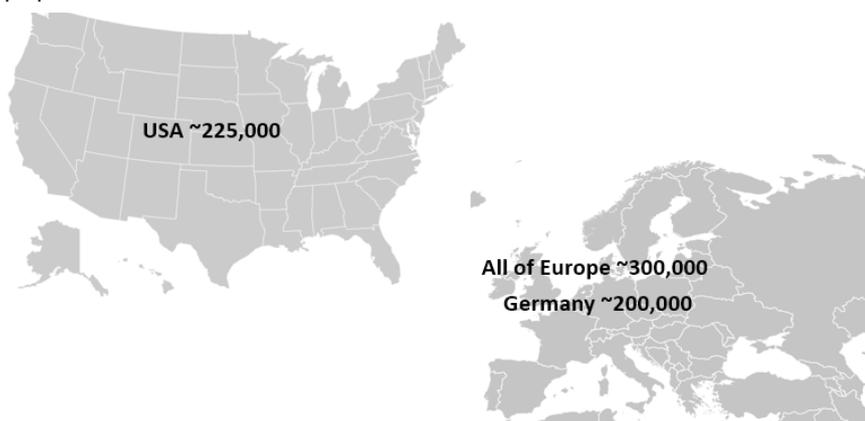
The next step for Dr Blostein is to set up a DOAC clinic using the DAWN AC DOAC modules for dabigatran, rivaroxaban and apixaban and work is currently underway with 4S DAWN to set up faxing and emailing so that the system is as automated as possible. In addition, Dr Blostein is working on an interface to the hospital EHR so that outside of the anticoagulation clinic, hospital staff have access to the key anticoagulation information for DAWN AC patients such as INR, dose and next test date.

Before DAWN AC was implemented, the anticoagulation clinic used paper charts and for the first 6 months using DAWN AC, the clinic had a dual system, using both DAWN AC and paper. The anticoagulation clinic is now paperless due to using the DAWN AC system.

Patient Self-Testing at Massachusetts General Hospital AMS

Lynn Oertel, Nursing Practice Specialist, Massachusetts General Hospital, Boston, MA

The map below shows the number of self-testing patients in the USA and Europe. Of the 300,000 patient self-testers in Europe, two-thirds of those are in Germany. 225,000 patients in the USA represents 5.6% of the warfarin population as self-testers.



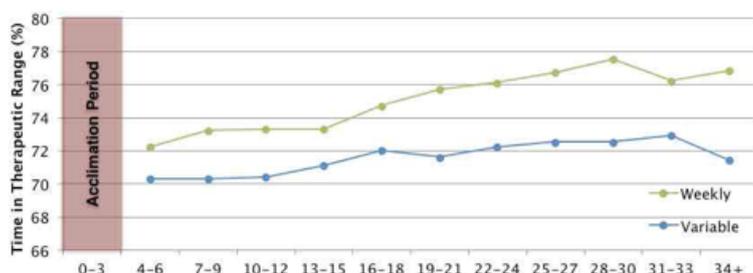
A range of studies have been undertaken that look at the efficacy of self-testing for anticoagulation patients compared to Usual or Clinic Care and these generally show an improvement in outcomes from TTR and bleeding events to mortality.

Summary of meta-analyses comparing PST/PSM to Usual or Clinic Care¹⁻³

	Heneghan et al Lancet 2006	Garcia-Alamino et al Cochrane 2010	Bloomfield et al Ann Intern Med 2011
# Patients	3049	4723	8413
# studies	14	18	22
TE Events	OR 0.45 (95% CI 0.30-0.68)	RR 0.50 (95% CI 0.36-0.69)	OR 0.58 (95% CI 0.45-0.75)
Major Bleed Events	OR 0.65 (95% CI 0.42-0.99)	RR 0.87 (95% CI 0.66-1.16)	RR 0.87 (95% CI 0.75-1.05)
Mortality	OR 0.61 (95% CI 0.38-0.98)	RR 0.64 (95% CI 0.46-0.89)	OR 0.74 (95% 0.63-0.87)

TE=Thromboembolic, OR=Odds Ratio, RR=Relative Risk, CI=Confidence Interval

Time in Therapeutic Range, by Time on Service



TTR by CoaguChek Patient Services⁴

Number of Patients: 18,243

Number of INRs: 1,055,265

Time Range: 2008-2015

Mean TTR Variable = 70.2%

Mean TTR Weekly = 72.8%

A number of advantages of partnering with Independent Diagnostics Testing Facilities (IDTFs) were highlighted including:

- The ability to review/determine the insurance benefits and patient's out of pocket costs
- Providing in-home training and supplies (testing meter and strips)
- Communicating INR results to warfarin managers via fax/page/phone/web portal
- Ongoing support of patient compliance with prescribed testing frequency
- Technical support and assistance

As of September 2016, Massachusetts General Hospital AMS had a self-testing patient population of 560, using eight different IDTFs, and representing 14% of the clinic population. Patient self-testers are recorded within DAWN AC under the 'Patient Self-Testing lab' type and the top indications for this patient cohort are Atrial Fibrillation, VTE, Heart Valve Replacements and Hypercoagulable States.

A performance improvement project to determine if TTR improved for patient self-testers was carried out by the AMS, the results of which are below and which were also included in a poster presentation at the ACF conference in May 2011.

ANALYSIS OF TTR PRE AND POST PST											
	Pre					Post					P value
	Mean	SD	Median	Q1	Q3	Mean	SD	Median	Q1	Q3	
F/U days*	693.8	439.7	769	253	1135	297	260.7	187	100	454	
INRs_30 days	2.8	2.9	2	1.5	3.2	3.7	1.3	3.9	3	4.3	<0.0001
Interval	15.2	8.1	15.1	9.9	19.2	14.5	48.1	8.1	7.3	11	<0.0001
TTR	69.5	16.1	72.9	60.7	79.5	74.6	18.8	77.6	64.4	88.8	<0.001

*F/U days = # treatment days from first to last INR, INRs_30 days = # INRs every 30 days, Interval = intervals between INRs, TTR calculated using Rosendaal method

Further as yet unpublished data from the AMS from December 2014 to March 2015 looks at INR performance in patient self-testers versus laboratory testing for a therapeutic range of 2-3.

Testing	# of PTs	# of INRs	TTR	# INRs 1.3 or below	# INRs 5 or above	# INRs 7 or above
PST	413	3,450	75	164 (4.75%)	21 (0.6%)	2 (0.06%)
Laboratory	3,457	18,018	73.9	1,175 (6.5%)	156 (0.87%)	33 (0.18%)

Frequency of INR testing for patient self-testers is 7 days at the start of treatment and increasing to no more than 14 days once established. This frequency is set within the patient's Treatment Plan in DAWN AC.

The AMS needed to be innovative and embrace new technology to create solutions for dealing with increased numbers of INRs for patient self-testers who tested more frequently than Usual Care patients, whilst tailoring their approach to those who benefitted most from increased frequency. This involved looking at:

- **Incoming INRs to clinic**
 - From patient (dedicated phone line, interactive voice-response system, web portal, mobile app)
 - From IDTF (Fax, phone, page, web portal retrieval)
- **Outgoing communication to assess and/or inform patients**
 - Telephony services
 - Email or mail (USPS mail has time delay)
 - Smart phones
 - Mobile apps
 - Web portals

Self-testing brings a number of benefits to provider and patients alike including:

- Empowerment – patients are actively engaged in their care and disease management
- Achieve more time in therapeutic range – therefore more likely to reduce adverse events and the associated health care costs
- Convenience – removes limitations associated with getting to a laboratory
- Preference for fingerstick over venous puncture (poor venous access)
- Improve quality of life – less time spent with travelling to/from laboratories, doctor's office etc.
- Maintains consistent lab for patient – mobile lifestyle, frequent traveller

In summary, the right patient selection and right educational support, makes patient self-testing an attractive option for routine INR testing by achieving a greater percent of time in therapeutic range and limiting the times INRs get in the danger zones. Actively engaging patients in their health care management offers many benefits and reinforces compliance.

A number of practical tips were outlined both at the clinic level and for getting started with PST.

At the clinic level:

- Utilize PST agreement (supplements general AMS agreement). Scan and attach to DAWN AC Documents Tab
- Practical / educational discussion with patient for expectations and practicalities
- Organize / streamline the process
- Document in clinic and hospital records

Getting started:

- Physician Order for Patient Self Testing (IDTF referral)
- Patient Authorization Form (not all IDTFs require this) for patient's signature to release healthcare information to determine benefit coverage
- Use ICD-10 codes for approved diagnoses [include: Z79.01 Long term (current) use of anticoagulants]

The presentation was brought to a close with a list of reasons explaining the introduction/growth of patient self-testing within anticoagulation services:

- Patients prefer it for many reasons
- Improves the quality of INR control, avoids danger zones
- Likely to reduce poor outcomes with better control
- Right option for the right patient
- This is patient-focused – engages patients in their health care management

References:

1. Heneghan C et al. *Lancet* 2006;367:404-411
2. Garcia-Alamino JM et al. *Cochrane Database Syst Review*. 2010:CD003839
3. Bloomfield HE et al. *Ann Intern Med* 2011. 154:472-482
4. Fantz CR. *The efficacy of patient self-testing to manage patients on warfarin. White paper published by Roche 2016*

War on warfarin: Integrating DOACS into your anticoagulation service

David DeiCicchi, Pharm. D, Advanced Practice Clinical Pharmacist Team Lead, Brigham & Women's Hospital, Boston, MA

Brigham and Women's Anticoagulation Management Service (AMS) are in the process of building a direct oral anticoagulant (DOAC) clinic and integrating it into their traditional anticoagulation management services. David's presentation aimed to look at the importance of an AMS in managing warfarin; national trends in anticoagulation; the role of an AMS in managing DOACs; and the approaches to integrating a DOAC clinic into an AMS.

Advantages and Importance of Anticoagulation Management Services

- Dedicated sites of service for anticoagulation
Having dedicated anticoagulation staff ensures quality results for the patient population

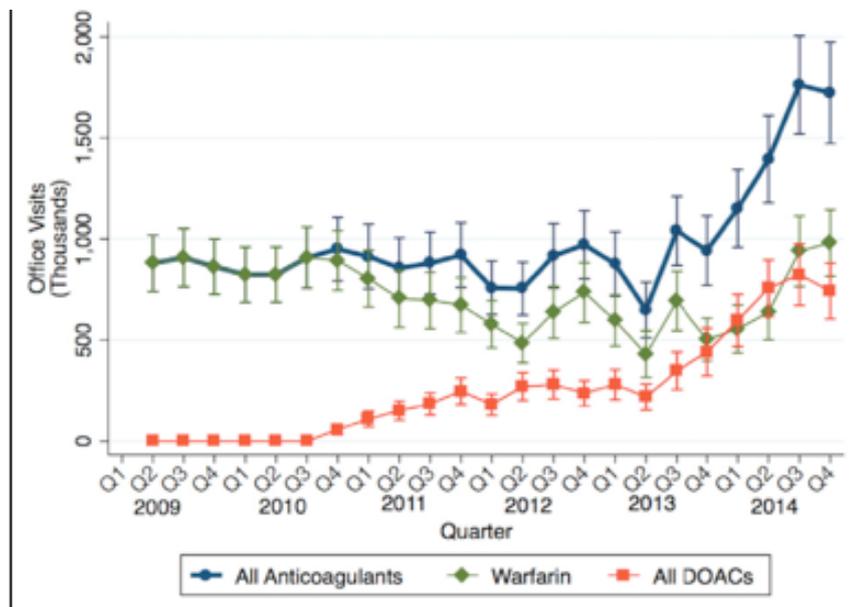
- Consistent provider-patient interactions
Frequent interactions allow for continued education and assessment of the patient
- Systematic follow-up
Reliable follow up of patients who don't attend their scheduled INR
- Quality assurance measures
Assesses anticoagulation management performance by tracking patient census, time in therapeutic range (TTR), critical INRs, events etc.

Time in Therapeutic Range (TTR) is lower for patients who visit their physicians for anticoagulant care with an average TTR of 57% which is considered poor control in most disease states. Generally, TTR for anticoagulation management services is around 66% which is considered good quality control.

National Trends in Anticoagulation

In 2015, important changes were seen in the utilization of oral anticoagulants, particularly with the newer direct oral anticoagulants, dabigatran, rivaroxaban, apixaban and edoxaban. Dispensed prescriptions for direct oral anticoagulants rose 73.6% from early 2014 through to the end of 2015, while Warfarin use decreased by 10.9% during the same time period.

By the fourth quarter of 2015, the four direct oral anticoagulants had captured 34% of the market, leaving 66% to warfarin.



➤ A-fib visits with AC use increased from 51.9% to 66.9% between 2009 and 2014

➤ DOAC usage rose 73.6% from early 2014 through 2015

➤ Warfarin use decreased by 10.9% from early 2014 through 2015

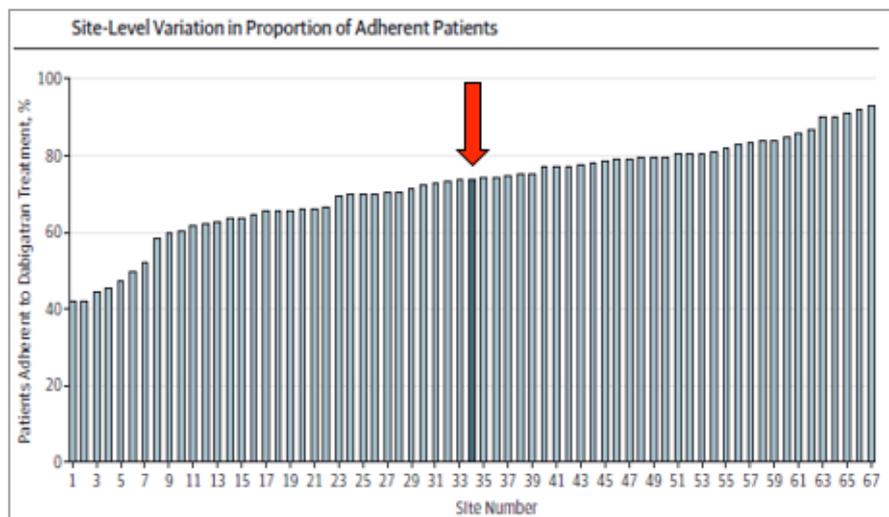
Quarterly visits for atrial fibrillation by anticoagulant type

The AMS at Brigham & Women's Hospital is seeing the same trend along a similar timescale. Since 2009, the service has been growing exponentially, yet from 2014 there has been a decline in patient numbers from over 3500 to around 3100 patients in the most recent quarter of 2016. This is due to a large percentage of anticoagulated patients being atrial fibrillation or VTE patients which are the main indications for DOACs.

With a strong trend towards increased DOAC usage the industry is seeing a lot of adverse events reported to the FDA. In 2011, dabigatran and warfarin had the first and second most FDA direct adverse event reports proving that inhibiting clotting still ranks as the highest risk chronic therapy regardless of whether you are administering VKA or non-VKA medications.

The question is: How can Anticoagulation Management Services help this problem?

A study of 67 sites representing just under 5000 patients looked at dabigatran adherence:



➤ 4,863 patients at 67 sites

➤ Adherence defined as proportion of days covered (PDC) \geq 80%

➤ Median site adherence rate was 74%

The height of each bar represents the proportion of patients who had adhered to their medication regimen at that site. The dark bar represents the median proportion (74%) who were adherent, across all 67 sites. Those sites with higher than average adherence were found to provide more pharmacist-led event monitoring, patient follow up, and have more involvement from an anticoagulation clinic.

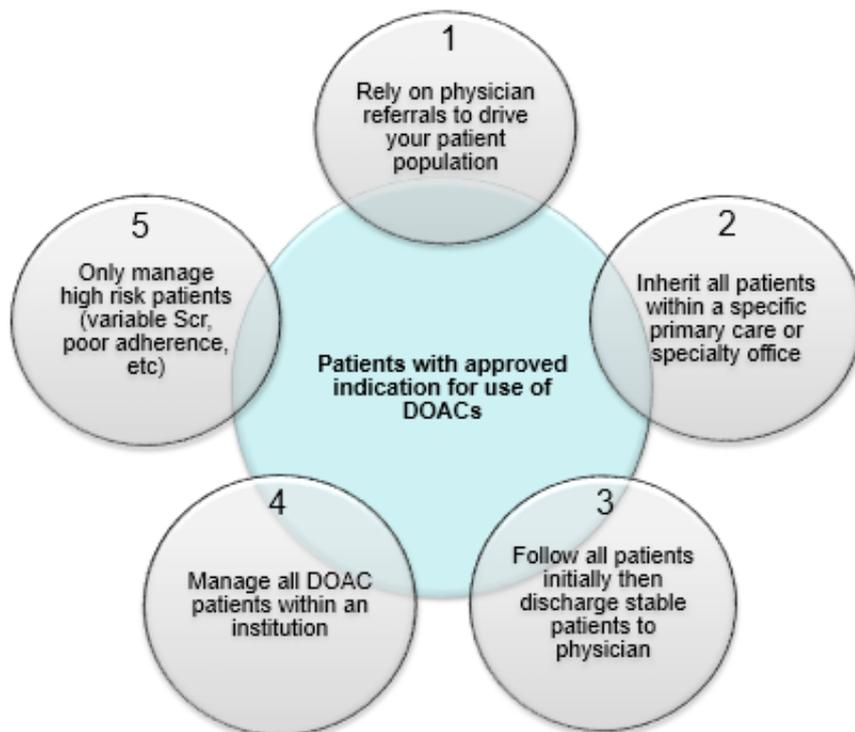
Increased adherence is key for these patients since every 10% decrease in dabigatran PDC results in a 13% increase in hazard ratio for all-cause mortality and stroke (Shore S, Carey EP, Turakhia MP, et al. Adherence to dabigatran therapy and longitudinal patient outcomes: insights from the veterans health administration. *Am Heart J.* 2014; 167(6):810-817).

What is the role of the AMS in prescribing and monitoring DOACs?

Initial	Ongoing
<ul style="list-style-type: none"> Assess patient, medication and dose selection Confirm initial fill of prescribed medications Ensure proper acute treatment and transition to maintenance doses Facilitate transition to and from other anticoagulants 	<ul style="list-style-type: none"> Facilitate proper labelled dose transitions Manage periprocedural anticoagulation Facilitate discontinuation of anticoagulants upon treatment completion Manage minor bleeding and triage clinically relevant events
Initial and Ongoing	
<ul style="list-style-type: none"> Identify drug-drug interactions Provide patient education Assess medication adherence Obtain laboratory markers 	

Approaches to Integrating DOAC clinics into the AMS

Firstly, consider what the target patient population is and where you will get your patients from.



Secondly, you need to understand what exactly the intervention from the AMS is going to be and when you will intervene.

What is your intervention?	When will you intervene?
<ul style="list-style-type: none"> • Patient chart review • Face-to-face initial or continued follow up • Telephone follow up • Telemedicine visits • Health care provider consults 	<ul style="list-style-type: none"> • At the time of qualifying diagnosis • During the anticoagulant selection process • After prescription is given to the patient • At the time of discharge • Only within high risk patients and situations

Once the AMS has considered its target patients and what the clinic's intervention will be, the next step is understanding how you will manage the patients on DOACs.

The reason an AMS can operate at a high level of efficacy and safety are due to the policies and procedures that they institute to standardize care in anticoagulation. This same theory needs to be applied to your new DOAC clinic if you want it to be successful as well.

As such, policies and procedures are being drawn up for the following areas:

- Patient education
- Assessing adherence
- Medication management plans and routine follow up
- Converting to and from anticoagulants
- Periprocedural management of each DOAC

The AMS believes that disease management software like DAWN AC that can track patients and ensure correct follow up in a systematic way is essential for initiating a DOAC clinic, monitoring your patients, and taking quality assurance measures for patients on DOACs.

Closing the presentation, David summarised helpful tips for integrating DOACs into an AMS:

- Define a target patient population that is consistent with the needs of your institution
- Clearly define your intervention

- Develop a patient education program with the goal of providing consistent, structured education to patients
- Create guidelines for patient management to standardize care across your AMS
- Use comprehensive software such as DAWN AC DOAC modules to support your intervention and report your results
- Train and educate your staff!
- Don't over manage DOAC patients. Management should be far less burdensome for the health care provider and the patient.
- Consider surveying other DOAC clinics and conducting pilot testing in order to help you
- Establish the target population that works best for your anticoagulation service
- Determine if you are ready for full scale implementation
- Make decisions on where to allocate your time and resources
- Ensure that you are well prepared to measure the success of your program
- Establish an evidence-based program that meets the needs of your institution

Management of NOACs with the DAWN AC modules

Jane Vo, Pharmacist, Scripps Clinic Anticoagulation Services, La Jolla, CA

The Anticoagulation Service (AS) at Scripps Healthcare is pharmacist managed and their role at Scripps as anticoagulation specialists includes NOAC management. Scripps AS have been using the DAWN AC NOAC modules for the initiation and follow-up of patients on apixaban, rivaroxaban and dabigatran for around two years. The service sees a wide range of patients who are referred by outpatient physicians, inpatient physicians and urgent care and uses DAWN AC to manage their entire patient population, both VKA and non-VKA.

The pharmacist's role in managing NOAC patients is:

- Encouraging adherence
- Adjusting drug dose and following-up renal function
- Identifying adverse drug reactions
- Communicating pre-and-post op therapy instructions
- Following up bleeding complications
- Tracking drug discontinuation and transitioning patients back to warfarin

Non-adherence to NOACs is a concern during long-term anticoagulation. Whilst rates of non-adherence to VKAs have been reported of between 22-58% (*Kimmel SE, et al.*¹, *Van der Meer FJ, et al.*²), adherence to NOACs has been poorly documented and may prove to be an issue now that the drugs are used more frequently outside of clinical trials.

So what information is available from NOAC clinical trials regarding adherence?

- **Einstein PE:** adherence was >80% in 94.2% of patients treated with rivaroxaban (Xarelto)³
- **Amplify (DVT & PE):** adherence was >80% in 96% of patients treated with apixaban (Eliquis)⁴

Scripps AS use the DAWN AC modules for apixaban, rivaroxaban and dabigatran and all three are prescribed for indications of Non-valvular atrial fibrillation and the treatment and prevention of DVT/PE.

The NOAC modules are used to help the AS manage NOAC patients all in one place. As they are integrated into the DAWN AC patient record the patient's full anticoagulation history is provided.

The DAWN modules also enable the AS to ensure that patients are on the appropriate drug and dose, schedule follow-ups, manage missed appointments, report on the NOAC patient population and audit the system. List views are used to check which patients are ready for follow-up/haven't had questionnaires completed etc.

The AS workflow within DAWN AC for NOAC patients comprises the following:

- Complete an initiation questionnaire
- Stop any existing treatment plan

- Activate a new treatment plan for the chosen anticoagulant and dose
- Schedule a follow-up date for the patient.

The AS manage NOAC patients using specific forms set up as questionnaires (initiation questionnaire and follow-up questionnaire) and these enable the AS to identify valid indications; identify contraindications, identify haemorrhagic risks; advise on dose; check drug and dose are still appropriate; check compliance; and check creatinine clearance among other key information such as HASBLED and CHA2DS2VASc scores.

After initiation onto a NOAC, follow-up is done every 1-2 weeks to start with, then moving to every 1-3 months. If the patient is not experiencing any issues, follow-up is then completed every 3-6 months.

The following examples of two patients seen by the AS show how the DAWN NOAC modules have helped determine suitability of NOAC and appropriate dose, both at initiation and follow-up stage.

CASE 1

66yo male referred from Urgent Care for acute unprovoked PE/DVT. Patient was given one dose of Lovenox and prescribed apixaban 10mg BID x 7 days then apixaban 5mg BID.

PMH: CAD, HTN, HPL, H/O seizures
 Labs: CMP unremarkable, CBC normal, INR=1.0, Scr=0.9
 Meds: atorvastatin, omeprazole, phenytoin and vit D

Start of Initiation questionnaire:

Questions:

Therapeutic Indication:

Duration Of Use:

NB Remember to schedule a follow-up questionnaire for this patient once the Apixaban treatment plan is activated

If switching from VKA, please enter the current INR:

Delay starting Apixaban until INR < 2.0

Notes:

Enter the start date of Apixaban or other anticoagulant:

Day 7 will be on Monday 6/8/2015 - adjust dose as appropriate.

Measured Creatinine Clearance: mL/min

Contraindicated and interacting drugs section:

The following lists are for guidance only and are not exhaustive. Please use your clinical judgement before decision making.

[Click for more details on Apixaban](#)

Contraindicated Drugs* :

- ANTIMYCOTIC (ITRACONAZOLE, KETACONAZOLE...)
- ANTITHROMBOTIC (WARFARIN, DABIGATRAN...)
- HIV PROTEASE INHIBITOR (RITONAVIR...)

Interacting drugs*:

- Agent associated with serious bleeding
- ASPIRIN
- CLOPIDOGREL
- CYP3A4 and P-gp inducers (RIFAMPICIN, PHENYTOIN...)
- OTHER NSAIDs

INTERACTION
[click for more details](#)

CYP3A4 AND P-GP INDUCERS (RIFAMPICIN, PHENYTOIN...):
 Use with caution. Not to be used for treatment of DVT and PE

Other anticoagulant or platelet inhibitor* :

- Abciximab
- Eptifibatid
- Heparin

Care is to be taken if patients are

Due to the drug interaction highlighted in the DAWN NOAC questionnaire and the warning not to be used for treatment of DVT/PE, the patient was stopped on apixaban and transferred back to warfarin.

CASE 2

73 yo female on Xarelto 20mg qpm for atrial fibrillation due for follow up.
Patient has been having borderline CRCL around 51 ml/min. Upon checking current SCR at follow-up,
CRCL = 48 ml/min.

Follow-up questionnaire,
adherence section:

Therapeutic Indication:	ATRIAL FIBRILLATION NON VALVULAR
	<i>NB Remember to schedule another follow-up questionnaire for this patient for 6 months time</i>
I have taken the correct dose every day	<input type="radio"/> No <input type="radio"/> Yes
I might have taken too many capsules / tablets	<input type="radio"/> No <input type="radio"/> Yes
I might have missed one or more doses	<input type="radio"/> No <input type="radio"/> Yes
Notes:	<input type="text"/>
I have started a new medication recently	<input type="radio"/> No <input type="radio"/> Yes
Reasons for compliance problems:	<input type="checkbox"/> Dementia <input type="checkbox"/> Fear of side effects <input type="checkbox"/> Gastroesophageal Reflux Disease <input type="checkbox"/> Gastrointestinal Bleed <input type="checkbox"/> Lack of information <input type="checkbox"/> Lives alone <input type="checkbox"/> Multiple medications <input type="checkbox"/> Prescriptions from several doctors

Creatinine clearance check:

Measured Creatinine Clearance:	48 mL/min
eGFR:	<input type="text"/> mL/min
Cockcroft-Gault estimate of CrCl:	$1.23 \times (140 - \text{age years}) \times \text{weight kg (x 0.85 if female)}$
Cockcroft G. Gault MD. Nepton, 1931-41, 1976	serum creatinine $\mu\text{mol/L}$
Serum Creatinine:	<input type="text"/> $\mu\text{mol/L}$
Rocky Mount	...

Suggested dose / dose advice:

Rivaroxaban Dose:	Rivaroxaban 20 mg Once Daily						
Suggested dose:	Moderate/severe renal impairment, 15mg once daily with the evening meal						
Dose Options:	<table border="1"><thead><tr><th>Dosing regime</th><th>Advice</th></tr></thead><tbody><tr><td>Rivaroxaban 20 mg Once Daily</td><td>Recommended dose (maximum recommended)</td></tr><tr><td>Rivaroxaban 15 mg Once Daily</td><td>Recommended for moderate to severe renal impairment (15-49 mL/min creatinine clearance)</td></tr></tbody></table>	Dosing regime	Advice	Rivaroxaban 20 mg Once Daily	Recommended dose (maximum recommended)	Rivaroxaban 15 mg Once Daily	Recommended for moderate to severe renal impairment (15-49 mL/min creatinine clearance)
Dosing regime	Advice						
Rivaroxaban 20 mg Once Daily	Recommended dose (maximum recommended)						
Rivaroxaban 15 mg Once Daily	Recommended for moderate to severe renal impairment (15-49 mL/min creatinine clearance)						
	Please use your clinical judgement before deciding on the most appropriate dose. Then update the treatment plan as required. Click for more details on rivaroxaban.						
Comments:	<input type="text"/>						

Due to the change in creatinine clearance picked up at the follow-up appointment and added to the questionnaire, the patient's rivaroxaban dose was adjusted accordingly in the module's dosing advice to take into account the highlighted renal impairment

Due to the incorporation of NOACs into the AS at Scripps, the service is changing from a traditional Coumadin Clinic and is striving to become a multi-disciplinary, comprehensive anti-thrombosis centre, managing thrombotic disease and coordinating all antithrombotic therapy⁶.

This comprehensive new Scripps anticoagulation service includes:

- NOACs incorporated into the scope of practice
- Development of expertise in the full range of antithrombotic agents
- Periprocedural management
- Transition between agents
- Drug-drug interactions
- Compliance management
- Knowledge of intervention to avoid or minimise complications and maximise efficacy of therapy

References:

1. Kimmel SE, et al., *The influence of patient adherence on anticoagulation control with warfarin: results from the International Normalized Ratio Adherence and Genetics (IN-RANGE) study.* Arch Intern Med 2007; 167: 229-35.
2. Van der Meer FJ, et al., *The role of compliance as a cause of instability in oral anticoagulant therapy.* Br J Haematology 1997; 98: 893-900. 3
3. The EINSTEIN-PE Investigators, *N Engl J Med*, 2012; 366:1287-97
4. Agnelli, G. and AMPLIFY Investigators., *N Engl J Med* 2012; 368: 699-708
6. Edith A. Nutescu, Pharm.D, et.al., *Transitioning from traditional to novel anticoagulants: the impact of oral direct thrombin inhibitors on anticoagulation management.* Pharmacotherapy 2004; 24: 199S-202S.

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.

INR: 2.5 InRange ✓ Date: 11/10/2016

Warfarin	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Pills (3 mg)	2	2	2	2	2	2	2
Pills (1 mg)	1	1	1	1	1	1	1
Total mg	7						

No dose change Dose: 7.00 d
Status: Tested Next: 01/11/2016 3 wk
No Further Appointments
Accept dose

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.

Patient Tablet Options

Use Dosing Regime? Warfarin 5mg Strength

Use Customised Tablet options?

Edit Tablet Options

Anticoagulant: Warfarin Record dose as: Weekly Total
Brand: Coumadin (USA) Split Tablet into: Half a Tablet
Tablet Strength: Pills (5 mg) ..
Dose in: mg

Patient Tablet Options Settings - New record

Anticoagulant: Warfarin Record Dose As: Weekly Total

Brand: Coumadin (USA) (Coumadin) Split Tablet Into: Whole tablet
Half a tablet
Quarter of a tablet

Dose In: Mg

Note: Tablets must be selected in descending order.

Tablet Strength: Pills (5 mg) .., Peach (Coumadir)

Note: Clicking the View Sample Instructions link produces Sample instructions for the tablet options selected in a new window.

The process can take a few minutes to run depending on the options selected.
[View Sample Instructions](#)

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.

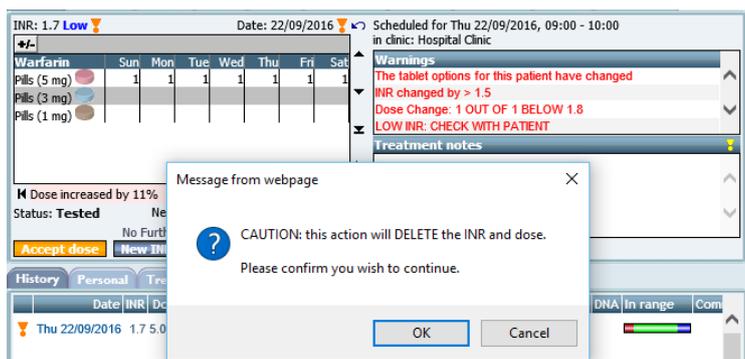
Version 7.9.50 – Undo Dose Made Easy

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.

Treatments for Smith, Julie - 18/02/1978 - 9283812 - Anticoagulation: 25/10/2015

INR: 2.5 **InRange** ✓ Date: 19/09/2016 ✓ Scheduled for Thu 02/06/2016, 13:00 - 13:15
in clinic: The Green Clinic

Coumadin	Sun	Mon	Tue	Wed	Thu	Fri	Sat
mg	5	2½	5	2½	5	2½	5

Warnings
The tablet options for this patient have changed
Calc Prevented: Last Interval greater than 98 days

Treatment notes

Dose decreased by 2% Dose: 27.50 w
Status: **Tested** Next: 26/09/2016 7 d
No Further Appointments

Accept dose New INR/Dose

Miscellaneous Status history Audit INR/Dose History

AC Therapy Maintenance
NonAttendanceCount 0
SeeDrFlag
SeenDrFlag
Sample No
InPatient
ContactStatus NoRequirement
AutoAuthorisationResult
INR Time 11:25

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.

Smith, Julie - Female - 18/02/1978 - 9283812

Risk class Review
Pref. clinic The Green Clinic (The Green Su
Phone 01534 4034834 - home
Age 38

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.

Using DAWN AC to communicate

Russell Peris, Support Staff Manager, Desert Oasis Healthcare, Palm Springs, CA

Russell provided an overview of the Medication Management department which started in 2005 with 6 employees and 450 anticoagulation patients. The department was renamed in 2016 to reflect the change in focus and there are now 65 employees, 10 of which work within anticoagulation with 3500 patients (300 of these are NOAC patients and are monitored using the DAWN AC NOAC modules). Anticoagulation patients from Desert Oasis's sister groups are also monitored by the department.

The organisation has established a variety of pharmacist managed clinics with educational classes held by nurses and/or pharmacy technicians.

Other programs run by the department include:

- Hepatitis C clinic
- CAD clinic
- CHF clinic
- COPD clinic
- Diabetes clinic
- Prescription refill clinic
- Diabetic education
- Diabetic supplies
- Nutrition consultation
- IV antibiotic review
- Health education
- Medication reviews

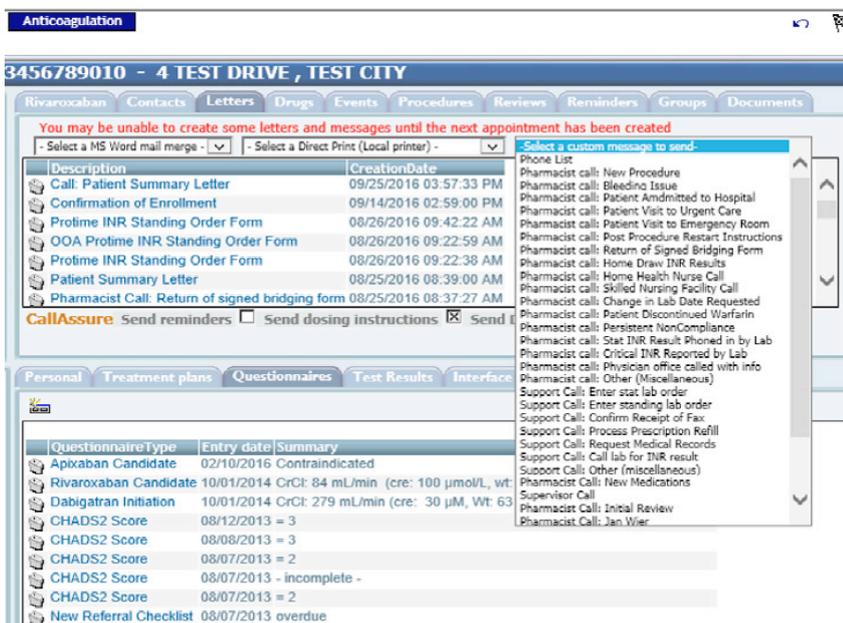
The anticoagulation service within the department is made up of pharmacists, pharmacy technicians and clinic assistants.

Healthcare professionals within the service used to communicate via email which presented a number of problems, primarily due to the quantity of emails received each day. This led to emails getting lost due to the volume received, a duplication of work if multiple people were copied into the email, and issues with mailbox size limitations that caused confusion if 'undelivered' messages were received by senders.

As a result, the team now use DAWN AC to message each other and this provided immediate benefits including:

- Decreased volume of emails
- No duplication of work
- Easy to track when tasks are assigned and completed
- Ability to group messages so that individuals can see only what is theirs to process

The first stage is to generate a quick note against the patient record and this is included in the message to be sent. The letters tab on the patient record is then utilized through the 'Select a custom message to send' drop down which is where all the messaging is done.



The appropriate message is chosen based on the healthcare professional who needs to receive it and the purpose of the message. This is then sent out along with the contents of the most recent quick note.

To view the messages, the List View, Phone List tab can be sorted by pharmacist, supervisor or support and these show the type of message sent, date sent, status and a snippet of the message:

Message	DateSent	Status	LastUpdated	LastNote
Other (miscellaneous)	09/22/2016 03:21:00 PM	Called No Success	09/22/2016 03:58:26 PM	Note: Pt called to say he is havin
New procedure	09/22/2016 02:45:00 PM	Not called	09/22/2016 02:45:12 PM	Note: Lovenox (y/n): Lovenox Rx from MD or MI Technician/Assistant Portic Technician s
Initial Review	09/23/2016 04:37:00 PM	Not called	09/23/2016 04:37:59 PM	Note: Initial review
Initial Review	09/23/2016 04:39:00 PM	Not called	09/23/2016 04:39:50 PM	Note: Please do initial review
Return of signed bridging form	09/23/2016 04:46:00 PM	Not called	09/23/2016 04:46:57 PM	Note: LMWH Bridging form saved
Other (miscellaneous)	09/23/2016 02:55:00 PM	Not called	09/23/2016 02:55:23 PM	Note: Spoke with pt for intake st

The oldest messages are shown at the top and this is easily viewable by all staff. Additionally, if a member of staff is away, the tasks assigned to them are easy to identify and can therefore be picked up by someone else if required.

Pharmacists also have the option to view the tasks personally assigned to them. With individual names added as a 'group' under the 'Groups' tab on the patient record, they can select their name (group) within the filter in List Views and this will bring up the list of messages specifically for them.

List view

With: (All risk classes)

Phone Messages

- SCOM - SCAN MEDI-MEDI (DESERT OASIS HEALTHCARE)
- ATOP - AETNA POS (DESERT OASIS HEALTHCARE)
- BCOM - BLUE CROSS SR MEDI-MEDI (DESERT OASIS HEALTHCARE)
- HNOM - HN SENIOR MEDI-MEDI (DESERT OASIS HEALTHCARE)
- SHOM - SECURE HORIZONS MEDI-MEDI (DESERT OASIS HEALTHCARE)
- SECE - SECURE HORIZONS EVERCLEAR (DESERT OASIS HEALTHCARE)
- BSHMO - BLUE SHIELDS HMO (DESERT OASIS HEALTHCARE)
- SECO - Secure Horizons (DESERT OASIS HEALTHCARE)
- B565 - Blue Shield 65 plus (DESERT OASIS HEALTHCARE)
- DPCS Desert Preferred Choice Senior1 (DESERT OASIS HEALTHCARE)
- INVV INTER VALLEY SERVICE TO SENIORS1 (DESERT OASIS HEALTHCARE)
- INVT INTER VALLEY TOTAL FIT SENIORS1 (DESERT OASIS HEALTHCARE)
- IVSN INTER VALLEY SPECIAL NEEDS 1 (DESERT OASIS HEALTHCARE)
- GAOS BLUE CROSS SENIOR SECURE (DESERT OASIS HEALTHCARE)
- CGNO CIGNA COMMERCIAL HMO (DESERT OASIS HEALTHCARE)
- CGOP CIGNA COMMERCIAL POS (DESERT OASIS HEALTHCARE)
- HN50 HEALTH NET SENIORITY PLUS (DESERT OASIS HEALTHCARE)
- PACP PACIFICARE COMMERCIAL POS (DESERT OASIS HEALTHCARE)
- SCNO SCAN HEALTH PLAN (DESERT OASIS HEALTHCARE)
- IVHP INTER VALLEY HEALTH PLAN SENIOR HMO (DESERT OASIS HEALTHCARE)
- ECSR - Easy Choice Best Plan (DESERT OASIS HEALTHCARE)
- HHCE - Heritage Commercial Employee (DESERT OASIS HEALTHCARE)
- SPANISH SPEAKING (DESERT OASIS HEALTHCARE)
- Robert Mao, PharmD (DESERT OASIS HEALTHCARE)
- Shereen Patel, PharmD (DESERT OASIS HEALTHCARE)
- Jan Wier, PharmD (DESERT OASIS HEALTHCARE)
- Megan Nguyen, PharmD (DESERT OASIS HEALTHCARE)
- CA15 - Care 1st Senior (DESERT OASIS HEALTHCARE)
- HN-X Covered California Exchange (DESERT OASIS HEALTHCARE)
- CZCH - Citizen Choice (DESERT OASIS HEALTHCARE)

For the final stage and in order to complete the message, the pharmacist clicks on the message within the list view and is taken to the relevant patient record where they can open the message, take the necessary action and then mark it up appropriately to confirm that the task is complete. This then removes the message from the list view.

This approach to communicating with team members means that a history of messages can be viewed including who was assigned to the task and when it was accepted/completed.

Communication with other providers is facilitated via an outbound appointment summary interface to the Nextgen EHR which provides visibility of key patient anticoagulant information such as INR, dose, next appointment date and the latest quick note recorded against the patient record in DAWN AC.

Approaches to educating patients on anticoagulation

Amy Levesque, Advanced Practice Pharmacist, Brigham & Women's Hospital, Boston, MA

Amy opened the presentation by outlining the key points to be highlighted, primarily National Patient Safety Goals (NPSG) relating to outpatient anticoagulation; patient education approaches used by Brigham & Women's AMS; and the plan to document and report patient education using DAWN AC.

Key anticoagulation statistics were highlighted¹:

- Anticoagulants are the highest risk outpatient drug treatment in older adults
- In 2015 the FDA received:
 - 34,765 adverse drug event reports related to oral anticoagulation therapy
 - 2,997 of these resulted in patient deaths
 - 9,523 of these required hospitalization

Since 1993, the Joint Commission has mandated that patient and family education be part of comprehensive care. In later years, the following goal relating specifically to anticoagulation was added:

National Patient Safety Goal 03.05.01

- Provide education regarding anticoagulant therapy to prescribers, staff, patients, and families. Patient family education includes the following:
 - Importance of follow-up monitoring
 - Compliance
 - Drug-food interactions
 - Potential for adverse drug reactions and interactions
- Evaluate anticoagulation safety practices, take action to improve practices, and measure the effectiveness of those actions in a time frame determined by the organization

Although the Joint Commission have developed many standards for health education efforts, they do not mandate methods of delivering such education in an outpatient setting, therefore leaving room for individual institutions to design their own approaches.

Learning is more effective when multiple strategies are used and studies⁽²⁻⁷⁾ have shown that quality education in anticoagulation leads to:

- Increase in patient knowledge of disease and treatment
- Increase in time in therapeutic range (TTR)
- Decrease in major bleeding events
- Decrease in composite bleeding and thrombotic events
- Decrease in hospital re-admission rates

A commonality of each of the studies resulting in the outcomes above was that all of them compared a structured, multi-modal approach to one that only provided patients with a pamphlet/informative printout.

A structured, multi-modal approach is key to quality education

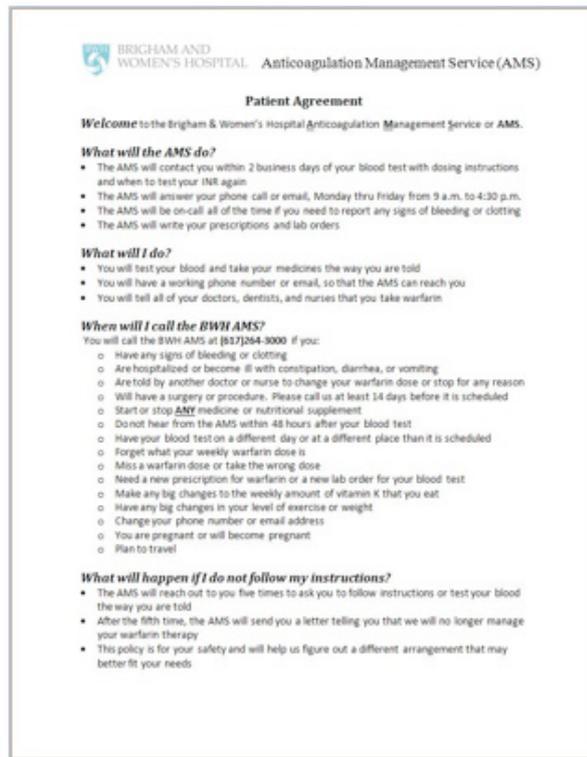
This is the approach used at Brigham & Women's AMS and is shown in more detail below:

Structured

- **Checklists** – ensure that the minimum NPSG criteria is met and ensures uniform content coverage with all patients
- **Discussion Technique** – ask the patient what he/she already knows as this helps get the patient engaged and allows misinformation to be corrected and built upon
- **Patient Contract** – gives the patient an element of responsibility and ownership of their care whilst reinforcing the need to know and understand the information they are being given

- **Reinforcement** – checking the patients’ understanding is extremely important; one of the most effective ways to reinforce learning is to utilize the teach-back method where you and the patient switch roles and they reiterate what you went over. Questionnaires may also be used; two validated questionnaires include the Oral Anticoagulation Knowledge (OAK) Test and the Anticoagulation Knowledge Assessment (AKA).

New Patient Education Checklist	
<input checked="" type="checkbox"/>	Personal Information: Verify Name DOB Address Phone number (primary number): ask if it is okay to leave a message Emergency Contact
<input checked="" type="checkbox"/>	Warfarin Management: Indication and Referring Physician
<input checked="" type="checkbox"/>	Clinic Information: Clinic Hours, Staff members, On-call service
<input checked="" type="checkbox"/>	Review medical history and identify patient risk factors
<input checked="" type="checkbox"/>	Discuss warfarin management, review key terms including: INR, High INR/Low INR
<input checked="" type="checkbox"/>	Diet: Role of Vitamin K in diet
<input checked="" type="checkbox"/>	Report changes in activity or illness (i.e.: vomiting, diarrhea, constipation)
<input checked="" type="checkbox"/>	Counsel on alcohol usage
<input checked="" type="checkbox"/>	Report any medication changes including: antibiotics, steroids, intake of acetaminophen and ibuprofen.
<input checked="" type="checkbox"/>	When to take warfarin during the day
<input checked="" type="checkbox"/>	Pharmacy info
<input checked="" type="checkbox"/>	Lab testing info
<input checked="" type="checkbox"/>	Upcoming procedures or surgeries
<input checked="" type="checkbox"/>	Upcoming travel plans

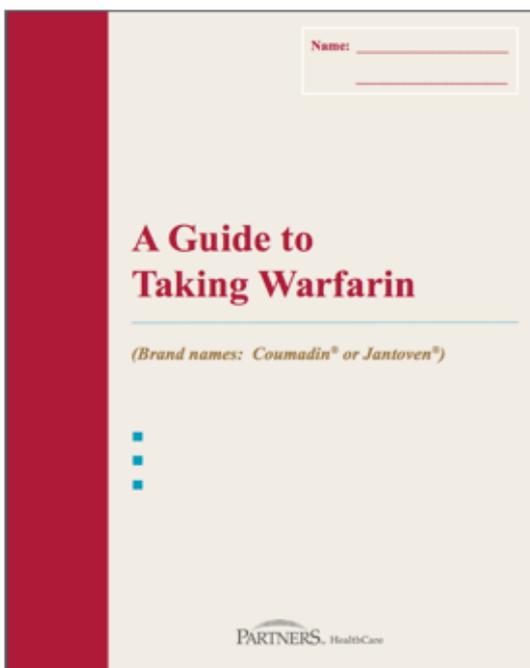


Multi-Modal

The AMS employ audio, visual and written methods in order to reinforce information.

The primary mode of initial education is via telephone although face-to-face sessions are scheduled if patients prefer and are accessible to the hospital. All patients receive some face-to-face education at the time of discharge for those admitted and at the time of diagnosis and treatment decision at the provider’s office for outpatients.

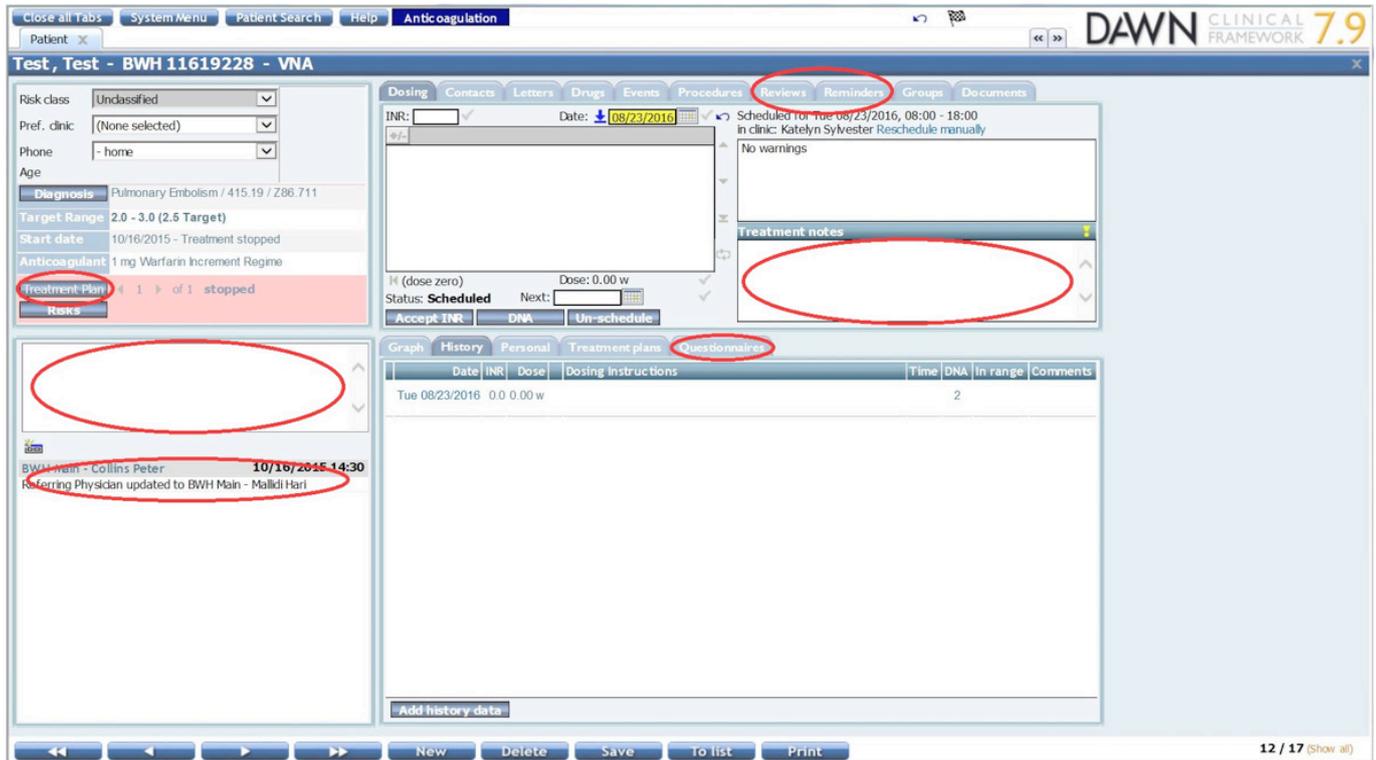
Written materials in the form of ‘A Guide to Taking Warfarin’ and an online education course are also used to educate patients and their families.



Using DAWN AC to document patient education

The NSPGs do not specifically mention documentation of education but it is certainly good practice to do so and there are a number of areas within DAWN AC where this can be recorded.

- Reviews
- Reminders – good for circumstances where patients are unable to receive the full education all at once
- Treatment plan
- Treatment notes – notes made here become a part of the permanent medical record
- Clinician notes – easily accessible every time you are within the profile
- Quick notes
- Questionnaires



Coded comments are also a useful way of recording patient education quickly and easily within the DAWN AC patient record and the following coded comments are used within the AMS:

- Coded Comment - **.nped** = New Patient Education Completed
Comment: Patient/family member verbalized understanding of indication, target INR range, importance of INR monitoring, compliance, diet/medication interactions, clotting risks associated with their disease state, and bleeding risks associated with anticoagulants
- Coded Comments - **.ed10, .ed20, .ed30**
Used for documenting re-education received by the patient and allot an amount of time associated with the encounter

Using coded comments facilitates reporting within DAWN AC that can provide statistics on the percentage of patients who have received education within a specific time period, the time spent on patient education and identifying patients who may not have received any education.

Future plans for patient education within the AMS include structuring a similar plan for DOACs (updating checklists and patient contracts; creating a new online education module; and developing new written materials) and looking at updating DAWN AC to assist with recording education more effectively (patient education checkbox?; patient education tab?; questionnaires?). Other resources to help with patient education could include Apps and Telemedicine.

Amy concluded the presentation with the following summary points:

- The Joint Commission mandates all patients and/or family members receive education related to anticoagulant medications
- The best approach has been proven to be one that is structured and includes multiple modes of teaching
- DAWN AC is helpful in ensuring patients are educated and provides space for documentation
- Best practices for documenting in DAWN AC include utilizing a trackable coded comment in a location in the profile that it easily accessible

References:

1. Institute for Safe Medication Practices. QuarterWatch: data from 2015 Q4. June 2016. <https://www.ismp.org/quarterwatch/>. Accessed September 23, 2016
2. Beyth R, Quinn L, Landefeld C. A multicomponent intervention to prevent major bleeding complications in older patients receiving warfarin: A randomized, controlled trial. *Ann Int Med* 2000;133(9): 687-695.
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4. Clarkesmith DE, Pattison HM, Lip GYH, Lane DA. Educational intervention improved anticoagulation control in atrial fibrillation patients: the TREAT randomised trial. *PloS one* 2013;8(9):e74037.
5. Kagansky N, Knobler H, Rimon E, Ozer Z, Levy S. Safety of anticoagulation therapy in well-informed older patients. *Arch Int Med* 2004;164:2044-50.
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7. Jayakody et al. Effectiveness of interventions utilising telephone follow up in reducing hospital readmission withing 30 days for individuals with chronic disease: a systematic review. *BMC Health Services Research* 2016;16(403): DOI 10.1186/s12913-016-1650-9.

The use of telephone reminder calls improves compliance with INR testing
Walter Moulaison Jnr, MSN MBA, RN, Co-Director, Anticoagulation Management Service (AMS),
Massachusetts General Hospital, Boston, MA

The AMS has a number of ongoing strategies to improve compliance with INR testing including a tiered system of DNA (did not attend) calls and letters reminding patients when they are late for a scheduled INR test.

Historically, all reminders were sent to patients by mail and in 2011 Televox reminder calls were implemented. There were a number of reasons that automated reminder phone calls were brought in to replace mail and these included:

- Response rate is better with phone reminders
- Cost savings (paper, postage, labor)
- More timely delivery of reminder notices
- Friendly notification despite geographical location or travel
- People like to listen to messages rather than open mail

DNA Procedures

The tiered DNA system involves the administrative team, office manager and nurses depending on the DNA level as outlined below:

DNA lists managed by administrative team	Nurses involved at DNA 3, 4 and final discharge
<ul style="list-style-type: none"> • DNA 1 call on second business day after scheduled INR date • Bulk reschedule to one week from previous date (2 weeks if the notice is mailed) • Daily Televox report by office manager 	<ul style="list-style-type: none"> • Reminders created on patient record for RN to follow up <ul style="list-style-type: none"> ○ Investigate if INR available ○ Call patient ○ Inform physician and request support, danger of potential discharge ○ Document status in DAWN AC and hospital record ○ RN makes final decision for discharge

When the reminder list is received at Televox, reminder calls are transmitted during calling hours that the AMS choose. If the phone call does not go through to a patient, answer machine or voicemail, Televox continues to try and reach the patient and the results of the Televox calls can be reviewed the day after the reminder list was sent. Daily reports are sent for follow-up when needed and show whether a patient or an answer machine picked up the call, if it was aborted, and provides lists of any invalid numbers.

Televox is able to call any day of the week, including weekends.



Lists of patients meeting criteria for DNA 1 and DNA 2 are queried each weekday.

The screenshot shows the 'List view' window in the DAWN software. The 'With' dropdown is set to '1st Notice (Televox, Email) - 7 Day'. The 'Date' is set to 'On or Before 09/23/2016'. The 'Reschedule' dropdown is open, showing a list of options including '1st Notice (Televox, Email) - 7 Days'. The 'Letters' tab is active, showing a list of messages including 'Non Attendance Phone 1' and 'Televox Send DNA messages'.

The rescheduling of patients calls up the "outbound Televox DNA House Call" procedure and documents the message on the Letters tab

The DNA reschedule event and non-attendance count on the patient record determines the choice of routines for creating outbound messages and text file messages are created and exported from DAWN AC to the individual DNA 1 and DNA 2 folders on the server.

A batch file merges all DNA 1 and DNA 2 messages into a single file, the Partners file transfer protocol (FTP) process outputs the files to Televox and an enterprise transaction manager schedules and monitors the entire process. Televox retrieves the files from their secure FTP site on a daily basis and makes the automated call at a designated time.

The Televox system used by the AMS uses a recorded human voice that sounds crisp and professional and calls are translated into 8 different languages in order to serve the AMS's culturally diverse population. Messages are not personalized to ensure compliance with HIPAA regulations.

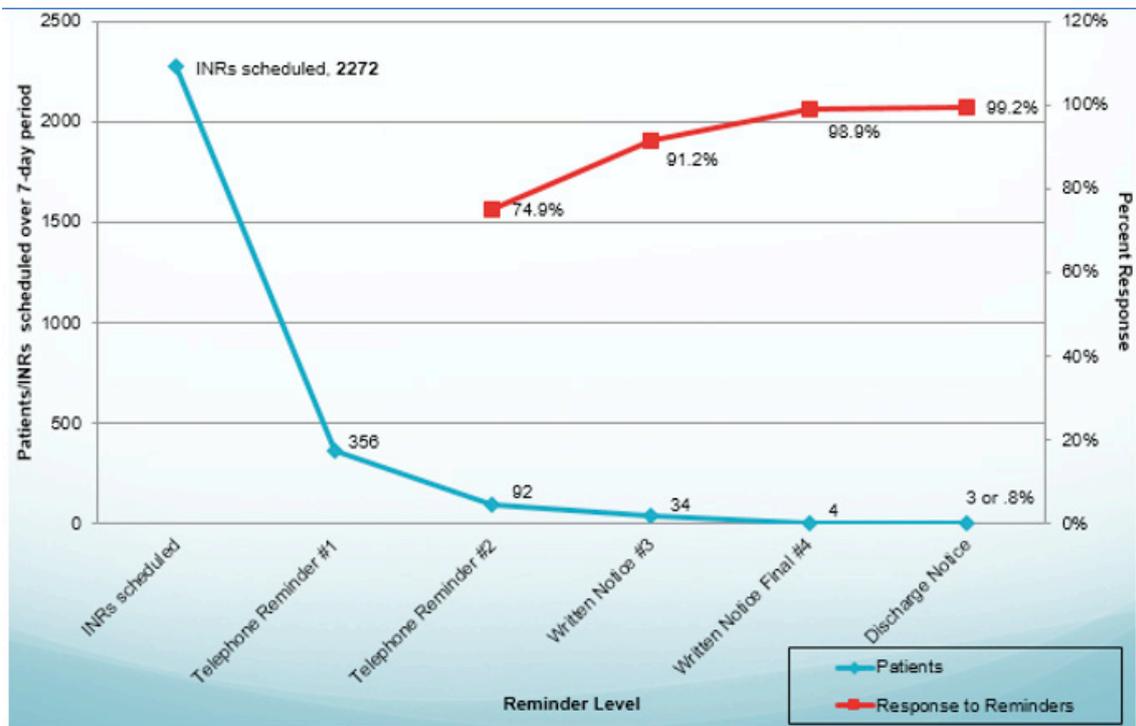
AMS nurses assist in educating patients about Televox reminder calls and during comprehensive education sessions, patients receive an explanation of the system, emphasizing safety.

In 2014 the AMS explored the impact of the Televox reminder system from two perspectives:

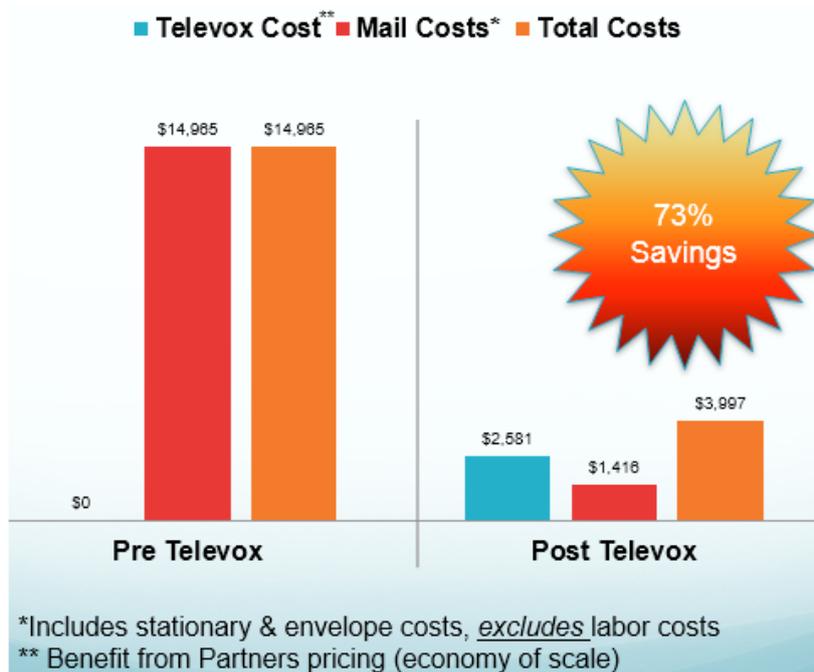
- Patient compliance
- Cost savings

The survey identified a patient cohort with a scheduled INR date for a one month period of time and this patient cohort was followed throughout an 8 week period through all DNA levels. Patient responses (attended for INR) to DNA 1 and 2 Televox reminders and written notices were determined during this time.

Response to Did Not Attend (DNA) Reminders (reflects details of a 1 week period)



Annualized Cost Reduction Post Telephone Reminders – 251 days Monday to Friday



The survey demonstrated that Televox reminders make a difference in the following ways:

- Patients respond positively to Televox reminder calls
- Phone calls are timely and prevent further progression to DNA 3 and 4 levels, therefore improving patient monitoring and safety
- Significant cost savings were demonstrated

The AMS is committed to improving patients' user experience and this advanced technology enables patients to receive DNA reminders on time and re-engage to avoid discharge from the AMS.



**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>**

**Or write to
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