PPC CARE BUNDLE

Warfarin Management

Aim

100% of patients on Warfarin will be managed within safe margins around the therapeutic target and 100% of practices will have developed consistent processes around INR testing

Background

In a 2017 study into medication related patient harm in NZ hospitals, warfarin was noted to be in the top 10 medicines causing harm, predominantly due to bleeding. Warfarin accounted for 1.8% of harm and, when combined with other anticoagulants, was implicated in the most serious harms, along with opioids. General Practice teams need consistent, systematic practice wide approaches to warfarin management to provide safe and effective care for patients taking warfarin. This module helps practices to assess and improve these processes.

Instructions

1. Identify patients who have received a prescription for Warfarin in the previous three months. A query has been developed for MedTech and My Practice PMSs to assist with this, which is available online

2. Change the 'Date of Prescription' to reflect the previous month

3. From the identified list, randomly select a sample of 10 patients

4. Print and complete the Warfarin Audit Data Collection Form (included in the Warfarin Bundle audit spreadsheet)

5. Transfer the data collected to the Warfarin audit spreadsheet.

6. Please make sure the date is entered beside each individual record. The data will automatically be collated and displayed on the run charts that can be printed as needed

7. Save the spreadsheet

8. Email the completed spreadsheet by or on the 10th of each month (i.e. June data is due on 10 July, July data is due on 10 August).

Updated 18/10/2018

9. The spreadsheet is to be emailed to your PHO facilitator.

Audit Questions

Measures	Rationale	Guidance

Is there evidence that the last advice re Warfarin dosing given to patient followed current Local Guidelines?	• The use of a dosing algorithm can significantly improve anticoagulant control
	  ○ Effect of a simple two-step warfarin dosing algorithm on anticoagulant control as measured by time in therapeutic range: a pilot study. Kim, Y.K., Nieuwlaat, R., Connolly, S.J., Schulman, S., Meijer, K., Raju, N., Kaatz, S. & Eikelboom,J.W. Journal of Thrombosis and Haemostasis, 2010 8, 101–106.
	• Computerized dosing has been shown to increase the overall percentage time for which patients are in their target INR range and in some studies to reduce the frequency of testing of patients. Furthermore, it has been shown to significantly reduce the risk of bleeding and thromboembolic events and overall is a more cost-effective option to manual dosing
	  ○ Evaluation of computerized decision support for oral anticoagulation management based in primary care. Fitzmaurice, D.A., Hobbs, F.D., Murray, E.T.,Bradley, C.P. & Holder, R. British Journal of General Practice,(1996) 46, 533–535.
		• Practices should refer to the guidance on the Auckland Regional Health Pathways site around
		• warfarin monitoring and check whether the last dosage advice fitted with this.

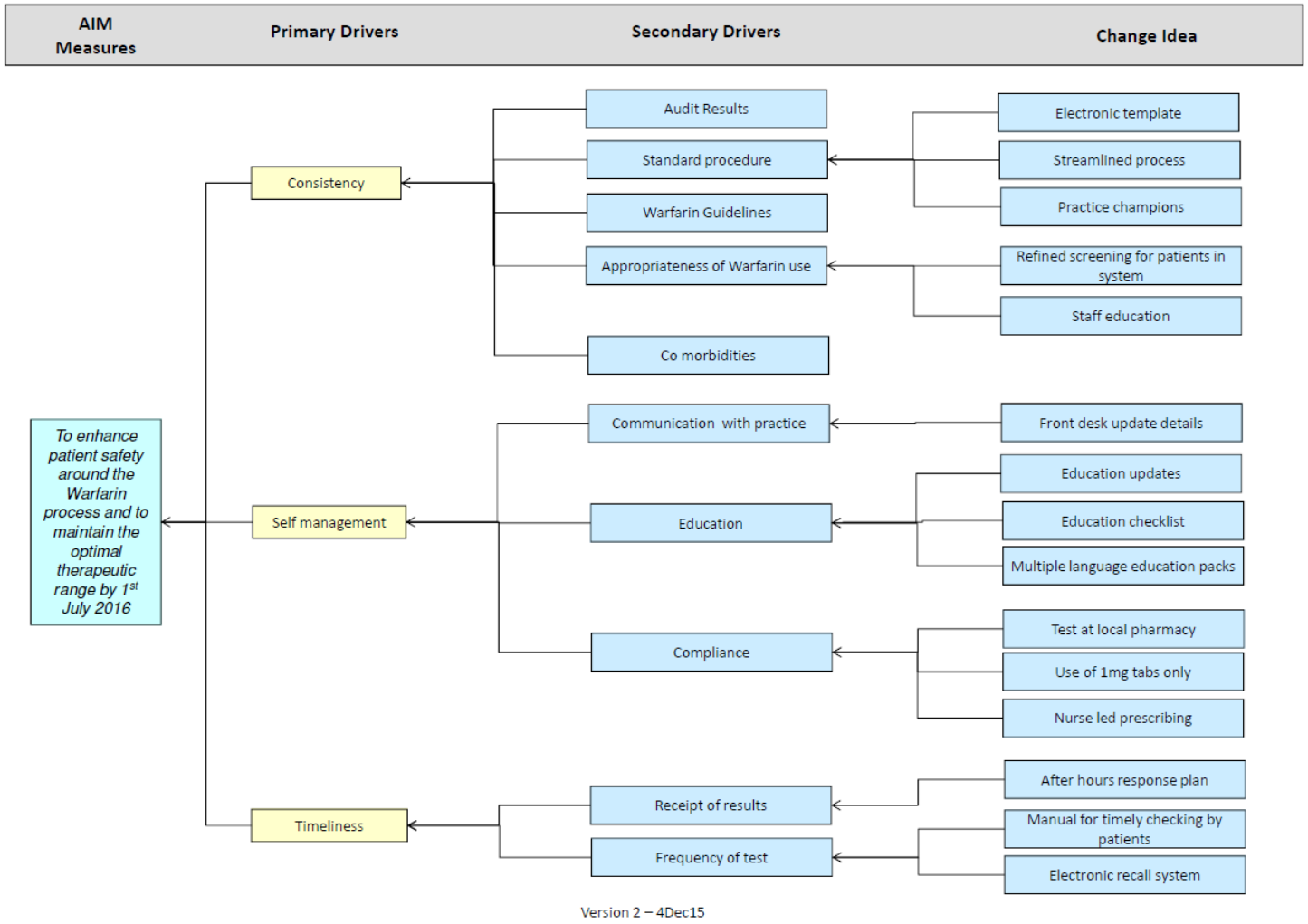
Is there evidence that the last advice re the interval for blood testing given to patient followed current Local Guidelines?	• As above	• As for measure 1. Ensure the advice for the dose interval is correct.
Since the last blood test, has	• Clearly the practice has to ensure that the patient is informed of the	• Practices do need to actually check

the patient been taking the correct dose as ordered by the treating GP?	correct advice regarding warfarin dosage for the patient to be able to comply with the advice. Furthermore, non-adherence to advice given should be further explored.	with the patient or their representative what the actual dosage is they have been taking and compare it to the previous instructions. • Record YES if there is recorded evidence that this has been checked. • Record NO if there is no recorded evidence of this having been done.
INR is taken within 7 days of planned repeat INR?	• Patient's regular attendance for blood testing is associated with better anticoagulation control. ○ Prompt repeat testing after out-of-range INR values: a quality indicator for anticoagulation care. Rose AJ, Hylek EM, Berlowitz DR, Ash AS, Reisman JI, Ozonoff A. Circ Cardiovasc Qual Outcomes. 2011 May 1; 4(3):276-82. Epub 2011 Apr 19.	• Record YES if date of test is within 7 days. • Record no if the result is greater than 7 days from when the test was planned.
Patient education recorded every 12 months?	• There is good evidence that improved patient knowledge and understanding of the use of warfarin improves anticoagulation control ○ Relationship between patients' warfarin knowledge and anticoagulation control. Tang EO, Lai CS, Lee KK, Wong RS, Cheng G, Chan TY. Ann Pharmacother. 2003 Jan; 37(1):34-9. ○ Effect of a warfarin adherence aid on anticoagulation control in an inner-city anticoagulation clinic population. Nochowitz B, Shapiro NL, Nutescu EA, Cavallari LH. Ann Pharmacother. 2009 Jul; 43(7):1165-72. Epub 2009 Jun 23.	• Record YES if there is documentation of patient education having been given. • Record NO if there is not.

- A structured teaching and self-management program for patients receiving oral anticoagulation: a randomized controlled trial. Working Group for the Study of Patient Self-Management of Oral Anticoagulation. Sawicki PT. JAMA. 1999 Jan 13;281(2):145-50.

Theory of Improvement

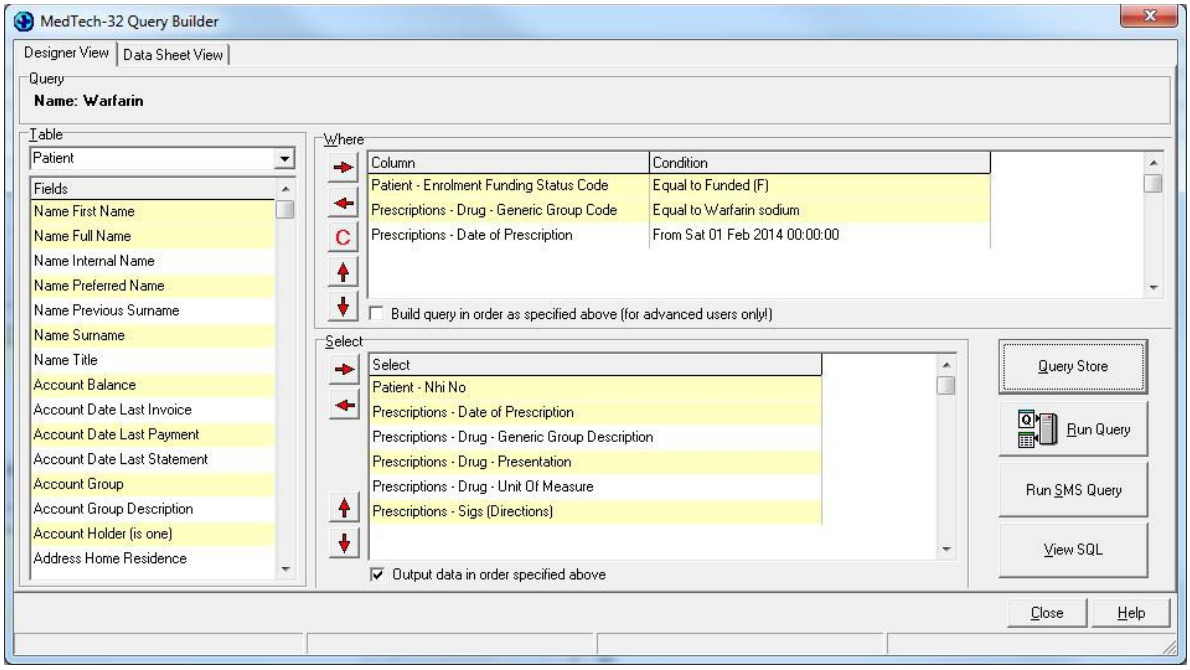
Updated 18/10/2018



Updated 18/10/2018

Query Build Example

Medtech32

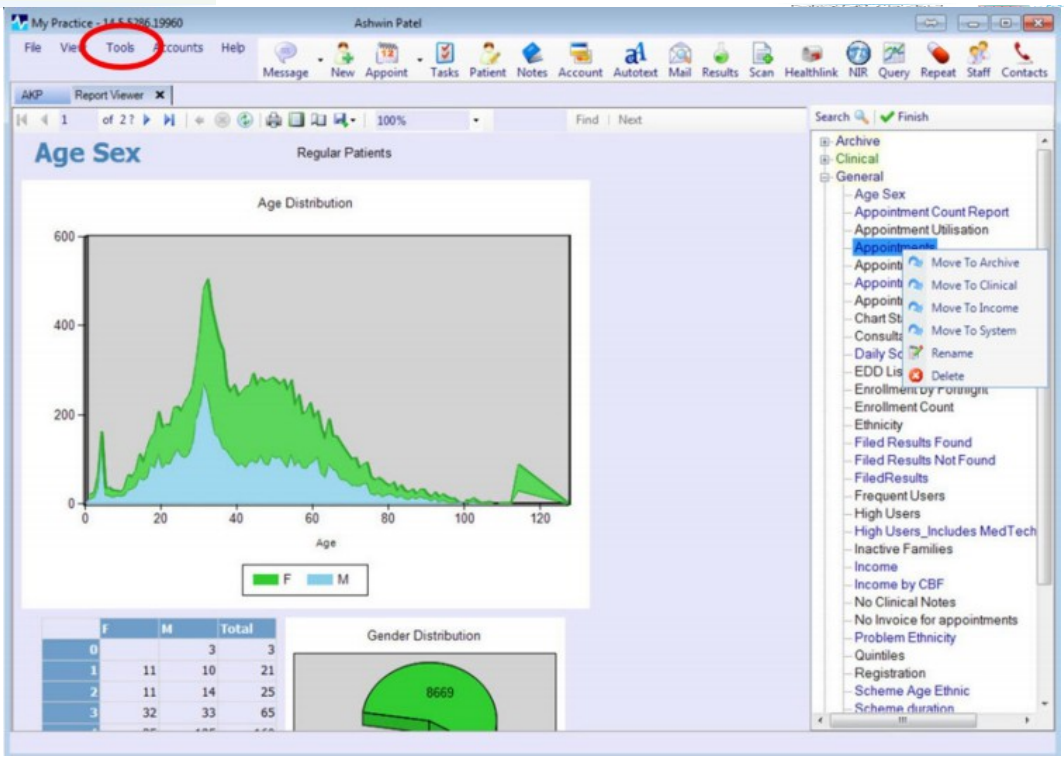


My Practice

- Select Tools > Report Viewer to bring up the menu on the right hand side. Warfarin is in the clinical folder.

- Click on a report name to run the report. You may be prompted for parameters such as date ranges. Reports may take a few seconds to minutes to run.

Updated 18/10/2018



Change Ideas Tested by Previous Practices

General	• Have a doctor and nurse champion in the practice – this has given practices more confidence in dealing with results and testing frequency. • Checking whether patient should still be on warfarin or whether oral novel anti-coagulation medicine would be more appropriate. • Identify patients with stable INRs to appropriate point of care testing through CPAMS. • Practice wide usage of 1mg tablets only.
Practice Processes	• Front desk maintaining up to date contact details. • All clinical staff to use standardised guidelines. • System for handling faxed INR's & ensuring that acted on that day before clinic closed. • Implementation of a recall system to follow-up on INR time frames.

Updated 18/10/2018

	• INR management IT tool & new protocol created using practice wide feedback, experience and knowledge. • Streamline the process – simplify instructions, implement recalls working with project team first. • Allow time for changes to be checked, adjusting further if required, before rolling out to all staff to embed as usual practice. • Setting up policies around testing intervals. • Development of a manual process to ensure the practice has the ability to monitor and remind INR patients, especially the ones currently testing spasmodically.
Recording process in patient management system	• Moved from duplicate electronic and manual process to single entry using INR screening template. • Dropdown option added within the screening tem to show whether Nurse or Doctor can manage patient. • Refined screening term to identify patients on warfarin. • Process in place for each test recording : INR result, warfarin dose, when next test is due, GP signature, nurse signature when patient advised any patient specific notes relevant to warfarin monitoring
Practice team roles and responsibilities	• Open discussion of most appropriate clinician to manage specific groups for patients on warfarin • Transition to nurse dosage adjustments under standing orders. • Up skilling opportunities for nurses
Patient education	• Patients having education updates. • Education checklist prepared and embedded into form

Benefits

- Patient demographic info up to date.
- Clear communication between all staff

Issues

- Time taken to apply changes.
- Multiple electronic systems, processes &

groups.

- Simpler, quicker process.
- Up-skilling nurses & pharmacists.
- Increased confidence in process.
- Reduced GP prescribing times.
- Patient's happier.
- Patient's better educated.
- Increased concordance.
- All staff groups engaged in improving the system.
- More stable INR results.
- Less blood tests.

guidelines available.

- Resistance to change, especially changing roles & responsibilities within the team.
- Co-ordinating implementation across many staff groups.
-

Outcome Measures

- Are patients spending more time in the therapeutic range?
- Has the frequency of INR testing decreased?

Resources

- Health Pathways information about Atrial Fibrillation (includes patient information)
- https://aucklandregion.healthpathways.org.nz/index.htm?18972.htm
- BPAC article: An update on antithrombotic medicines www.bpac.org.nz/BPJ/2015/April/antithrombotic.aspx
- BPAC article: The safe and effective use of dabigatran and warfarin in primary care www.bpac.org.nz/2017/anticoagulants.aspx
- Health Pathways information regarding warfarin https://aucklandregion.healthpathways.org.nz/index.htm?18972.htm

Updated 18/10/2018

- Waitemata DHB – Warfarin Counselling Checklist and List of Interactions https://aucklandregion.healthpathways.org.nz/Resources/PWarfarinCounsellingChecklistListofInteractionsMay13.pdf
- BPAC Guidelines: INR for Monitoring Warfarin Treatment www.bpac.org.nz/BT/2010/November/inr.aspx
- New Zealand Formulary: Warfarin www.nzf.org.nz/nzf_1493
- SafeRx® leaflets. "Warfarin: What you need to know" leaflets are available at www.saferx.co.nz in English, Chinese, Korean, Niuean, Samoan, and Tongan
- Anticoagulant Treatment Booklet "Red Book" – available free from Medidata on 09 488 4271
- Health Navigator https://www.healthnavigator.org.nz/medicines/w/warfarin/
- Patient information sheet card https://www.countiesmanukau.health.nz/assets/Communityhealth/Pharmacy/Warfarin-patient-information-card.pdf

Prompts for Discussion with Patients

Low INR (< 2)

Need to ask patient about possible causes of low INR before increasing the dose of Warfarin. How much have they been taking recently? Document the amount taken in the patient notes.

CAUSE	DOSE OF WARFARIN	REPEAT INR TEST IN
Missed dose in last 5days	Same dose	3 days
Temporary Vitamin C in last 5days	Same dose	3 days
Temporary high Vitamin K foods in last 5days • Liver • Broccoli • Brussel sprouts	Same dose	3 days

Updated 18/10/2018

• Spinach • Watercress • Cabbage • Coriander			
Inadequate dose to achieve target INR	< 1.5	increase by 20%	3 days
	1-5-1.9	increase by 10%	

Bleeding Questions

Bleeding can occur when the INR is between 2 and 3, but is more likely with higher INRs. Ask the patient about the following:

- Red or brown urine
- Red or black stools
- Severe headache
- Unusual weakness
- Excessive menstrual bleeding
- Prolonged bleeding from gums or nose
- Dizziness, trouble breathing or chest pain
- Unusual pain, swelling or bruising
- Dark, purplish or mottled fingers or toes
- Vomiting or coughing up blood

Repeat Tests When Last Two Tests Between 2-3

PREVIOUS INTERVAL	NEXT TESTS
Every 3 days	Every week

Updated 18/10/2018

Every week	Every two weeks
Every two weeks	Every month to six weeks

High INR (> 3):

Consider wrong dose taken and interactions with medications and food. Ask the patient if they have recently had any of the following common causes of a high INR:

Wrong dose of tablets taken	Ginger
Alcohol	Grapefruit or grapefruit juice
Allopurinol	Ibuprofen
Arnica	Lansoprazole
Cefaclor	Liquorice
Co-trimoxazole	Metronidazole
Cranberry juice	Omeprazole
Erythromycin	Sulphonamides
Garlic	

INR	**ACTION**		**REPEAT INR TEST IN**
	Dose Warfarin	**Vit K**	
3.1-3.9	Same dose	Only if minor bleeding	3 days
4-5	Stop 1 day; reduce dose by 10-20%	Only if minor bleeding	3 days
>5	Stop & restart when INR <5; reduce dose by 20%	Give Vit K 1mg if INR not falling or high risk of serious bleeding	Daily

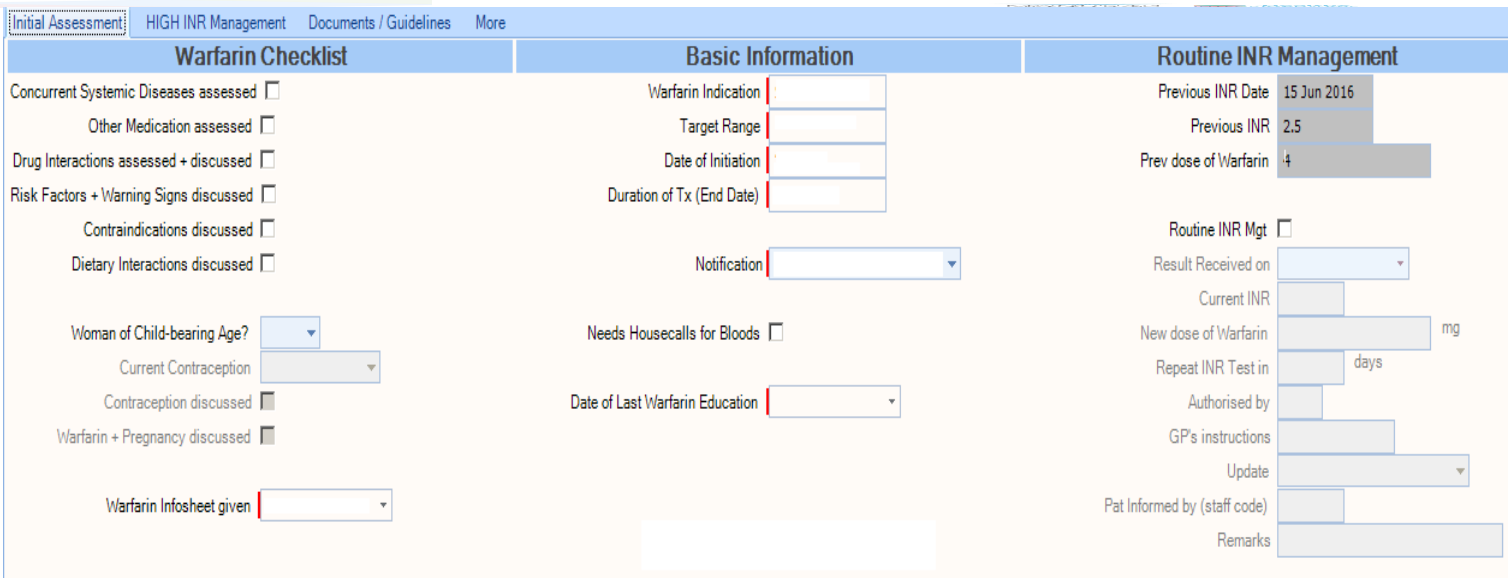
Updated 18/10/2018

>8	Stop & restart when INR <5; reduce dose by 20%	Vit K 1mg if minor bleeding & consider hospital admission; Vit K 10mg if major bleeding & hospital admission	Daily

Indications and Duration of Warfarin Therapy

INDICATION	TARGET INR	DURATION
DVT or PE due to reversible risk factors	2-3	3 months
DVT or PE due to two unprovoked causes or cancer	2-3	Lifetime
Chronic AF	2-3	Lifetime
Mechanical aortic valve	2-3	Lifetime
Antiphospholipid syndrome without recurrent VTE	2-3	Lifetime
Mechanical mitral valve	2.5-3.5	Lifetime
Mechanical aortic or mitral valve with additional risk factors for VTE	2.5-3.5	Lifetime
Antiphospholipid syndrome with recurrent VTE	3.0-4.0	Lifetime

Example of Warfarin Prescribing Template (Medtech)



Resources

1. Effect of computer aided management on the quality of treatment in anticoagulated patients: a prospective, randomized, multicentre trial of APROAT (Automated Program for Oral Anticoagulant Treatment). Manotti, C., Moia, M., Palareti, G., Pengo, V., Ria, L. & Dettori, A.G. Haematologica, (2001) 86, 1060–1070.

2. A multicentre randomised clinical endpoint study of PARMA 5 computer assisted oral anticoagulant dosage. Poller, L., Keown, M., Ibrahim, S., Lowe, G., Moia, M., Turpie, A.G., Roberts, C., van den Besselaar, A.M., van der Meer, F.J., Tripodi, A., Palareti, G. & Jespersen, J. British Journal of Haematology, (2008a) 143, 274–283.

3. An international multicentre randomized study of computer-assisted oral anticoagulant dosage vs. medical staff dosage. Poller, L., Keown, M., Ibrahim, S., Lowe, G., Moia, M., Turpie, A.G., Roberts, C., van den Besselaar, A.M., van der Meer, F.J., Tripodi, A., Palareti, G., Shiach, C., Bryan, S., Samama, M., Burgess-Wilson, M., Heagerty, A., Maccallum, P., Wright, D. & Jespersen, J. Journal of Thrombosis and Haemostasis, (2008b) 6,935–943.

4. Screening computer-assisted dosage programs for anticoagulation with warfarin and other vitamin K antagonists: minimum safety requirements for individual programs. Poller, L., Roberts, C., Ibrahim, S., Keown, M.,Ageno, W., van Den Besselaar, A.M.H.P., Fitzmaurice, D., Harenbeg, J., Kitchen, S., Lowe, G., Moia, M., Palareti, G., Tripodi, A., Turpie, A.G.G. & Jespersen, J. Journal of Thrombosis and Haemostasis, (2009) 7, 1736.

5. The cost-effectiveness of computer-assisted anticoagulant dosage: results from the European Action on Anticoagulation (EAA) multicentre study. Jowett, S., Bryan, S., Poller, L.,

Updated 18/10/2018

Van Den Besselaar, A.M., Van Der Meer, F.J., Palareti, G., Shiach, C., Tripodi, A., Keown, M., Ibrahim, S., Lowe, G., Moia, M., Turpie, A.G. & Jespersen, J. Journal of Thrombosis and Haemostasis, (2009) 7, 1482–1490

Updated 18/10/2018