

Community Pharmacy

Warfarin Audit

2008/09

AUDIT REPORT

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1. INTRODUCTION

1.1 Taken at the right dose and interval oral warfarin is an effective and safe medicine. In response to a series of reports of patient safety incidents involving anticoagulants the National Patient Safety Agency (NPSA) issued a Patient Safety Alert in March 2007. This alert outlined the risks associated with oral anticoagulants and provided advice to professionals and patients on best practice in relation to prescribing, dispensing, monitoring and administration. As most prescriptions for warfarin are dispensed in community pharmacies it is extremely relevant to you.

1.2 The following points are particularly relevant to community pharmacy:

.2.1. Ensure that patients on anticoagulant therapy have received appropriate verbal and written information at the start of their therapy, and when necessary throughout their treatment. In practice, this means making sure that patients have received a 'yellow book' or some other written record of dosing regime and ensuring that they (or their carers) fully understand the directions.

.2.2. Ensure that before dispensing a repeat prescription for anticoagulant medication, there is a check to confirm that the patient's INR is being monitored regularly and that it is at a safe level for the repeat prescription to be dispensed. One way of doing this is to ask to see the patient-held INR record (Yellow Book or other source).

.2.3. Check that if one or more clinically significant interacting medicines for patients on oral anticoagulants are dispensed, then arrangements for additional INR blood tests have been made and that the anticoagulant service has been informed that an interacting medicine has been prescribed.

.2.4. Ensure that doses are expressed in mg and not in number of tablets

.2.5. Ensure that a risk assessment is undertaken on the use of monitored dosage systems for anticoagulants for individual patients. The general use of MDS systems for anticoagulants should be minimised.

- .2.6. Ensure that all pharmacy staff caring for patients on anticoagulant therapy have the necessary work competences commensurate with their role in that process. This includes pharmacists, dispensers/ technicians and counter assistants.
- .2.7. Review and, where necessary, update any sections of clinical procedures and protocols that relate to parts of the anticoagulant care pathway for which the pharmacist or pharmacy staff take responsibility.
- .2.8. Participate in an annual audit of anticoagulant services.

2. AIMS AND OBJECTIVES

- 2.1 To assess current local practice against the advice / guidance issued as a patient Safety Alert 18, Actions that can make anticoagulant therapy safer. NPSA March 2007.
www.npsa.nhs.uk/health/alerts
- 2.2 This audit is intended to measure current practice against the recommendations in the safety alert and will involve you and your staff answering questions about systems, as well as reviewing a series of prescriptions and requesting some simple information from patients. Following the audit you will be asked to reflect on current performance against the advice /guidance outlined in the NPSA documentation and submit an action plan outlining how you will support your team, other healthcare professionals and patients in meeting the guidance in the future. You will not be required to return any patient identifiable information.

3. CRITERIA AND STANDARDS

3.1

Criteria	Standard
1. Patients are asked if they have a “yellow booklet” or other written source	100%
2. Patients are asked if they have their INR regularly monitored	100%
3. The GP or INR monitoring agency is contacted in cases where there is a clinically significant drug interaction	100%
4. Patients initiated on warfarin are advised on the potential for interactions with OTC medicines, herbal preparations, diet and alcohol	100%

4. METHODOLOGY

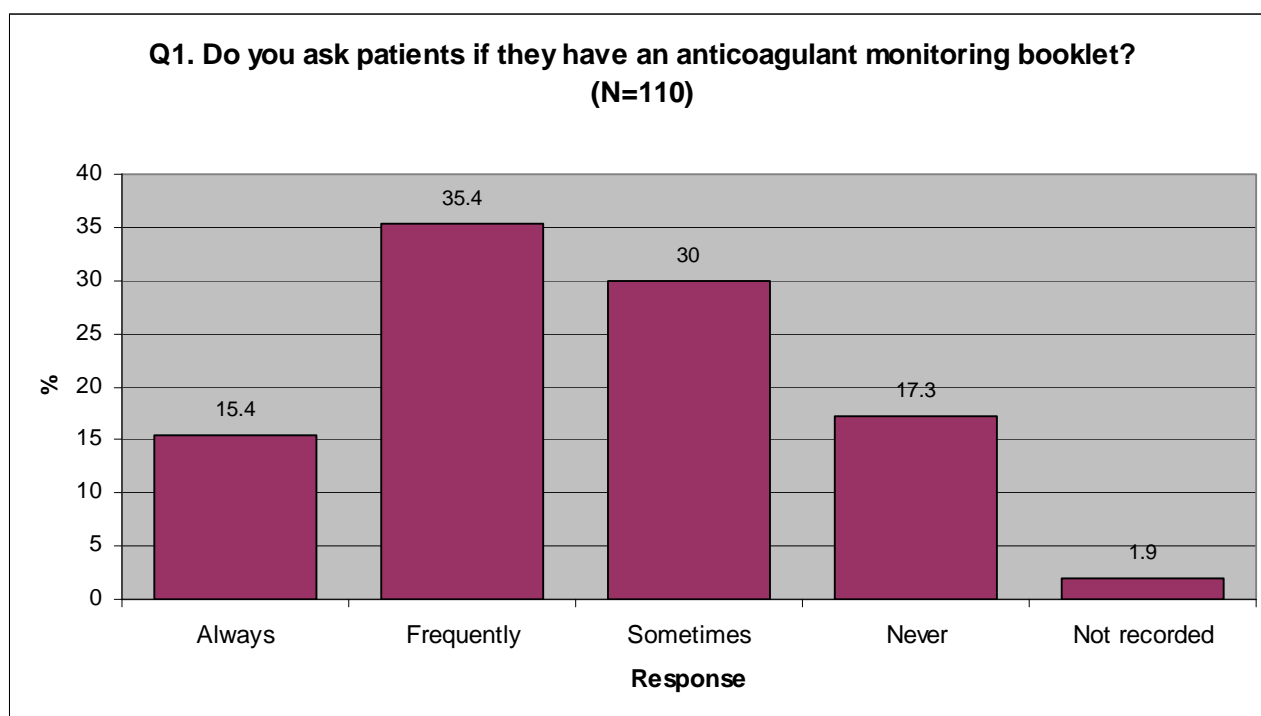
- 4.1 Complete the questionnaire provided (Appendix A) in as much detail as you can to answer the questions asked. The questions relate to your pharmacy practice.
- 4.2 You must also review warfarin prescriptions obtaining information from the patient (or carer) and / or the practice relating to monitoring or administration for up to 20 different patients, if possible. If you don't have 20 different warfarin prescriptions presented, just complete the Warfarin Data Collection Sheet (Appendix B) for those that you do dispense, even if there's only a few. The reflective action plan (Appendix C) should be completed at the end of the audit period. The audit period is not limited but the forms (appendices A, B and C) must be completed and returned to the PCT by the 5th September 2008.
- 4.3 All dispensary staff should be made aware of the audit to understand that when a warfarin prescription is presented they must alert the team member leading the audit.
- 4.4 To avoid duplication you will need to assign each warfarin patient an ID number, we suggest giving the first patient presenting a prescription for warfarin the number 1 and noting their details e.g. name and address, PMR ID number or their NHS number against this on Appendix D. Assign number 2 to the next different patient presenting a

warfarin prescription and so on. **Retain Appendix D in the pharmacy at the end of the audit.** The data collection form is included in the pack.

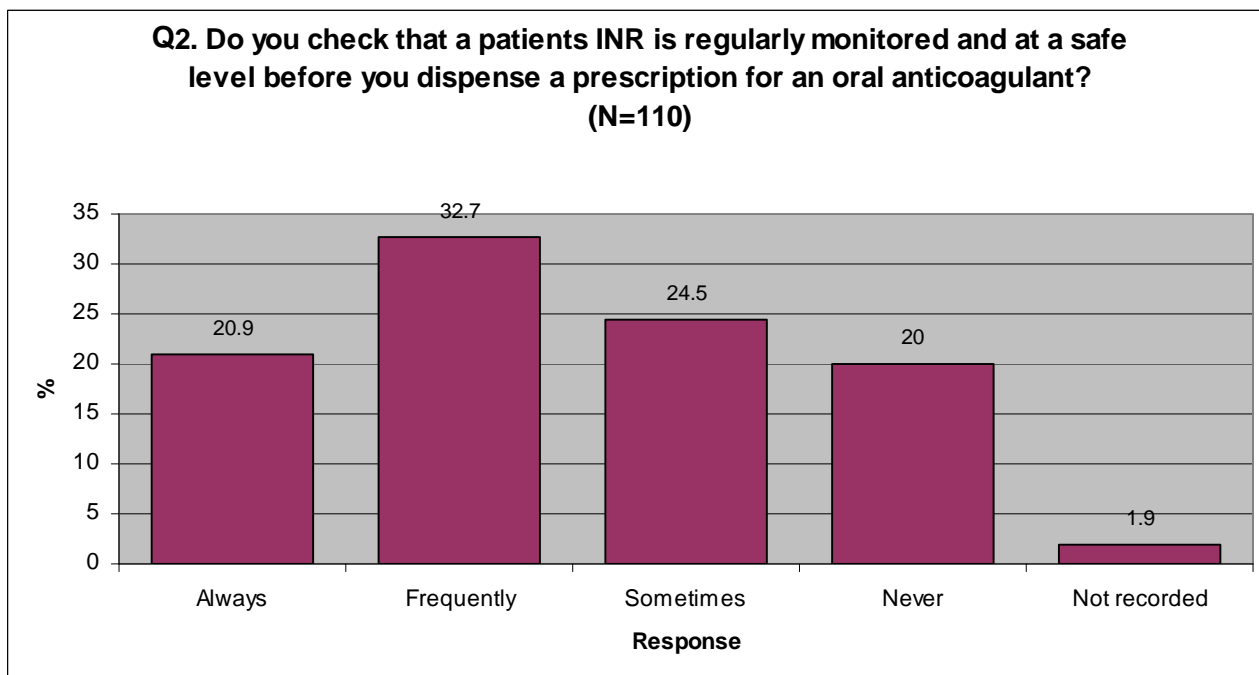
5. RESULTS

5.1 110 pharmacies completed and returned Appendix A of the audit tool and the results were analysed and are illustrated below.

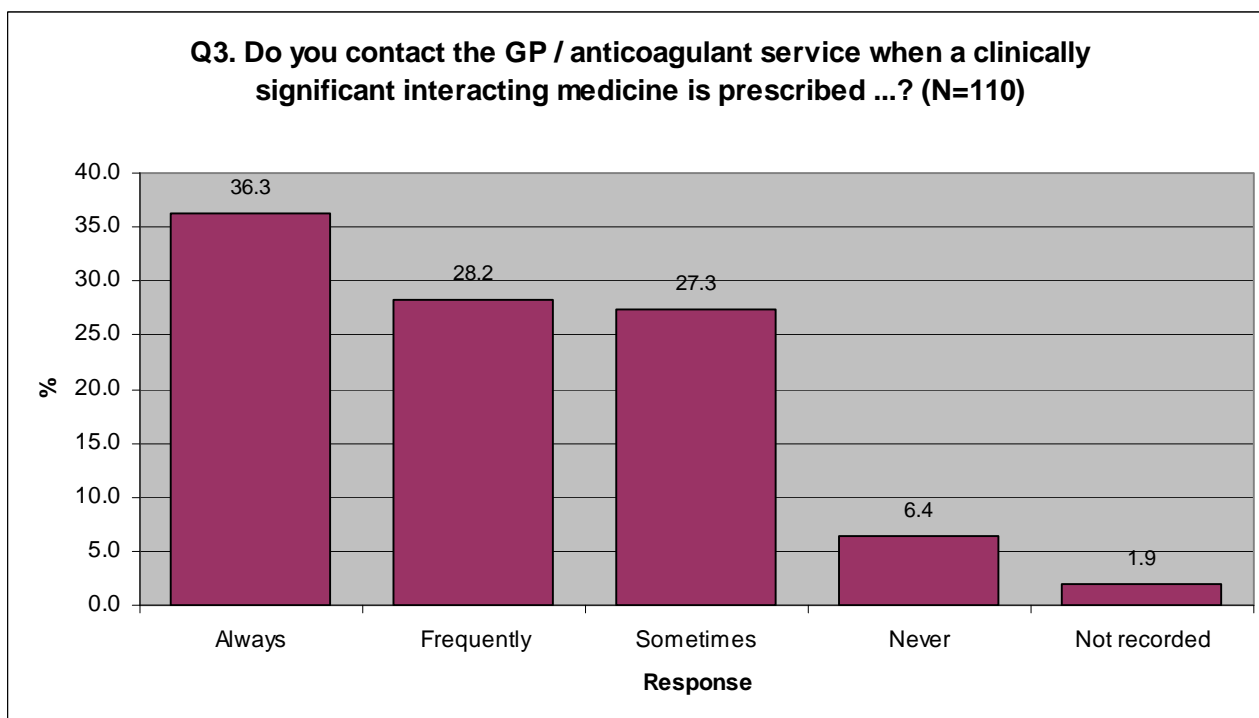
5.2 Do you ask patients if they have an anticoagulant monitoring booklet (yellow booklet or other written source of dosing) prior to dispensing the prescription?



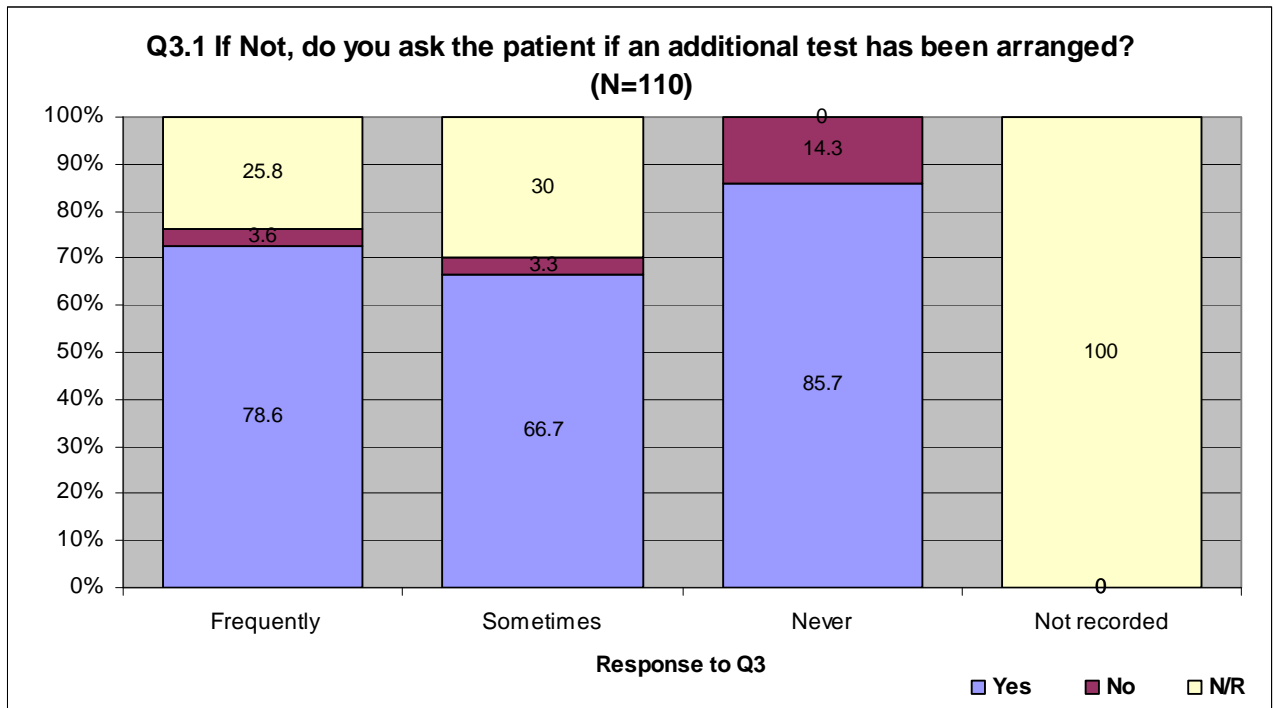
5.3 Do you check that a patients INR is regularly monitored and at a safe level before you dispense a prescription for an oral anticoagulant?



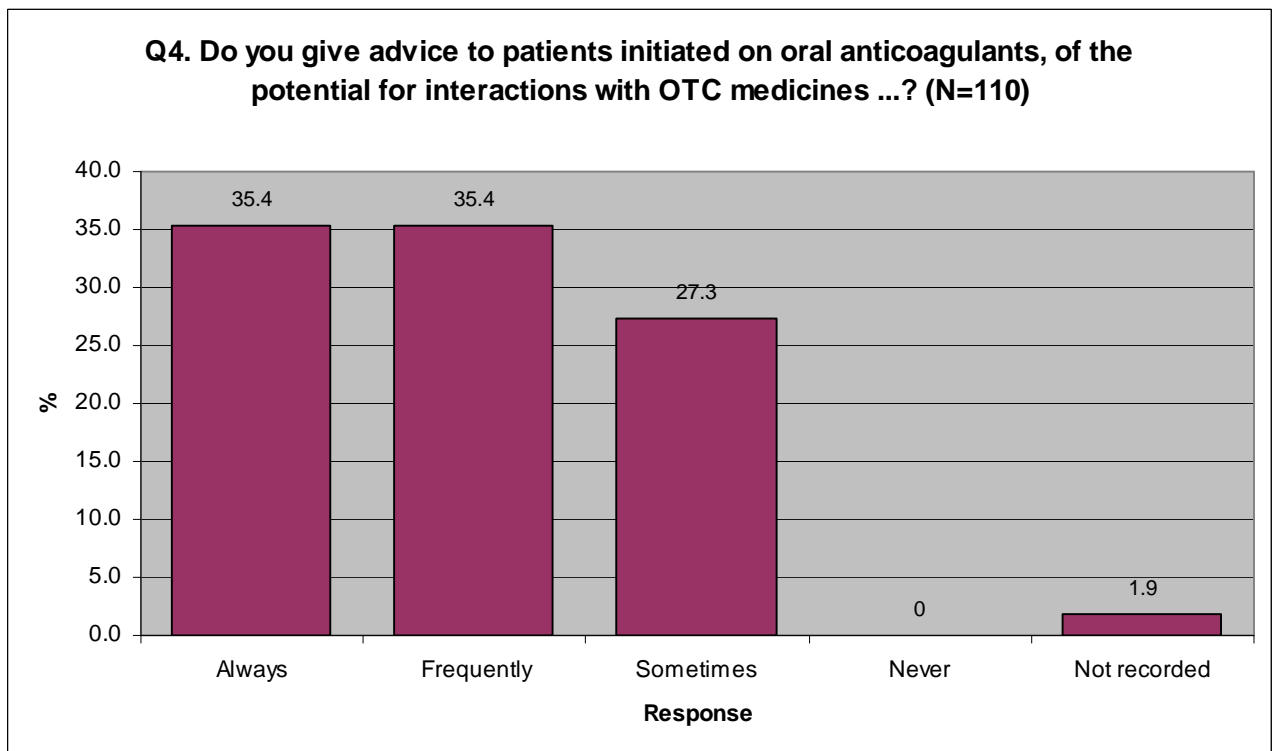
5.4 Do you contact the GP / Anticoagulant service when a clinically significant interacting medicine is prescribed and check that an additional INR has been arranged?



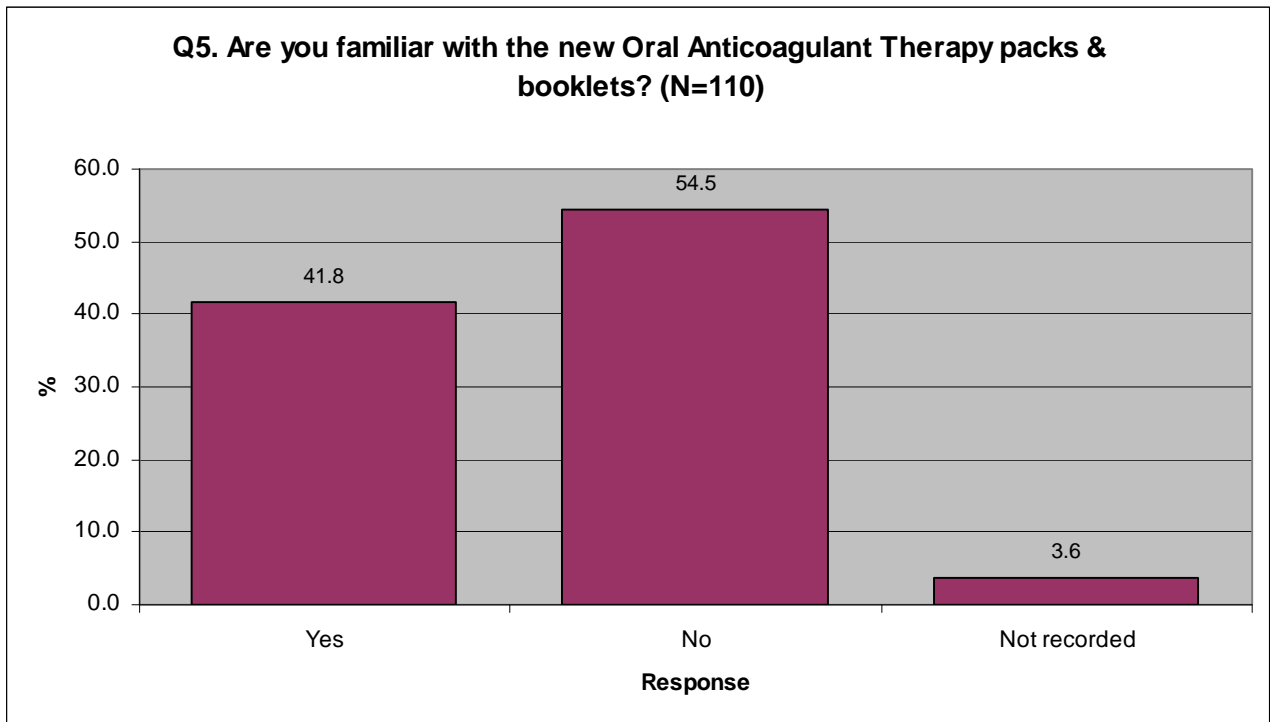
5.5 If not, do you ask the patient if an additional test has been arranged?



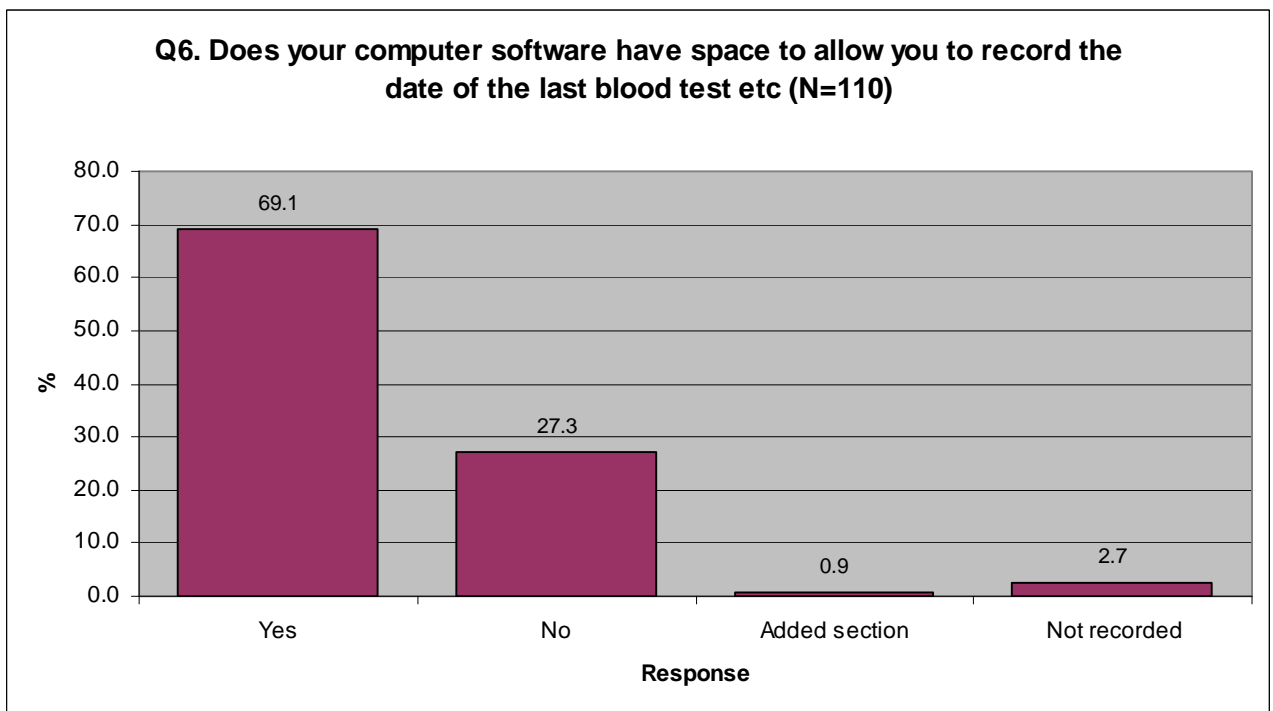
5.6 Do you give advice to patients initiated on oral anticoagulants of the potential for interactions with OTC medicines, including herbal preparations, diet & alcohol, and the effect that can have on their INR levels?



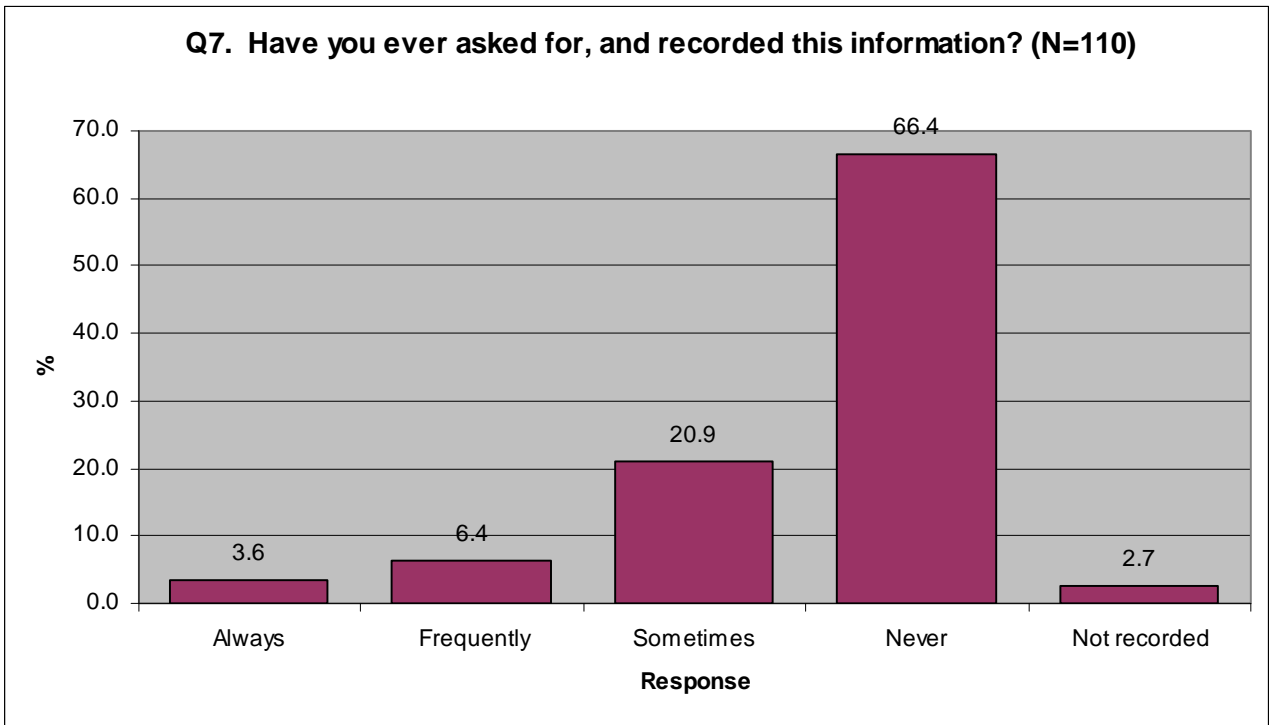
5.7 Are you familiar with the new Oral Anticoagulant Therapy packs and booklets?



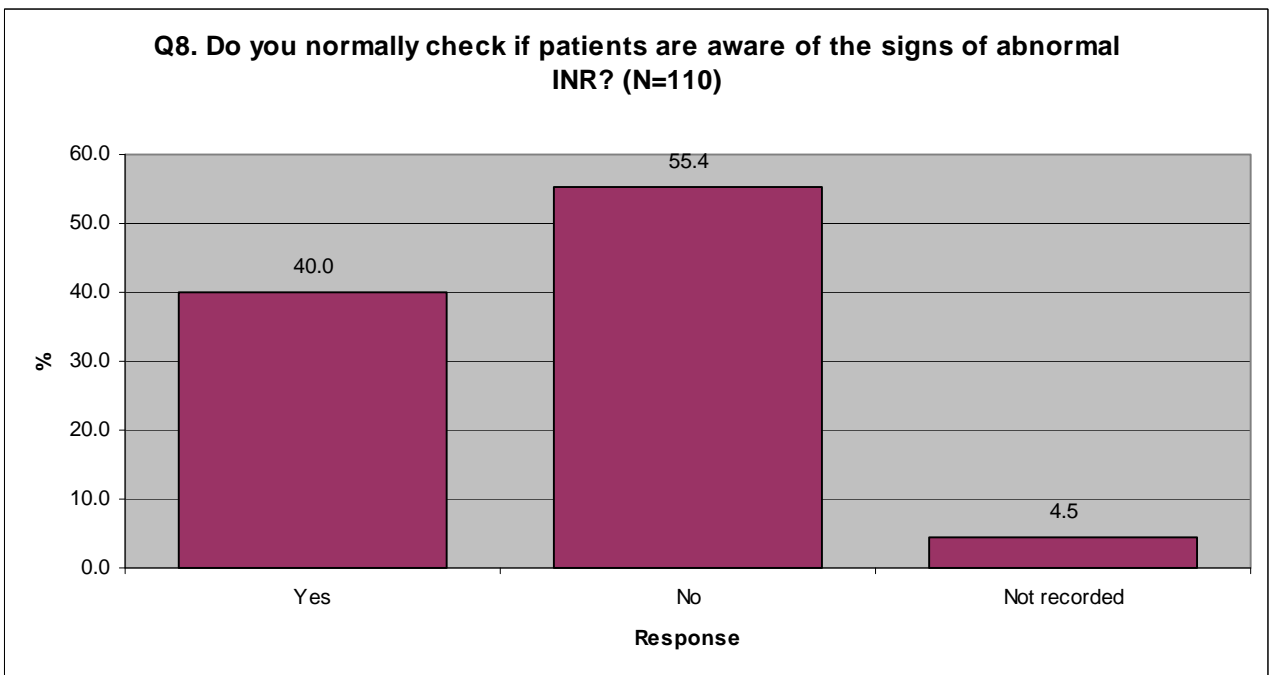
5.8 Does your computer software have space to allow you to record the date of the last blood test, the INR level and the current dose?



5.9 Have you ever asked for, and recorded this information?

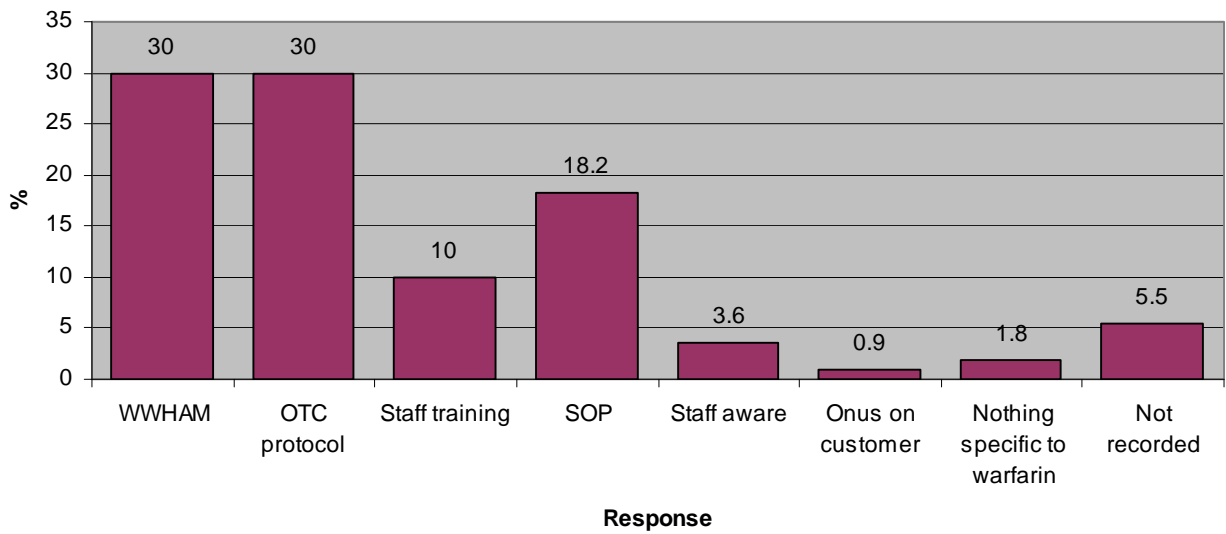


5.10 Do you normally check if patients are aware of the signs of abnormal INR?



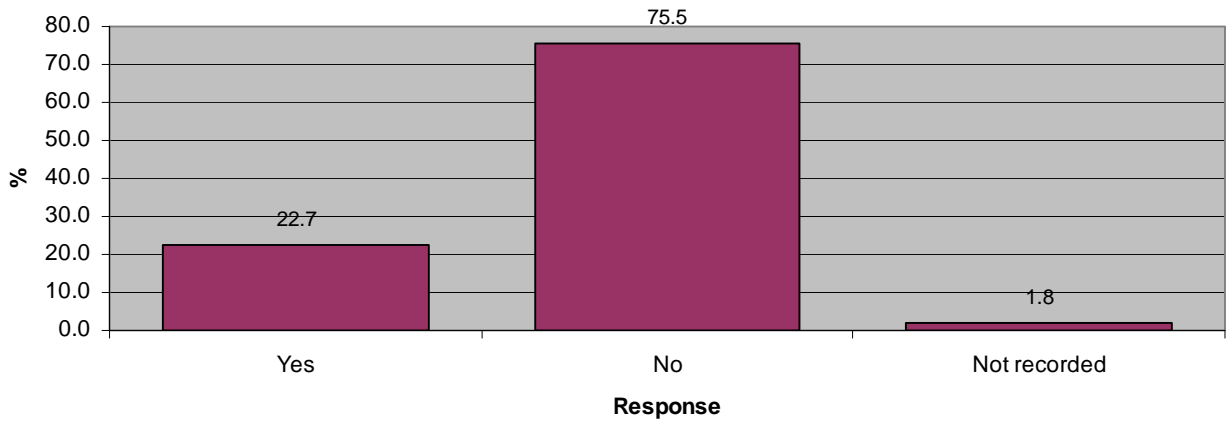
5.11 What processes do you have in place to ensure that staff are aware that patients taking anticoagulants should be referred to the pharmacist in response to requests for OTC medicines?

9. Processes in place to ensure staff aware of procedure for anticoagulated patients requesting OTC medicines (N=110)

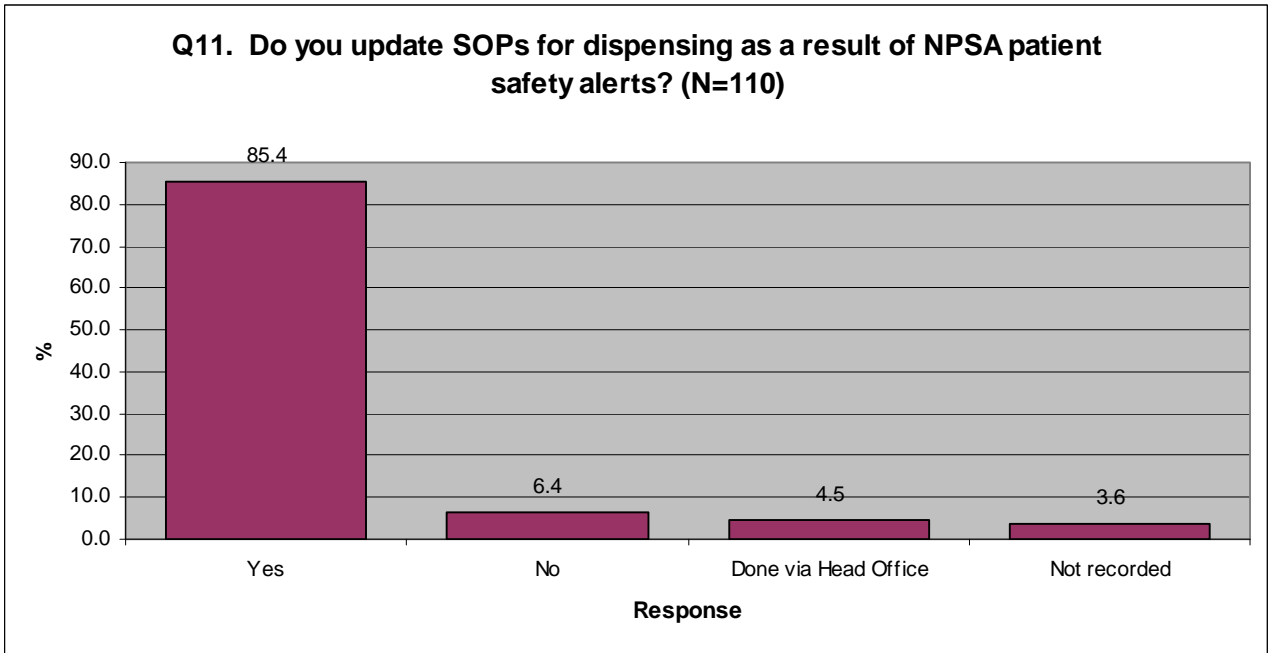


5.12 Do you ever supply anticoagulants in Monitored Dosage Systems?

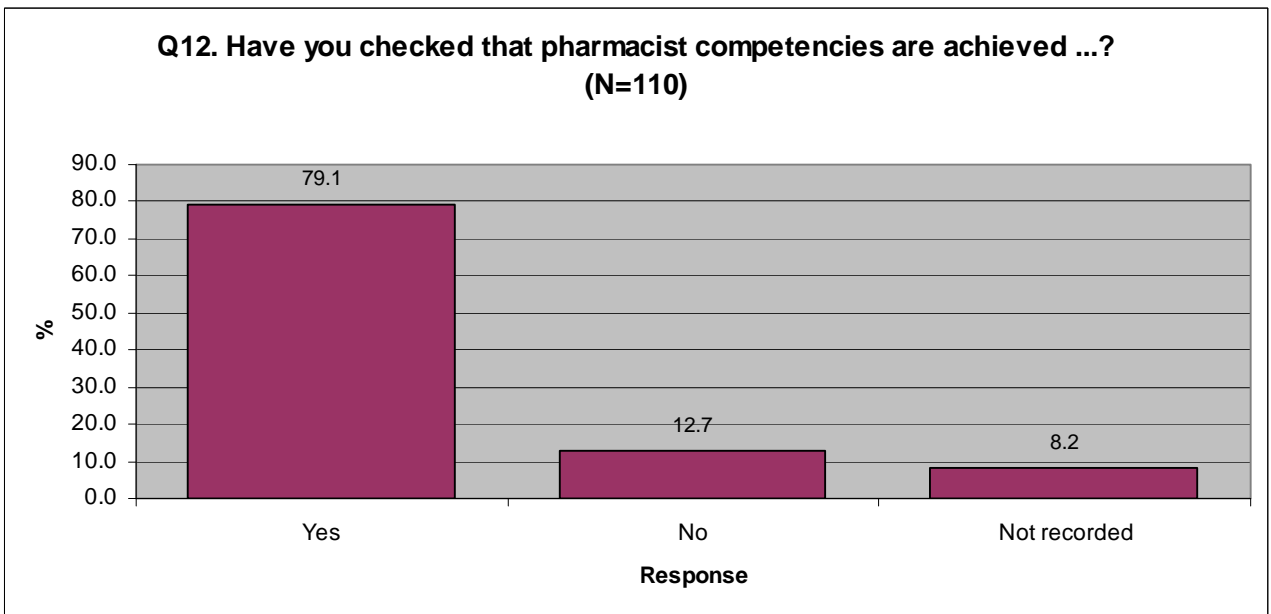
Q10. Do you ever supply anticoagulants in Monitored Dosage Systems? (N=110)



5.13 Do you update SOPs for dispensing as a result of NPSA patient safety alerts? i.e. will you review your current SOP in light of this alert?

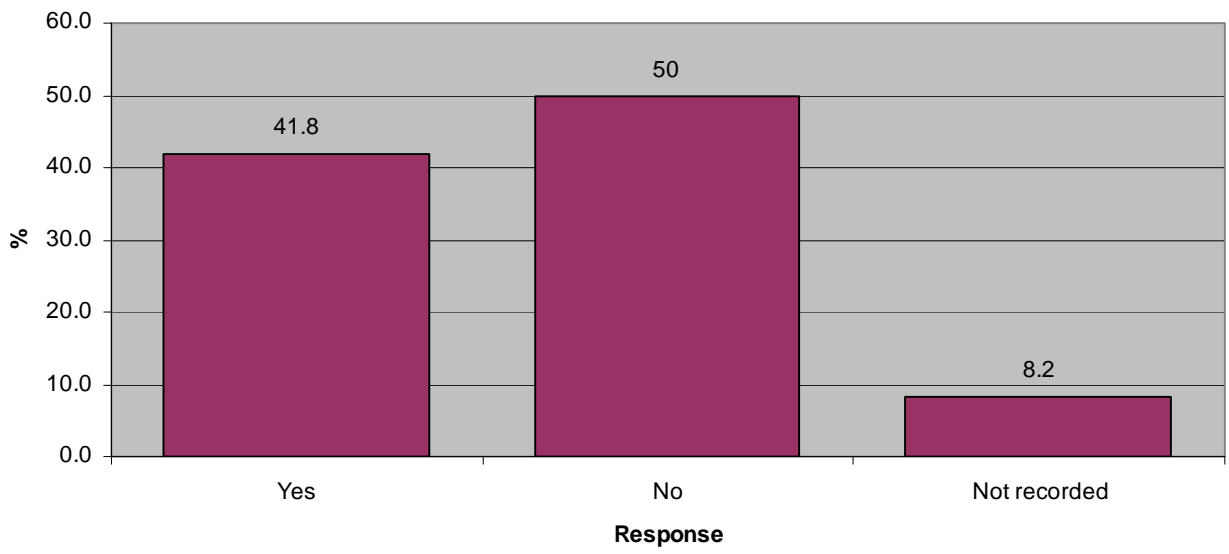


5.14 Have you checked that pharmacist competencies are achieved with respect to dispensing prescriptions for oral anticoagulant therapy?



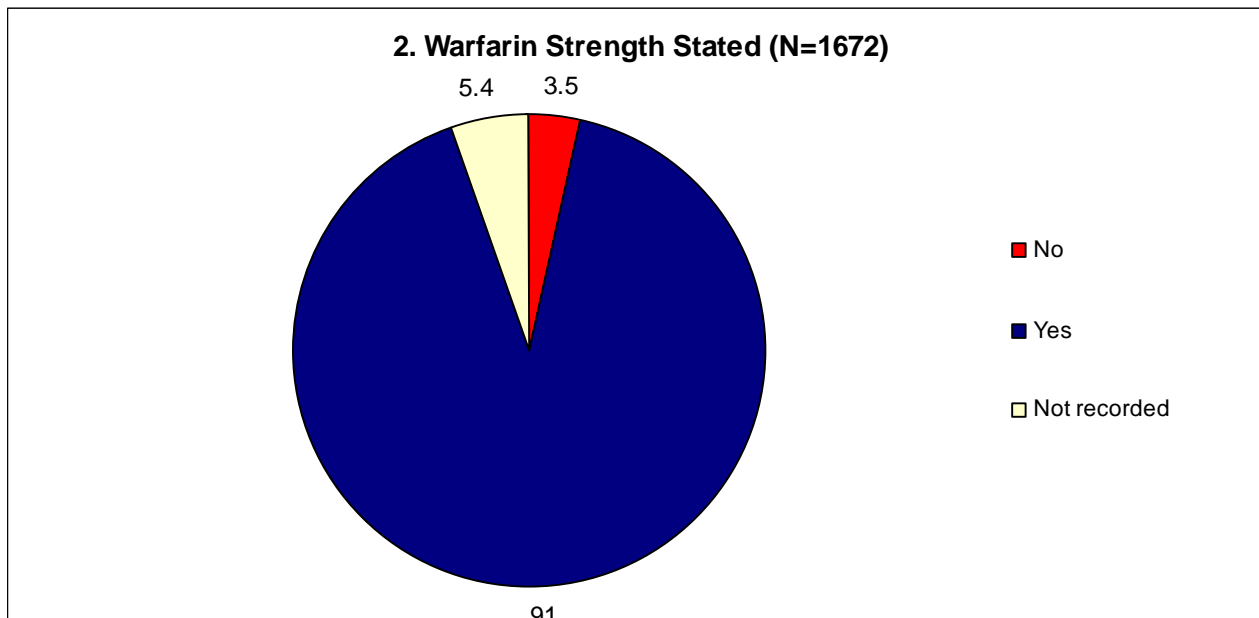
5.15 Have you identified any training issues?

Q13. Have you identified any training issues? (N=110)

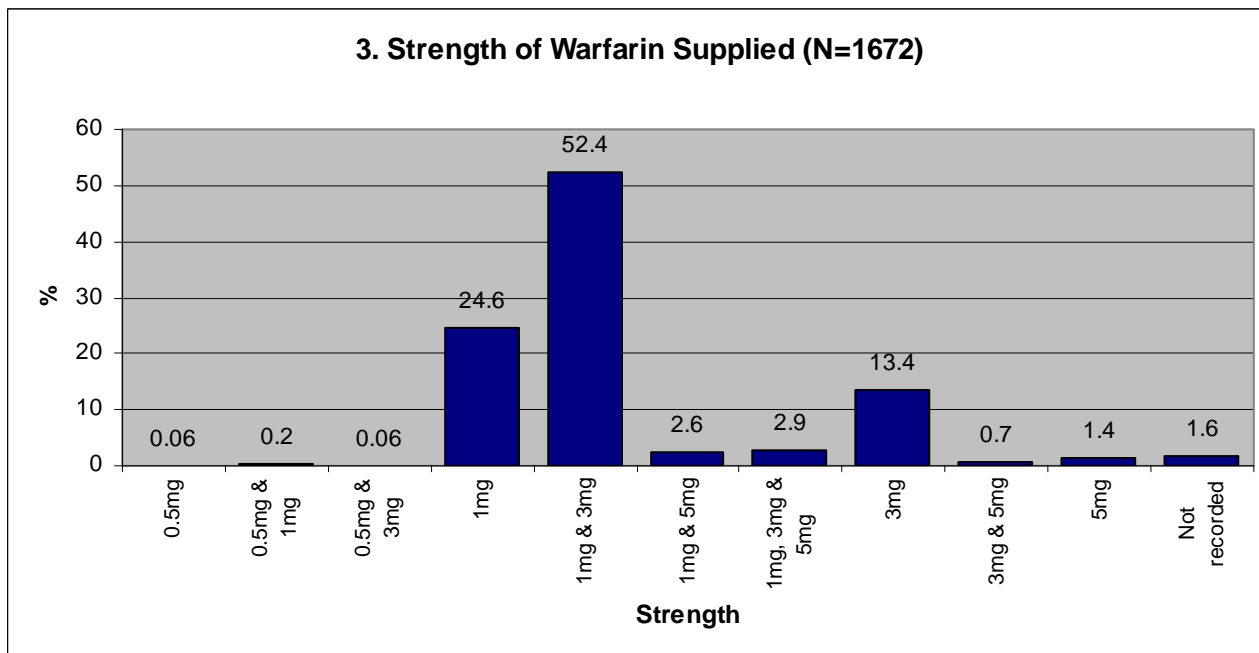


5.16 110 pharmacies completed and returned data from Appendix B of the audit tool, whereby they were required to audit up to 20 warfarin prescriptions per pharmacy. A total of 1672 prescriptions were audited and the results are detailed below.

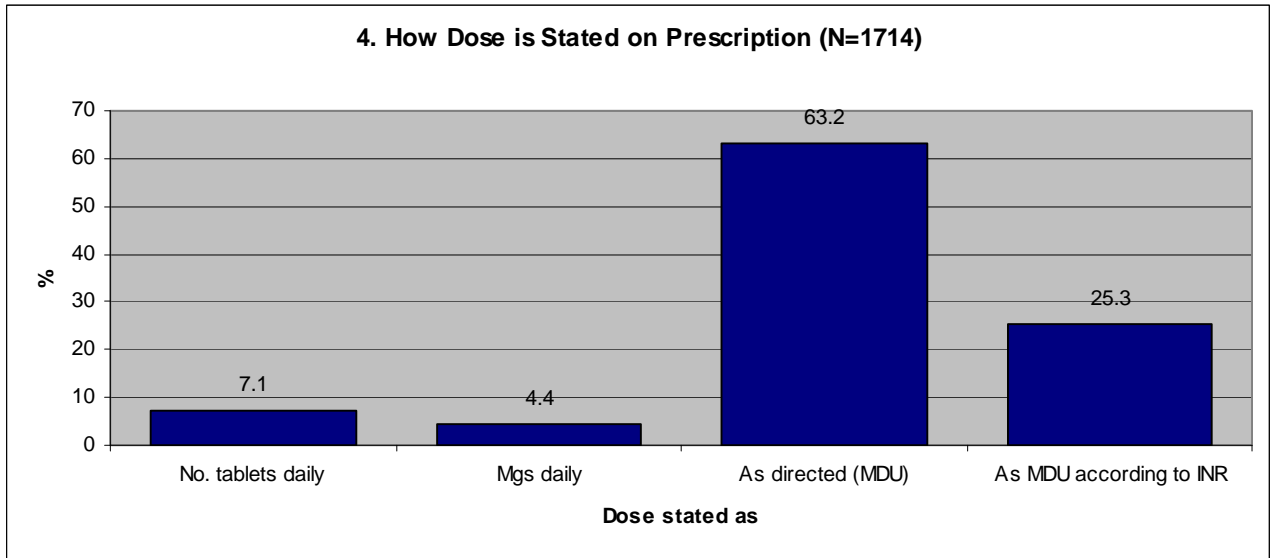
5.17 From the 1672 prescription forms that were audited, 95.2% were an FP10 prescription form type



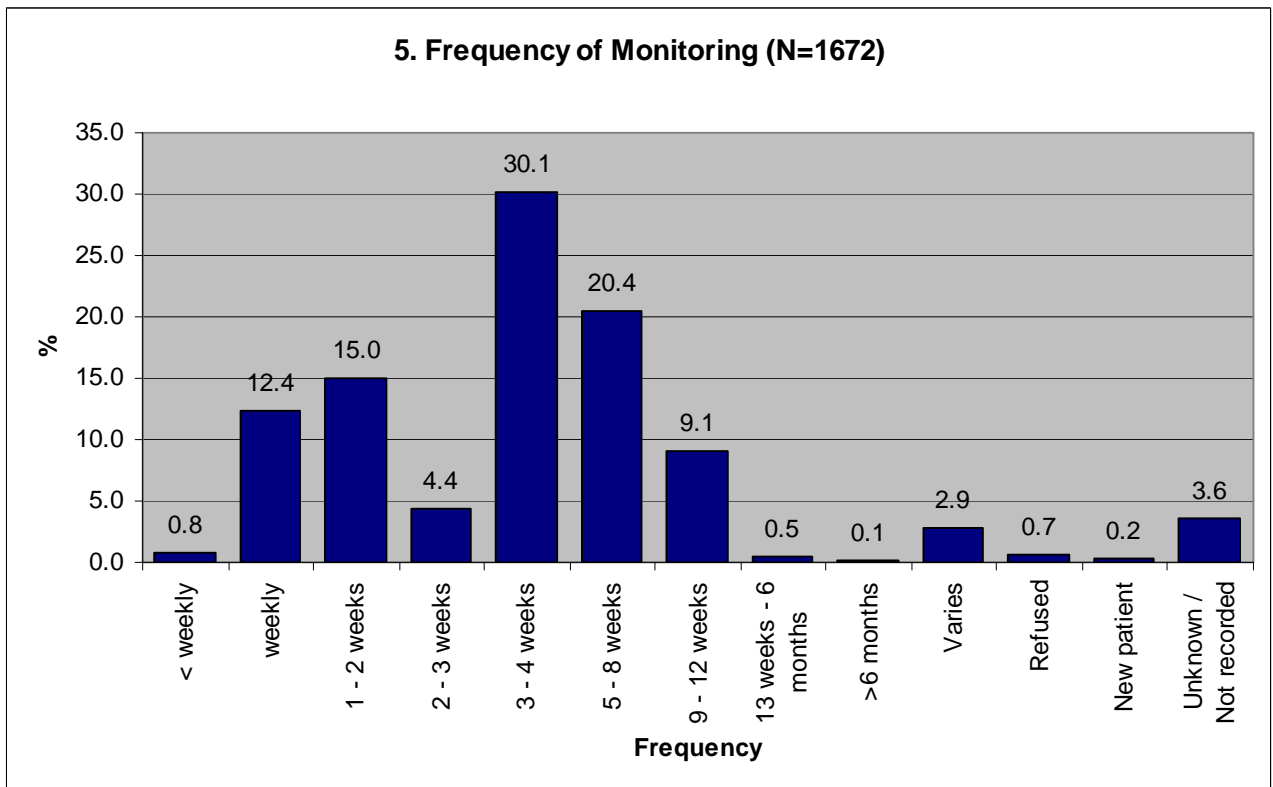
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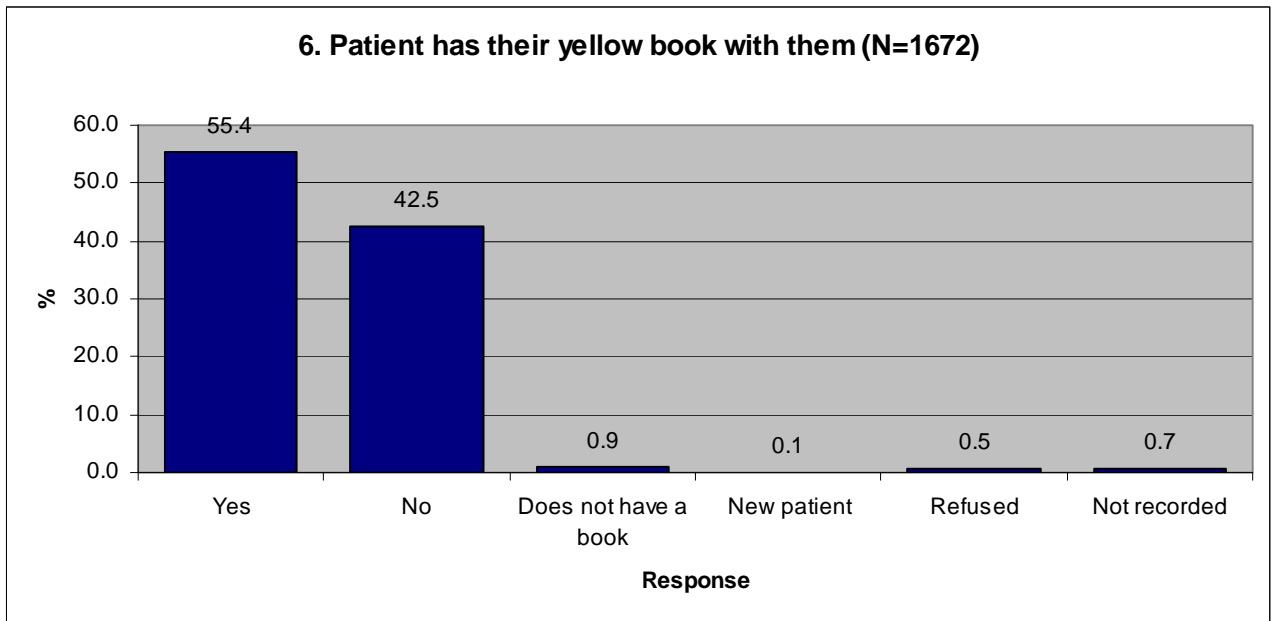
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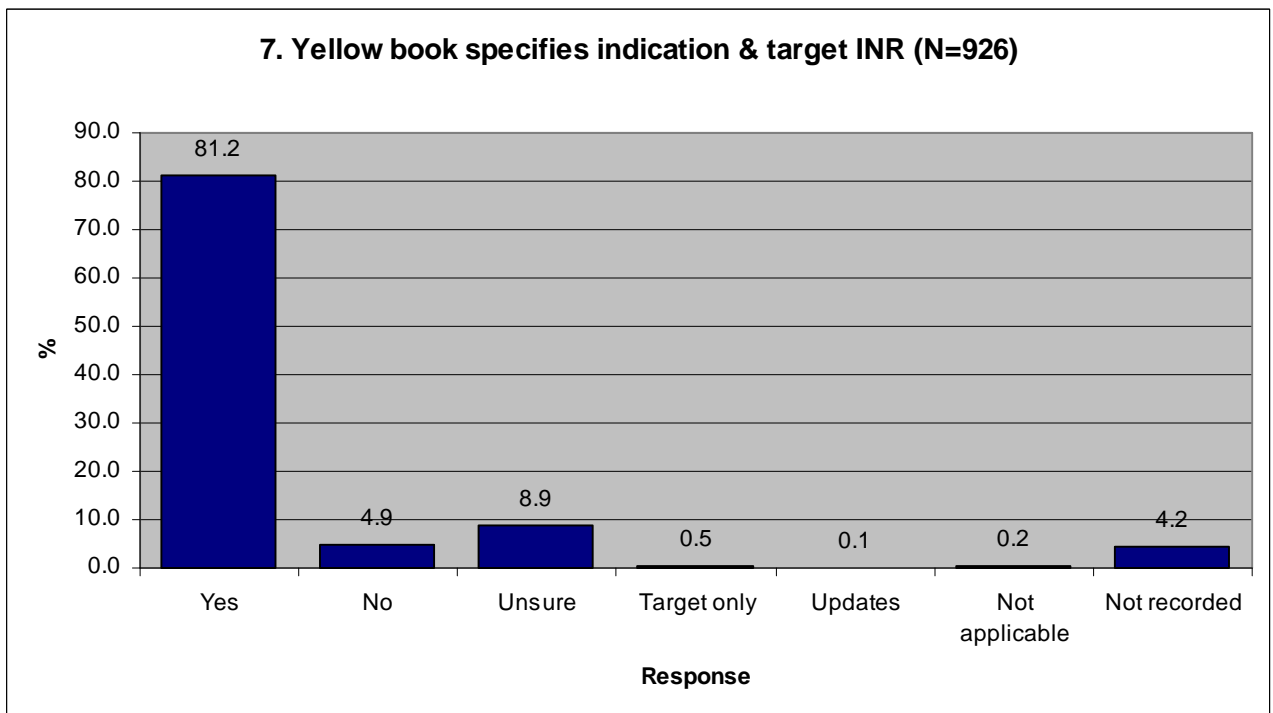
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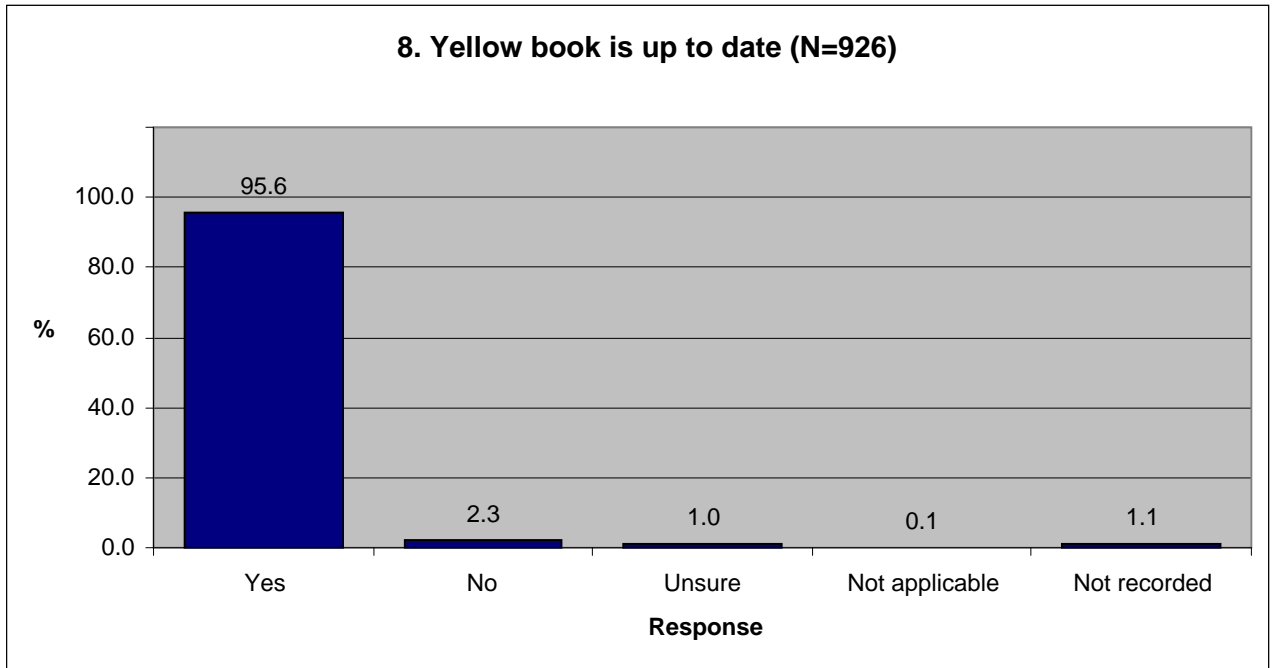
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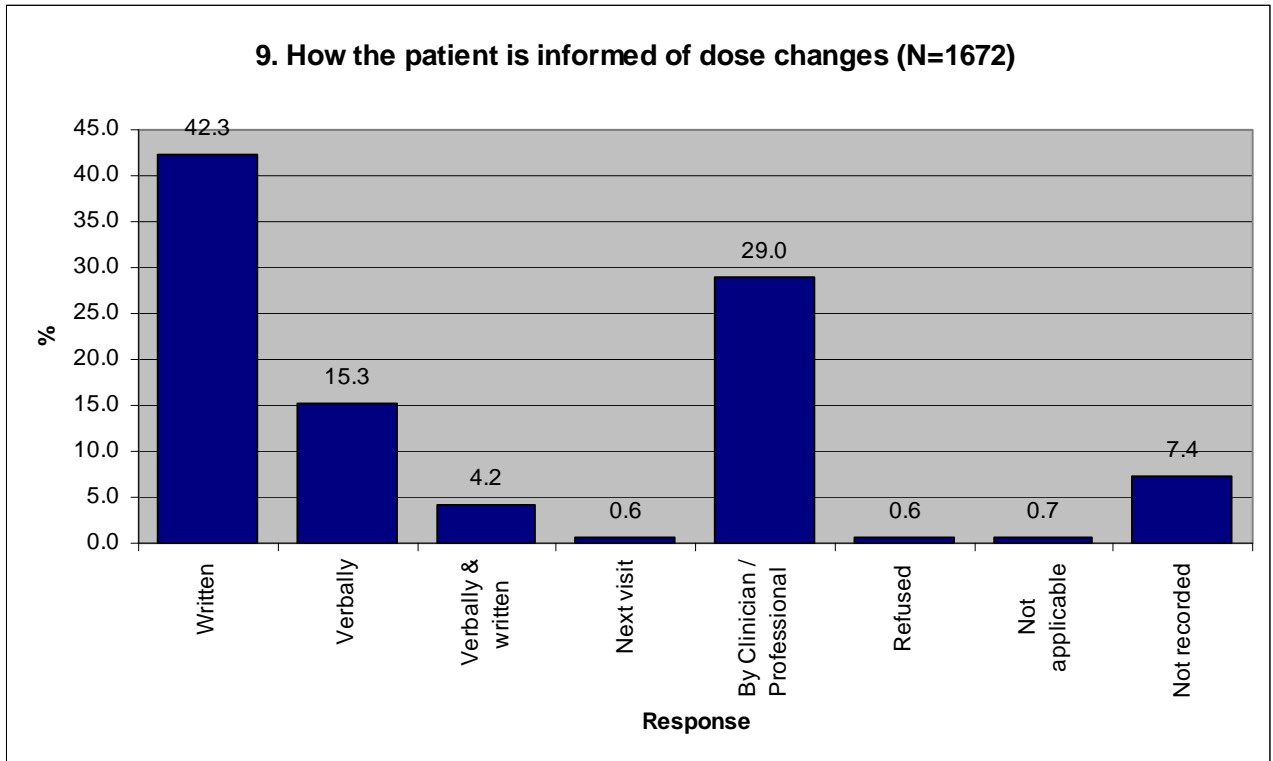
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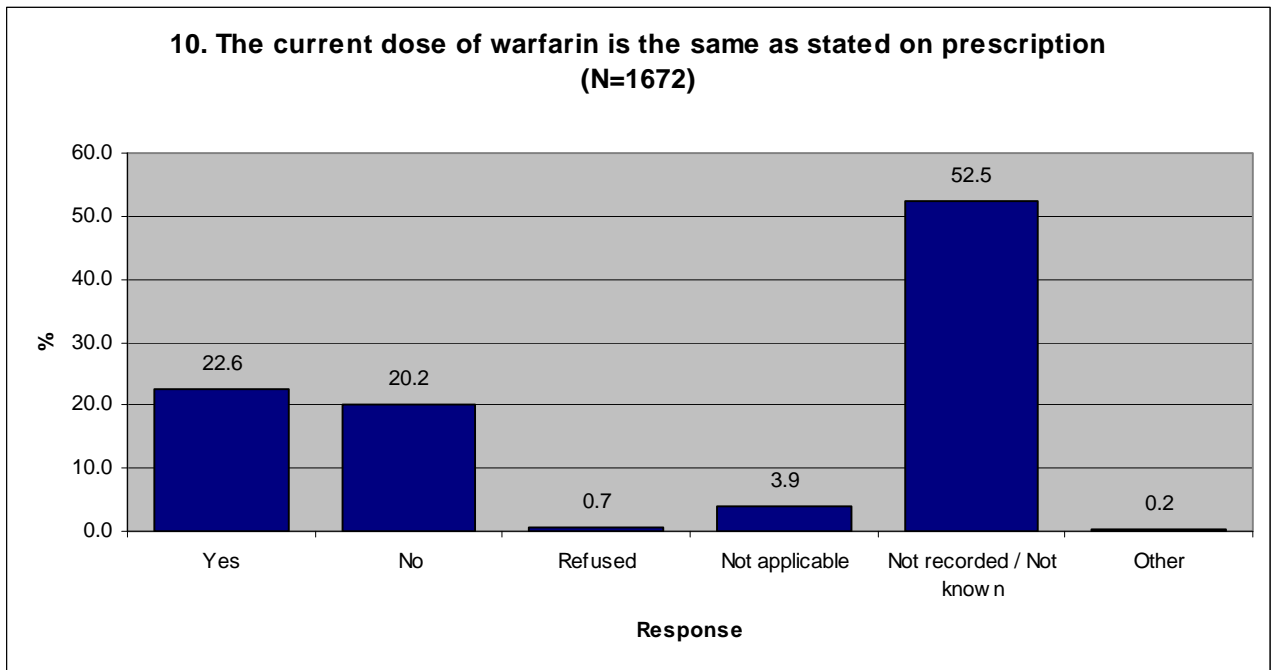
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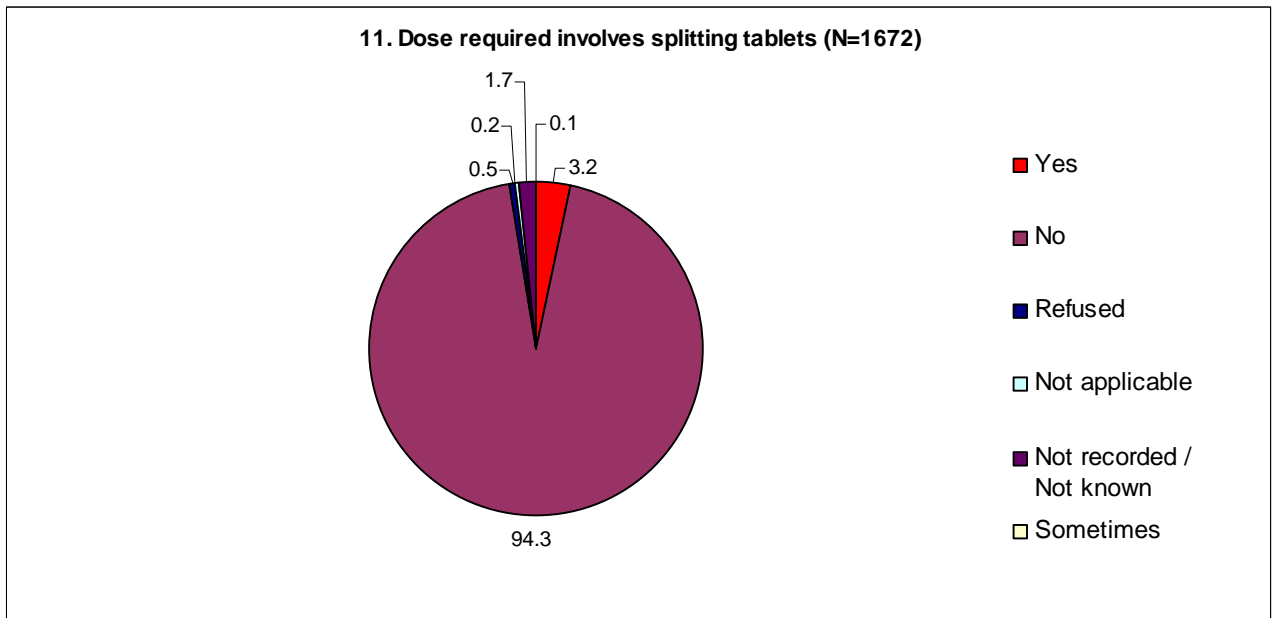
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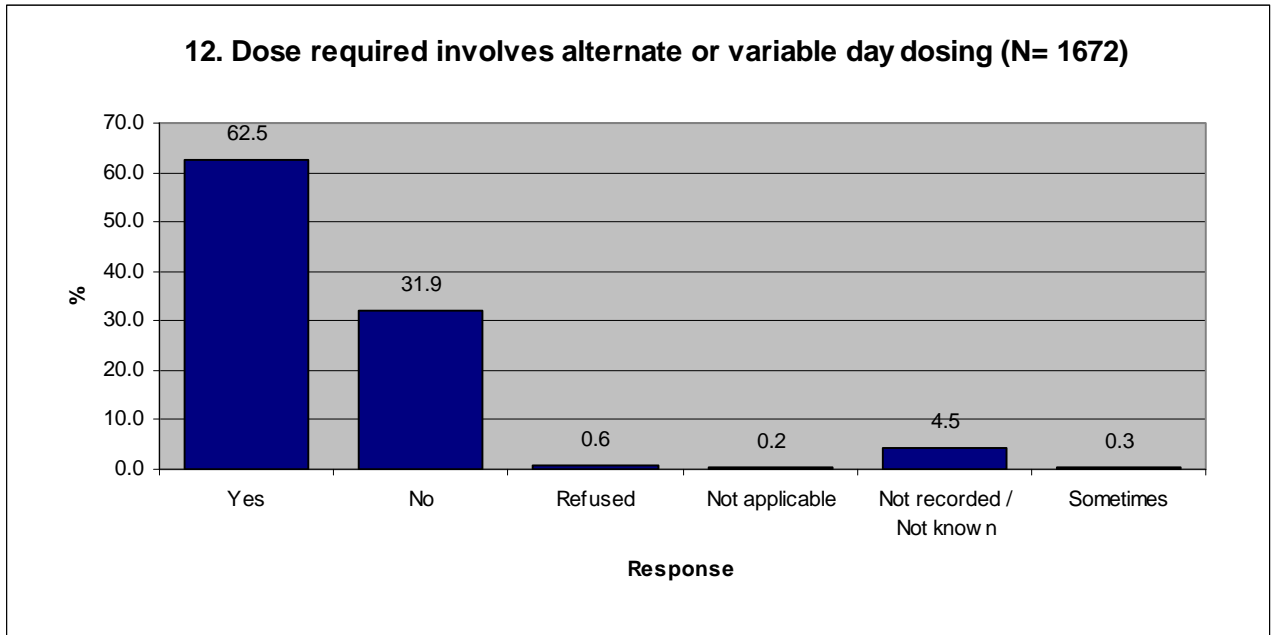
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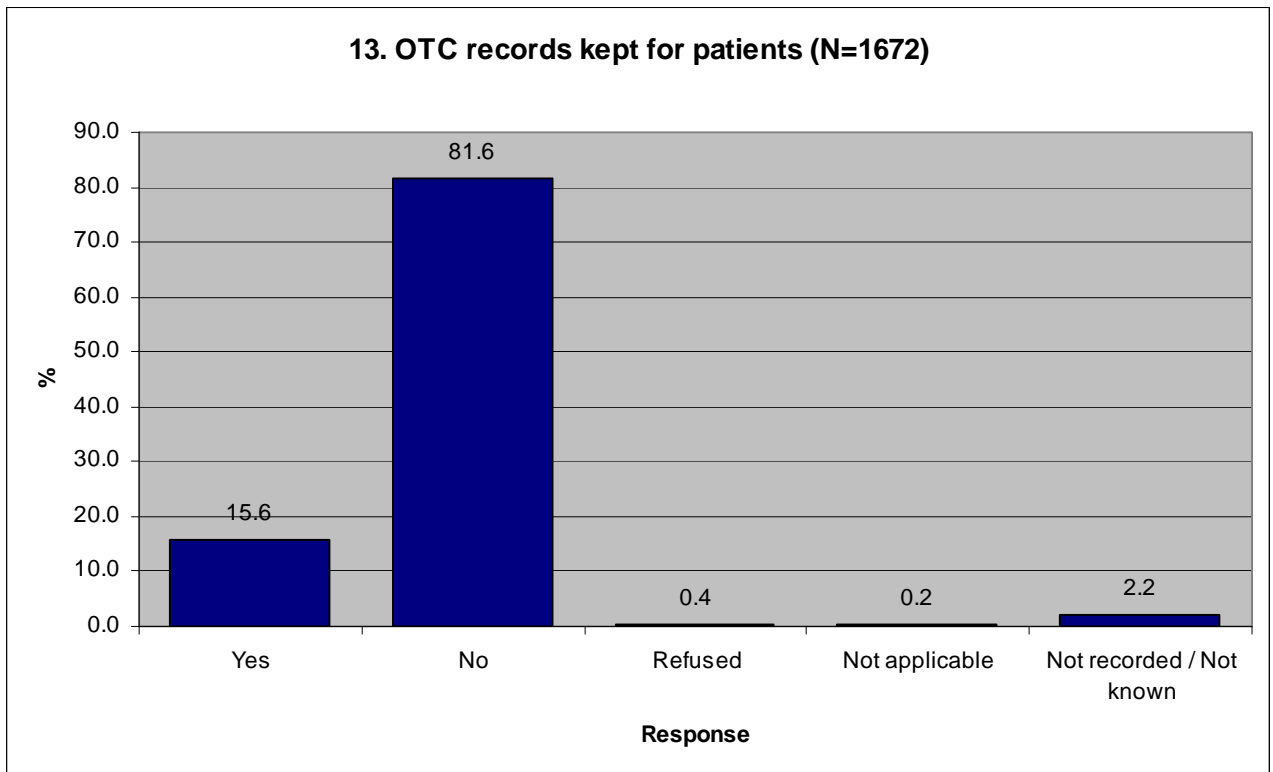
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



5.29 Action plans were generated by the pharmacies using the table in Appendix C of the audit tool. The table below summarises the various action points that were documented by the community pharmacies.

5.30

Learning action	Number of Responses
Set up SOP for OTC sales to cover warfarin	16
Check patients are having INR monitored	108
Carry out annual MUR on warfarin patients	9
Give information and advice to patients on warfarin	35
Make records of OTC sales for patients on warfarin	30
Carry out pharmacy intervention if patients prescribed 5mg tablets	4
Training of staff and locums	18
SOP for locum	3
Inform prescriber if dose not as per NPSA guidelines	9
Review medidose procedures	1
Contact prescriber if drug interaction with warfarin	23
Review SOP for dispensing warfarin, put sticker on bag	7
Put a procedure in place to ensure INR is checked before delivery of warfarin	3
Review NPSA guidelines and/ reaudit	9

5.31

Criteria	Result
1. Patients are asked if they have a “yellow booklet” or other written source	15.4%
2. Patients are asked if they have their INR regularly monitored	20.9%
3. The GP or INR monitoring agency is contacted in cases where there is a clinically significant drug interaction	36.3%
4. Patients initiated on warfarin are advised on the potential for interactions with OTC medicines, herbal preparations, diet and alcohol	35.4%

	Standard Met
	Standard Almost Met
	Action Required
	Urgent Action Required

6. DISCUSSION

6.1 The audit was sent out to all 116 pharmacies in Sheffield. Information was obtained via a questionnaire for pharmacists to complete and also via data collection on warfarin prescriptions dispensed. 110 pharmacies had submitted their returns by the deadline. The remaining six pharmacies are being followed up. The discussion will focus on each criterion in turn.

6.2 Patients are asked if they have a “yellow booklet” or other written source

6.2.1 The first criterion was to establish whether pharmacy staff were confirming if patients held a written source of INR monitoring. The standard for this criterion, as set by the NPSA, is 100%.

6.2.2 The results from the questionnaire showed that 15.4% (17) of pharmacists always asked to see documentation of INR monitoring. (35.4% frequently asked and 30% sometimes asked.) However 17.3% (19 Pharmacists) never asked to see any documentation when dispensing prescriptions for warfarin.

6.2.3 The data collection exercise looked at warfarin prescriptions dispensed over a two week period. The results showed that 55% of the patients confirmed that they had their yellow book (or other INR documentation) with them.

6.2.4 Results show that the majority of pharmacists are failing to ask to view the Yellow Book, or similar documentation, on each occasion that a prescription for warfarin is presented. Furthermore, patients are unaware of the need to present their records when having a prescription dispensed.

6.2.5 There may be a number of reasons for this.

- Lack of awareness by pharmacist, or pharmacy staff, of the NPSA alert which was issued in March 2007. (One year previous to audit)
- Delivery of the prescription by a driver on behalf of the pharmacy
- An assumption that the patient has been treated with warfarin for a considerable period, therefore assuming that monitoring was being appropriately managed
- Resistance to change

- 6.2.6 **Lack of awareness** - The undertaking of this audit will have raised the profile of the NPSA alert and of the need to assess warfarin prescriptions before dispensing, thus addressing the lack of awareness. However the audit may not have been shared with all staff. This has been acknowledged by some pharmacists as 21 pharmacies reported that they would brief locum pharmacists of the NPSA requirements. Of the 21 pharmacies 3 said they will also produce a SOP for locum pharmacists to follow.
- 6.2.7 The majority of pharmacies – 94 pharmacies (85.4%) - state that they do update their Standard Operating Procedures as a result of the NPSA Patient Safety Alerts. However, this is not borne out by the results which show that only 17 pharmacies always ask whether the patient has an anticoagulant monitoring booklet.
- 6.2.8 **Delivery** - Housebound patients rely on their medication being delivered. However, although this presents difficulties in accessing the documentation, the pharmacy should make every effort to contact the patient, the surgery or the INR clinic prior to delivery. The Standard Operating Procedure should reflect this.
- 6.2.9 As a matter of good practice and clinical governance the INR details (date of the last and next test and the INR result) obtained should be recorded in the patients PMR. 69.1% of pharmacies reported that their computer system had the facility to record patient INR details in their PMR. Yet 66.4% of pharmacies did not use this field on their computer.
- 6.2.10 In the cases where there is no specific field to record the INR then a note could be made in the 'patient's notes' section on the PMR.
- 6.2.11 **Assumptions** - Pharmacists are experts on medication and as such need to provide an element of safety. The clinical assessment is an important part of this and requires access to the patient's documentation. Despite the period of time over which the patient has been prescribed warfarin, the pharmacy should not make assumptions around frequency of INR monitoring.
- 6.2.12 **Resistance to change** - The NPSA guidelines are issued to reduce risk. In this case, both patients and pharmacists need to adopt new practice, which often results in resistance to change. However as clinical governance is there to ensure the patients are always receiving the best care possible, guidelines and advice is always changing. To embrace and implement these changes will provide to best care to the patients.

6.3 Patients are asked if they have their INR regularly monitored

6.3.1 The second criterion was to understand whether, in the absence of written INR details, pharmacists are asking the patients if their INR is being regularly monitored. In the questionnaire one fifth of pharmacists – 22 pharmacies - always checked that INR was being regularly monitored, 63 pharmacies (57%) stated that they asked either frequently or only sometimes. However, 20% reported never to make these checks. This is below the set criteria of 100%.

6.3.2 In practice it is sometimes not possible for the patients' record book to be updated at the time of the blood test. In this scenario results are given to the patient over the phone. Practices should ensure that a named person is responsible for this. Verbal instructions should then be followed up in writing.

6.3.3 The NPSA guidelines state that in the absence of written INR documentation pharmacists must satisfy themselves that the patient is aware of their current dose, their INR is being monitored appropriately and they are also aware of when their next INR is due. If the patient is unable to provide this information it can be obtained by contacting the INR clinic or prescribing doctor. If this information still can't be obtained the pharmacist must use their professional judgement to assess whether it is safe to proceed and dispense the prescription. It would be good practice to document any action taken in the patients PMR.

6.3.4 In appendix 3, the pharmacists individual action plans, it shows that the issue of checking patients INR is being monitored will be addressed as a result of the audit. 98% of pharmacists - 107 pharmacists - stated in their action plans that they will now ensure they check that patients INR is being monitored in line with the NPSA guidelines. This is a positive outcome of the audit. It has successfully raised the profile of the NPSA alert and the need to assess each warfarin prescription before it is dispensed.

6.4 The GP or INR monitoring agency is contacted in cases where there is a clinically significant drug interaction

6.4.1 The third criterion set out in this audit was to see if the GP or INR monitoring agency is contacted in cases where there is a clinically significant drug interaction with warfarin. The questionnaire showed 36.3% of pharmacists – 40 pharmacists - always contacted

the relevant prescriber. However 6.4% - 7 pharmacists - never contact the prescriber when dispensing a clinically significant drug interaction with warfarin. This falls below the criteria set out in the audit, which is 100%.

6.4.2 The questionnaire showed that 78.6% of pharmacists frequently ensured the patient had got an extra INR check booked in as a result of the significant drug interaction. It can be seen from graph 3b the distribution of results for each group. One pharmacist stated that they would neither contact the prescriber nor check with the patient to see if an extra INR was booked if there was a clinically significant drug interaction.

6.4.3 Stable patients who are initiated on medication that is known to interact with warfarin should be monitored before the drug is started and then twice weekly until the INR is stabilised. (see Ref 9.5)

6.4.4 It is the responsibility of the pharmacist to ensure that patients receive safe and effective treatment and the prescriber should be contacted for all significant interactions. This should be documented.

6.5 Patients initiated on warfarin are advised on the potential for interactions with over the counter (OTC) medicines, herbal preparations, diet and alcohol

6.5.1 Most patients are initiated on warfarin in secondary care although some may be initiated in primary care. However, all patients should receive information on the use of OTC, complimentary therapies, diet and alcohol both in verbal and written form. The Sheffield teaching hospitals use a document called 'living with anticoagulants'. This is given to all patients initiated on warfarin. It contains all this information for the patient. Appendix 2 is a copy of this document. For those patients initiated in primary care the patients may receive one of two documents; the STH 'living with anticoagulants' or the NPSA's 'Oral Anticoagulant Therapy' book which is available for download from NPSA website:-
<http://www.npsa.nhs.uk/nrls/alerts-and-directives/alerts/anticoagulant/>.

6.5.2 Pharmacists can pick up on drug interactions with warfarin by having robust protocols in place when selling OTC medicines (2-WHAM protocol). The results show that pharmacies have such protocols in place to identify patients taking other medication, although not necessarily specific to warfarin.

6.5.3 In the action plans in Appendix C, 16 pharmacies recorded they were going to write an SOP for picking up warfarin specific interactions when conducting OTC sales. 30

pharmacists stated they will now record OTC purchases made to patients on warfarin on their PMR. This is a positive outcome from the audit.

6.6 Interdisciplinary outcomes: One benefit of this audit has been an opportunity to capture valuable data on the prescribing habits across Sheffield.

Strength:

6.6.1 The advice from the NPSA is to use the least number of strengths of warfarin tablets to achieve the patients desired INR. The use of 0.5mg tablets should be used in preference to halving tablets to achieve optimum INR. They also advise to use constant daily dosing rather than alternate daily dosing regimes.

6.6.2 Guidelines issued by Sheffield Teaching Hospital Foundation Trust (STHFT) recommend the use of alternate daily dosing to achieve optimum INR (rather than using the 0.5mg tablets). If patients are unable to cope with the alternate dosing regime then 0.5mg may be considered by the clinical team. STHFT guidelines also state that a maximum of two strengths of warfarin should be used to maintain INR (1mg and 3mg). The guidelines also state that 5mg and 0.5mg should never been given together.

6.6.3 The results show that the prescribing habits are mainly in line with NHS Sheffield guidelines as oppose to the NPSA guidelines. 5 of the 1672 prescriptions presented were for the 0.5mg strength of warfarin. 49 prescriptions (2.9%) were presented for three different strengths of warfarin.

Dose:

6.6.4 As the dose for warfarin is often variable depending on INR, it is often unnecessary to state the dose on the prescription. An ideal dosage instruction would be “take as directed as per INR results”.

6.6.5 For a stable patient the actual daily dosage may be prescribed in milligrams rather than the number of tablets. The results show that 7.1% (122) of prescriptions stated the dose in the form of the number of tablets rather than as milligrams. Furthermore the data collection exercise indicated that of the total number of prescriptions that included a daily dosage, 20.2% - 40 - prescriptions included a dose that did not correlate with the dose actually taken by the patient. Both these are learning points should be shared with the prescribers.

Frequency of monitoring:

6.6.6 The maximum length of time patients should go between INR tests is 12 weeks. The audit revealed 10 patients were going longer than this. This is another learning point that should also be shared with the prescriber.

7. CONCLUSIONS

7.1 The audit has highlighted the variable way that pharmacists have adopted the NPSA guidelines. The four criteria set out were not met indicating the need for raising awareness and training of staff involved in the handling of warfarin prescriptions. Re-audit in those pharmacies where any of the four criteria were not met would be advised. Pharmacists should continue to make positive links with prescribers to make a valuable contribution to patient safety. This can be achieved through feedback on prescription writing and frequency of INR monitoring, which should be at intervals not exceeding 12 weeks. Furthermore, where changes are made to the dose patients should always be given written confirmation and a nominated member of the practice team should take responsibility for this.

8. RECOMMENDATIONS

8.1 The following recommendations are made as a result of the audit:

8.1.1 **Re-audit:** Re-audit is an essential part of the audit cycle, especially when the criteria have not been met, as on this occasion. Pharmacies should be encouraged to repeat the internal element of this audit. (Appendix 1)

8.1.2 **Standard Operating Procedures (SOP):** Pharmacists are advised to review their SOP's at least annually and ensure they include processes for delivery of warfarin prescriptions and, if applicable, the dispensing of warfarin into monitored dosage systems. The SOP should also be reviewed following significant incidents involving warfarin and should reflect any subsequent NPSA recommendations. Importantly, all staff, including relief staff, should be aware of these procedures which should be signed and dated.

8.1.3 **Training:** All staff involved in the handling of warfarin should be competent to do so. Training needs of the team should be assessed and training implemented and documented, if necessary. Appendix 2 contains a document from the Sheffield Teaching Hospitals NHS Foundation Trust concerning drugs that interact with warfarin, which can

be used to assist with the training of staff. All staff dealing with warfarin patients should be familiar with the documentation the patient receives when they are first initiated on it. Again an example of the 'living with anticoagulants' is in the appendix.

- 8.1.4 **Records:** Recording INR information obtained from patients in the patient's records (PMR) is good practice, enabling access by dispensing staff. It provides an audit trail and satisfies the requirements set out by the NPSA. Similarly, interventions made when making significant OTC sales or picking up on drug interactions when dispensing prescriptions should also be recorded.
- 8.1.5 **Advice:** An assessment of the patient's understanding can be made when handing out the prescribed medicine. The pharmacist can establish whether the patient has received written documentation on their treatment as well as affording them the opportunity to ask questions.
- 8.1.6 **Interdisciplinary:** If it is established that patients are going longer than the recommended time lapse between INR appointments then this should be discussed with the monitoring practitioner. A record of the conversation should be made on the patients PMR. If the dose of warfarin is expressed in number of tablets (or mg and this does not correspond to what the patient is taking), the prescriber again should be contacted and the outcome documented.

9. REFERENCES

- 9.1 The NPSA has developed work competences for anticoagulant therapy which include maintaining anticoagulant therapy and dispensing oral anticoagulants available at: www.npsa.nhs.uk/health/alerts
- 9.2 The work competency for dispensing oral anticoagulants is reproduced at appendix D.
- 9.3 Guidelines for anticoagulant therapy are published by the British Society of Haematology Standards available at: <http://www.npsa.nhs.uk/display?contentId=5754> (under 'Standards and Guidelines').
- 9.4 The Royal Pharmaceutical Society guidance, *Anticoagulant therapy: information for community pharmacists* is available for download <http://www.npsa.nhs.uk/display?contentId=5754>

9.5 The Sheffield primary care trust anticoagulation monitoring service standard operating procedure.

<http://www.sheffield.nhs.uk/medsmanagement/resources/anticoagulationservicespecification.doc>

APPENDIX 1

COMMUNITY PHARMACY MULTIDISCIPLINARY AUDIT 2008-2009 WARFARIN

Name of Pharmacy	
Address of Pharmacy	
Telephone number of pharmacy	
Name of pharmacist submitting audit	

1. Do you ask patients if they have an anticoagulant monitoring booklet (yellow booklet or other written source of dosing) prior to dispensing the prescription?

Always Frequently Sometimes Never

2. Do you check that a patients INR is regularly monitored and at a safe level before you dispense a prescription for an oral anticoagulant?

Always Frequently Sometimes Never

3. Do you contact the GP/ anticoagulant service when a clinically significant interacting medicine is prescribed and check that an additional INR has been arranged?

Always Frequently Sometimes Never

3.1 If **Not** do you ask the patient if an additional test has been arranged?

yes No

4. Do you give advice to patients initiated on oral anticoagulants, of the potential for interactions with OTC medicines, including herbal preparations, diet and alcohol and the effect that can have on their INR levels?

- Always Frequently Sometimes Never

Reminder: It would be appropriate to conduct a MUR for patients taking anticoagulant medication, if accredited.

5. Are you familiar with the new Oral Anticoagulant Therapy packs and booklets? (available to practices from Brincliffe House)

- yes No

Booklets and cards are available to view at

<http://www.npsa.nhs.uk/health/display?contentId=5754>

6. Does your computer software have space to allow you to record the date of the last blood test, the INR level and the current dose?

- yes No

7. Have you ever asked for, and recorded this information?

- Always Frequently Sometimes Never

8. Do you normally check if patients are aware of the signs of abnormal INR?

- yes No

9. What processes do you have in place to ensure that staff are aware that patients taking anticoagulants should be referred to the pharmacist in response to requests for OTC medicines?

10. Do you ever supply anticoagulants in Monitored Dosage Systems? (including care homes)

- yes No

If yes what steps are taken to minimise the risk of incorrect dosage being given? (I.e. with dose changes after blood tests)

11. Do you update SOPs for dispensing as a result of NPSA patient safety alerts? I.e. will you review your current SOP in light of this alert?

- yes No

12. Have you checked that pharmacist competencies are achieved with respect to dispensing prescriptions for oral anticoagulant therapy? (see appendix E)

- yes No

13. Have you identified any training issues? (Please list if 'yes')

- yes No

This is an opportunity to review patient incidents in light of this safety alert guidance, and identify changes to processes that may prevent future occurrences. Please review any recorded patient safety incidents or near misses at your pharmacy involving anticoagulants. **Please do this in-house, within your pharmacy team – no details are required by Sheffield PCT.**

Warfarin data collection sheet

1 of 2

Patient ID		1	2	3	4	5	6	7	8	9	10
Prescription details											
Prescription form type FP10 or FP10HP											
Warfarin strength stated? Y or N											
If indicated strength and quantity supplied	0.5mg										
	1mg										
	3mg										
	5mg ¹										
Is dose stated as	number tablets daily										
	mgs daily										
	as directed (MDU)										
	MDU according to INR										
Monitoring – complete this section with the patient/carer											
Who is responsible for monitoring INR											
Frequency of monitoring											
Does patient have yellow book with them? Y/N											
Does yellow book specify indication & target INR (please state)											
Is the yellow book up to date? Y/N											
How is patient informed of dose changes?											
What is current dose of warfarin – is this the same as stated on prescription											
Does dose required involve splitting tablets											
Does dose required involve alternate or variable day dosing (eg 5,6,5,6 or 5,5,6)											
Do you keep OTC records for this patient? Y or N											

If info refused = R

¹ Please note:- There is an agreement across the Sheffield Health Community NOT to use the 5mg tablet

Warfarin data collection sheet

2 of 2

Patient ID		11	12	13	14	15	16	17	18	19	20
Prescription details											
Prescription form type FP10 or FP10HP											
Warfarin strength stated? Y or N											
If indicated strength and quantity supplied	0.5mg										
	1mg										
	3mg										
	5mg²										
Is dose stated as	number tablets daily										
	mgs daily										
	as directed (MDU)										
	MDU according to INR										
Monitoring – complete this section with the patient/carer											
Who is responsible for monitoring INR											
Frequency of monitoring											
Does patient have yellow book with them? Y/N											
Does yellow book specify indication & target INR (please state)											
Is the yellow book up to date? Y/N											
How is patient informed of dose changes?											
What is current dose of warfarin – is this the same as stated on prescription											
Does dose required involve splitting tablets											
Does dose required involve alternate or variable day dosing (eg 5,6,5,6 or 5,5,6)											
Do you keep OTC records for this patient? Y or N											

If info refused = R

² Please note:- There is an agreement across the Sheffield Health Community NOT to use the 5mg tablet

REFLECTIVE ACTION PLAN

Identify areas in your practice where you can make changes to help meet the standards of the NPSA safety alert?

What changes will you make in the future?

- Set practice guidelines
- Outline at least 3 action points to achieve agreed practice standards
- Set a date for a re-audit and compare results to standards

Practice standard	Action points

Did you identify areas in the practice of others e.g. GPs, nurses or hospital Drs /Nurses or Pharmacists, where they can make changes to help meet the NPSA advice/guidance?

Yes

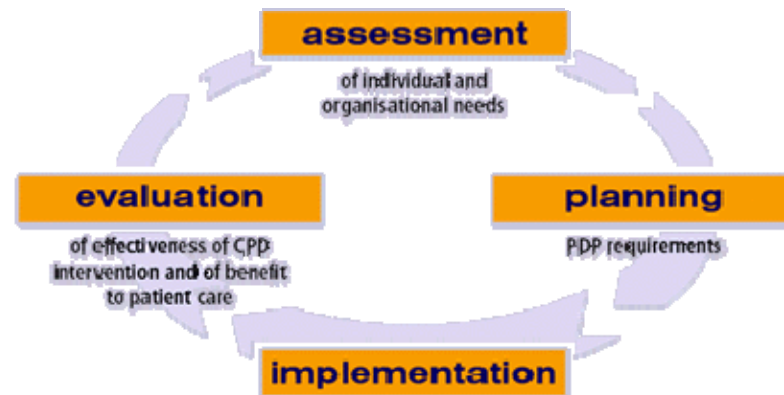
No

If yes, how will you communicate this to them?

What help if any do you need from Sheffield PCT to achieve this?

(The summarised results of the audit will be circulated to pharmacists and GPs after amalgamation for information and consideration)

REMINDER - YOU MAY WANT TO CONSIDER THIS AUDIT ACTIVITY AS AN ENTRY IN YOUR RPSGB CPD PORTFOLIO.



Appendix D – Use this form to allocate an Audit ID No. to the anticoagulant patients

RETAIN IN PHARMACY – DO NOT SEND TO SHEFFIELD PCT

Patient's Audit ID No	Patient Details e.g. name and address or NHS Number
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Appendix A (Continuation Sheet) – Use this form to allocate an Audit ID No. to the anticoagulant patients

RETAIN IN PHARMACY – DO NOT SEND TO SHEFFIELD PCT

11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

**DO NOT INCLUDE THIS FORM IN ANY RETURNS BUT RETAIN IN THE PHARMACY FOR CONTRACT VALIDATION PURPOSES.
SHEFFIELD PCT CLINICAL GOVERNANCE DEPARTMENT MAY NEED TO ACCESS THE INFORMATION AT SOME STAGE FOR FOLLOW UP PURPOSES.**

Work competence statement

Anticoagulant competence 4:

Dispensing oral anticoagulants

Summary	This proposed competence is directly applicable to healthcare professionals who undertake the dispensing of anticoagulants.
Indicative links to KSF Dimension and Level	<i>Health and wellbeing HWB4:</i> Enablement to address health and wellbeing needs <i>Level 3:</i> Enable people to address specific needs in relation to health and wellbeing
Origin	This is a new workforce competence proposed and developed by the National Patient Safety Agency.
Activity scope	<p>Key words and concepts:</p> <p><i>Dispensing</i> Taking responsibility to ensure that the required drugs are available to the patient or to the ward in the correct form, amount and in date for nurse administration or patient self-administration.</p> <p>This workforce competence covers dispensing of anticoagulant treatment for adult patients only. This includes oral anticoagulants (warfarin, acenocoumarol (nicoumalone) and phenindione).</p>
Performance criteria	<p>You need to:</p> <ol style="list-style-type: none"> 1. Find out what the patient already understands and remembers. 2. Ensure that the patient has been issued with appropriate information (e.g. yellow book) and has had the contents fully explained to them. 3. Ensure that arrangements are in place for INR monitoring and follow-up, and that the patient and/or carer understand these. 4. Accurately answer any questions relating to the patient's therapy at a pace and level that is appropriate to: <ul style="list-style-type: none"> • their emotional state; • their level of understanding; • their culture and background; • their preferred ways of communicating; • their needs. 5. Explain in clear and simple terms what the medicines are for and when the patient needs to take them. 6. Explain any lifestyle changes that will be needed in order to ensure good anticoagulant control. 7. Check that the patient and/or carer understand the prescribed treatment and the lifestyle implications of that treatment.

Actions that can make anticoagulant therapy safer
Work competence 4: Dispensing oral anticoagulants

March 2007
Word document available at: www.npsa.nhs.uk/health/alerts

	<ol style="list-style-type: none">8. Ensure that the patient and/or carer understands how to take the correct dose in relation to the number of milligrams and the number of tablets to be taken.9. Ensure the drugs are dispensed with written instructions (e.g. patient information leaflet) on what they are for, how and when to take them, the date dispensed and the expiry date.10. Explain the importance of remembering to take every dose prescribed.11. Inform the patient of side effects or symptoms the drugs may produce, how common or rare these are, how to recognise them and what action to take.12. Ensure the patient is aware of the potential for anticoagulants to interact with other medicines, including those bought over-the-counter, and that they understand the need to consult with a pharmacist or the prescriber before taking other medicines. <p>Offer compliance aids, if appropriate, to help the patient to remember to take every dose prescribed.</p>
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Appendix 2

Warfarin Drug Interactions

This guide is intended as a quick reference to highlight significant interactions between warfarin and commonly prescribed medicines or [complimentary medicines](#). It is not intended to be exhaustive or give detailed information. Prescribers should refer to the SPC or the BNF for further information or contact NHS Sheffield Medicines Management Team for advice.

Interacting Drug	Potential problem	Comment
Alcohol	Increases anticoagulant effect of warfarin	Fluctuations in prothrombin time in heavy drinkers or patients with liver disease.
Allopurinol	Increases anticoagulant effect of warfarin	Uncommon but unpredictable interaction – monitor INR more closely when allopurinol started.
Aminoglutethamide	Reduces anticoagulant effect of warfarin	Effect appears to be related to dose of aminoglutethamide. May need up to four times the dose of warfarin.
Amiodarone	Increases anticoagulant effect of warfarin	The onset of this interaction may be slow and may persist after amiodarone has been withdrawn.
Amitriptyline	Unpredictable increase or reduction in anticoagulant effect	Monitor INR closely. INR may be difficult to control in patients taking tricyclic antidepressants.
Anabolic Steroids (e.g. danazol, stanozolol)	Increases anticoagulant effect of warfarin	Interaction develops rapidly, possibly within 2 or 3 days.
Aspirin	Increases anticoagulant effect of warfarin	Avoid aspirin as an analgesic – use Paracetamol as a safer alternative. Low dose aspirin 75mg daily appears not to interact to any clinically relevant extent but may increase the risk of bleeding due to antiplatelet effect.
Azapropazone	Increases anticoagulant effect of warfarin	Significant risk of bleeding. Concurrent use NOT recommended.
Azathioprine	Reduces anticoagulant effect of warfarin	Warfarin dose may need to be increased when azathioprine started and reduced if azathioprine is stopped.
Barbiturates (e.g. Phenobarbital)	Reduces anticoagulant effect of warfarin	May require 30-60% increase in warfarin dose. The reduction in anticoagulant effects begins within a week, reaching a maximum after about 3 weeks and may still be evident up to 6 weeks after stopping the barbiturate.
Bezafibrate	Increases anticoagulant effect of warfarin	Bleeding is likely if the anticoagulant dose is not reduced appropriately (between one-third to one-half and then adjusted as per INR).
Boldo	May increase anticoagulant effect of warfarin	Modest rise in INR seen in a patient taking Boldo and Fenugreek.
Interacting Drug	Potential problem	Comment
Carbamazepine	Reduces anticoagulant effect of warfarin	Dose of warfarin may need to be increased (up to double dose). Oxcarbamazepine does not appear to interact.
Cefaclor	Increases anticoagulant effect of warfarin	Cefuroxime, cefalexin or cefradine are safer alternatives.

Celecoxib	Increases anticoagulant effect of warfarin	Rare cases of increased INR and bleeding reported.
Cimetidine	Increases anticoagulant effect of warfarin	Unpredictable but common interaction. Use ranitidine instead.
Ciprofloxacin	May increase the anticoagulant effect of warfarin	Rare and unpredictable interaction. Monitor INR. Use alternative antibiotic if possible.
Ciprofibrate	Increases anticoagulant effect of warfarin	Bleeding is likely if the anticoagulant dose is not reduced appropriately (between one-third to one-half and then adjusted as per INR).
Clarithromycin	Increases anticoagulant effect of warfarin	Marked increase in INR has been reported. If a macrolide is required, Azithromycin is a safer alternative.
Clofibrate	Increases anticoagulant effect of warfarin	Bleeding is likely if the anticoagulant dose is not reduced appropriately (between one-third to one-half and then adjusted as per INR).
Clopidogrel	Mild bleeding can occur even though INRs remain stable and within range.	Increased risk of bleeding due to antiplatelet effect. Manufacturer advises avoid concomitant use.
Colestyramine	Reduces anticoagulant effect of warfarin by preventing the absorption of warfarin.	Separating the dosages as much as possible may minimise the effects of this interaction.
Coenzyme Q10	Reduces anticoagulant effect	Monitor INR. Avoid use of products containing coenzyme Q10.
Oral contraceptives	Reduces anticoagulant effect of warfarin	Generally avoided in thromboembolic disorders
Co-proxamol	Increases anticoagulant effect of warfarin	Uncommon and unpredictable. Use Paracetamol as a safer alternative.
Corticosteroids	Variable response	Low to moderate doses can increase or decrease the anticoagulant effect of warfarin. High doses have been reported to increase the anticoagulant effects. Monitor INR.
Cranberry Juice	Increases anticoagulant effect of warfarin	Avoid use in patients taking warfarin.
Cytotoxics	Increases anticoagulant effect of warfarin reported with some cytotoxics	Refer patients on concurrent cytotoxic agents to secondary care for management of anticoagulation
Interacting Drug	Potential problem	Comment
Danshen	Increases anticoagulant effect of warfarin	Advise patients not to use Danshen whilst taking warfarin.
Devil's Claw	Increases anticoagulant effect of warfarin	Bleeding disorders visible on the skin (purpura) have been reported.
Diclofenac	Cases of bleeding reported with concomitant use.	Unpredictable – monitor INR & adverse effects. Avoid if possible. Ibuprofen or Naproxen are less likely to interact with warfarin.
Diflunisal	Increases anticoagulant effect of warfarin	Unpredictable – monitor
Dipyridamole	Mild bleeding sometimes occur even though INRs remain stable and within range.	Increased risk of bleeding due to antiplatelet effect.
Disulfiram	Increases anticoagulant effect of warfarin	Review concurrent use of warfarin in patients requiring Disulfiram.

Dong quai (<i>Angelica sinensis</i>)	Reports of marked increases anticoagulant effect of warfarin	Advise patients not to use Dong quai whilst taking warfarin. Increased bleeding time & bruising.
Erythromycin	Increases anticoagulant effect of warfarin	Serious but unpredictable. The elderly are at greater risk. Monitor closely.
Esomeprazole		Monitor INR if adding or stopping esomeprazole.
Fenofibrate	Increases anticoagulant effect of warfarin	Bleeding is likely if the anticoagulant dose is not reduced appropriately (between one-third to one-half and then adjusted as per INR).
Feverfew	Altered bleeding time reported	Advise patients not to use Feverfew whilst taking warfarin. Monitor INR.
Fluconazole	Increases anticoagulant effect of warfarin	Monitor and reduce warfarin dose accordingly.
Flurbiprofen	Cases of bleeding reported with concomitant use.	Unpredictable – monitor INR & adverse effects. Avoid if possible.
Flutamide	Increases anticoagulant effect of warfarin	Monitor and reduce warfarin dose as necessary.
Garlic	Case reports of increased anticoagulant effect of warfarin	Advise patients NOT to take garlic supplements. Regular ingestion of foods containing garlic should not pose a problem.
Gemfibrozil	Increases anticoagulant effect of warfarin	Bleeding is likely if the anticoagulant dose is not reduced appropriately (between one-third to one-half and then adjusted as per INR).
Interacting Drug	Potential problem	Comment
Gingko Biloba	Isolated reports of increased risk of bleeding	Advise patients not to use Gingo Biloba whilst taking warfarin.
Ginseng	Reports of spontaneous bleeding in patients using Ginseng without anticoagulants	Ginseng contains antiplatelet components, so avoid use in patients taking warfarin.
Grapefruit juice	Increases anticoagulant effect of warfarin	May cause a modest rise in INR
Glucagon	Large doses (≥ 50 mg over 2 days) increase anticoagulant effect of warfarin	Reduce dose of warfarin & monitor INR closely. Smaller doses (total of 30mg) are reported not to interact.
Glucosamine	Reports of increases in INRs	Patients on warfarin are recommended not to take Glucosamine
Glucosamine / Chondroitin	Increased risk of bleeding	Chondroitin has anticoagulant activity and should be avoided in warfarin patients.
Griseofulvin	Reduces anticoagulant effect of warfarin	Unpredictable (effects some but not all patients) – monitor INR
Indometacin	Indometacin inhibits platelet aggregation and so prolongs bleeding.	Avoid NSAIDs in patients taking warfarin if possible. If concurrent use essential, monitor INR closely.
Influenza vaccine	Usually safe & uneventful, but small numbers of bleeding episodes reported.	Evidence shows that influenza vaccination in those taking warfarin is normally safe & uneventful. Advise patient to report any unexplained bleeding.
Itraconazole	Case report of increased anticoagulant effect of warfarin	Monitor and reduce dose if necessary. Advise patients to report any unexplained bruising or bleeding.

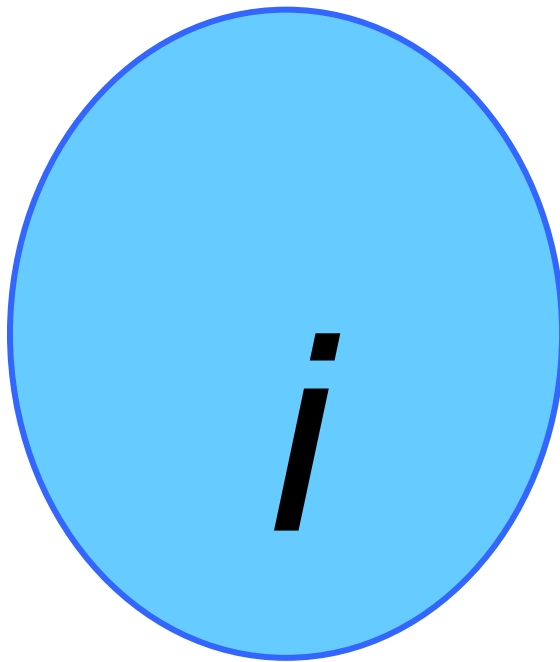
Ketoconazole	Case reports of increased anticoagulant effect of warfarin	Monitor and reduce dose if necessary. Elderly at greater risk. Advise patients to report any unexplained bruising or bleeding.
Ketorolac (oral)	Serious risk of gastrointestinal bleeding	Oral Ketorolac is contra-indicated in patients taking warfarin.
Metronidazole	Increases anticoagulant effect of warfarin	If concurrent use cannot be avoided, reduce the warfarin dose by between one-third and one-half and monitor closely.
Miconazole	Increases anticoagulant effect of warfarin	Avoid -Potentially serious interaction. Use Nystatin instead.
Non-Steroidal Anti-inflammatory Drugs (NSAIDs)	NSAIDs irritate stomach lining and reduce platelet aggregation	Avoid where possible. If concomitant use cannot be avoided, monitor INR and adverse events. Ibuprofen or Naproxen are less likely to interact with warfarin.
Interacting Drug	Potential problem	Comment
Omeprazole	Increases anticoagulant effect of warfarin	A small change in INR may be seen. Occasionally clinically significant interactions occur. Use Lansoprazole as an alternative.
Papaya	Increases anticoagulant effect of warfarin	Avoid use in patients taking warfarin. Monitor INR.
Paracetamol	Increases anticoagulant effect of warfarin when large doses are used over a prolonged time.	Intermittent use (<2.5g/week) unlikely to effect INR. A reduction in warfarin dose may be needed for regular paracetamol users.
Penicillins	Increases and decreases in the anticoagulant effect of warfarin have been seen.	Uncommon and unpredictable effect. Close monitoring of INR recommended.
Phenytoin	Can increase or reduce anticoagulant effect of warfarin	Monitor INR and adjust dose of warfarin accordingly.
Piroxicam	Increases anticoagulant effect of warfarin	Avoid NSAIDs in patients taking warfarin if possible. If concurrent use essential, monitor INR closely and reduce dose of warfarin if necessary. Ibuprofen or Naproxen are less likely to interact with warfarin.
Rifampicin / Rifabutin	Markedly reduces anticoagulant effect of warfarin	Monitor closely. Reduces anticoagulant effect within 5-7 days. Warfarin dose may need to be double or trebled and reduced on stopping Rifampicin or Rifabutin.
Simvastatin	Generally small, clinically irrelevant increase in anticoagulant effects	Monitor initially or after dose increases of Simvastatin.
St John's Wort	Moderate reduction in the anticoagulant effects of warfarin	CSM advises stopping St John's Wort and adjusting the dose of warfarin as necessary.
Sulindac	Increases anticoagulant effect of warfarin	Uncommon and unpredictable – monitor INR. Avoid NSAIDs where possible. Ibuprofen or Naproxen less likely to interact.
Tamoxifen	Markedly increases anticoagulant effect of warfarin	Monitor and reduce warfarin dose as necessary – may need to reduce dose by half.
Thyroid hormones	Increases anticoagulant effect of warfarin	Monitor and adjust warfarin dose as necessary. Warfarin dose may need to be changed as thyroxine

		doses are altered.
Vitamin K	Anticoagulant effects of warfarin are reduced or abolished	Vitamin K may be present in enteral feeds, health foods, food supplements, some green vegetables, green tea. If patients are "warfarin resistant" consider this interaction.

References:

1. Stockley's Drug Interactions 6th Edn. (2002). Ed. Ivan H Stockley. Pharmaceutical Press, London.
2. British National Formulary 47, March 2004. British Medical Association and Royal Pharmaceutical Society of Great Britain. Pharmaceutical Press, London.
3. Ernst, E, Ewings P et al., Co-ingestion of herbal medicines and warfarin. British Journal of General Practice (2004; 50: 439-441).
4. Drugs to watch with WARFARIN. NHSSB Prescribing Team, May 2004.
5. Interactions between complimentary medicines and conventional medicines. National Collaborative Medicines Management Services Team of East Birmingham PCT, October 2002.

Living with Anticoagulants



Information for patients

Anticoagulation
Service

Name

Hosp. No

D O B

Address

.....

.....

Telephone

Name of anticoagulant

Reason for anticoagulation

Target range

Date treatment started

Duration of treatment

Please note:

If you experience any bleeding or extensive bruising you should seek advice from your GP or attend the nearest Accident and Emergency Department.

Your anticoagulation will be monitored at one of the following places
[Tick in appropriate box]

Anticoagulation clinic, Room C 51

Royal Hallamshire Hospital Tel: 0114 2713820
(This is located opposite the blood testing reception in
The Outpatient Building on C Floor)

Anticoagulation Clinic, Outpatients 2

Northern General Hospital Tel: 0114 2714399
(This is the second building on your left when you
enter the hospital at the Herries Road entrance.)

Your GP Practice at:

.....

An appointment has been made for you to attend the clinic/GP Practice identified above
on:

.....(date) at (time)

**Please inform the clinic of FP practice dealing with the management of your
anticoagulation if you are unable to attend for your next appointment.**

*** See next page to complete dose instructions**

Until your appointment you dose of
will be as follows:

Daily dose in milligrams per day:

Date							
Date							

Signed by Date

Print Name

Position

Ward/Department Hospital

This section needs to be completed before you are discharged and the anticoagulant dosing instructions completed and signed by a doctor.

What are anticoagulants?

Anticoagulants are medicines used to prevent harmful blood clots. The most commonly used medicine is **Warfarin** but there are others such as **nicoumalone** (sinthrome) or **Phenindione** (dindevan). In this booklet, the advice applies to all three anticoagulants but we will refer only to warfarin in the text,

Warfarin is used mainly in two situations:

- To prevent further clotting (or thrombosis) when a blood clot has already caused a problem - such as when a clot has formed in the legs (a deep vein thrombosis) or has travelled to the lungs (a pulmonary embolus)
- To prevent clotting when you are at risk of forming a blood clot - such as if you have an artificial heart valve. In this situation a clot forming on the valve may clog up the valve causing heart failure.

If you have an irregular heartbeat you are at risk of forming a blood clot in the heart. If this were to happen the clot may break off, travel in the blood supply to the brain, and cause a stroke by blocking a small artery.

The aim of anticoagulant treatment is therefore to prevent any problems which might be caused by clots forming where they can cause damage.

Why does the blood clot?

When a blood vessel is damaged by a cut or injury, a blood clot forms to seal the hole and stop the bleeding. Without this action the bleeding would not stop. So the ability of the blood to clot is life saving.

However clots can be life threatening if they occur in places where they should not develop. Blood clots (or thromboses) developing inside a vein or artery when there is no injury can be life threatening. In this circumstance the clot can block the blood vessel cutting off the blood supply to the surrounding tissue or preventing blood from flowing through the vessel thereby causing swelling and pain. Sometimes the clot can move to the lungs or brain. Here, the clot may cause serious problems such as a pulmonary embolus or a stroke.

When do harmful blood clots occur?

A blood clot can develop suddenly and unpredictably, or as a consequence of certain conditions. For example, if you have an irregular heart beat, then blood clots are more likely to form in your heart; or if you are confined to bed after an operation then blood may pool in the veins of the legs causing a deep vein thrombosis. There are times when clots can form in areas where they are harmful and we have little idea as to what has caused them.

How can you stop or treat harmful blood clots?

There are certain medicines that reduce the clotting tendency of the blood. These are called **anticoagulants**. Anticoagulant medicines are given either to prevent blood clots forming or to treat them when they have formed.

The drug most commonly used is called warfarin- you may have heard of it before because it has been used in very large doses as a rat poison. Warfarin prevents clots forming when there is a risk of this occurring and prevents the growth of a clot when it has already formed.

Warfarin does not dissolve clots. There is a chemical process in everyone's body which breaks clots down over a period of time. Warfarin protects you from further clot development while this process takes place. It is important to regularly monitor your blood clotting ability when taking anticoagulants to ensure that you are taking the right amount to reduce the blood's ability to clot, without exposing you to a risk of bleeding. It is for this reason that you will need to have regular blood tests.

How does warfarin work?

Warfarin works by altering the way the liver makes the proteins which produce clots. Many factors can alter the way warfarin works such as illness, other medicines and alcohol. If you have liver disease you will be very sensitive to warfarin. The amount of warfarin needed to change the clotting ability of the blood to the correct level varies from person to person - there is no standard dose of warfarin.

We have to find the right amount for you and that can only be determined by frequent blood testing and adjustment of your dose.

Warfarin Tablets.

It is because we need to give different doses of warfarin that it is manufactured in four strengths:

0.5 milligram	White tablet	○
1 milligram	Brown tablet	○
3 milligram	Blue tablet	○
5 milligram	Pink tablet	○

You may be asked to take a combination of these strengths to achieve the correct dose for you. Generally most patients will be issued with 2 types - the **3mg blue** tablets and the **1mg brown** tablets. Only in exceptional cases will the other strengths be issued.

If warfarin doesn't suit you (and this is very unusual) other medicines which do the same job are available. These are called called nicoumalone (sinthrome) and phenindione (dindevan).

To find the correct dosage your blood needs to be monitored regularly. However the amount of warfarin you need may also change due to changes in your condition, other medications prescribed, or your diet. So it is **important** that blood checks are made at regular intervals although these should become less frequent than they were when you first started the treatment.

How is the blood tested?

The laboratory based clotting test of the blood is called **I.N.R. (International Normalised Ratio)**. This is a test that compares the time for a sample of blood to clot when taken from a person not taking warfarin with a sample from a person who is taking warfarin. For example, if your INR is 2.0 this means that it takes approximately twice as long for your blood to clot compared with a blood sample taken from a person who is not taking warfarin. Even though your blood takes twice as long to clot as the normal blood sample this difference is still only a matter of seconds.

How often must I have blood tests?

When you begin taking warfarin your blood tests will be frequent. When the correct dose is found the intervals between the blood tests should increase until you may need to have your blood checked only once every 8-12 weeks. However the frequency of blood tests required will depend on the stability of your blood results and this cannot be predicted at the outset. Generally speaking the more stable your results the less often you will need your blood testing. You can help by always taking the correct alcohol. However, some factors which upset stability, will be out of your control such as illness and the need for new medicines.

It is very important you attend for blood tests when required. This will help us to find the correct dose for you and keep your blood results stable.

What should my INR be?

The degree to which your blood clotting ability needs to be reduced will depend on the condition for which you are being treated. Below are some examples of INR ranges and the conditions for which they are appropriate:

INR	2.0-3.0	Atrial Fibrillation (Irregular heart beat) Deep Vein Thombosis (clot in leg) Pulmonary Embolus (clot in lung)
INR	2.5-3.5 or 3.0-4.5	Mechanical Heart Valve Replacements

These are general ranges. Occasionally your doctor may decide on a slightly different range that is appropriate for your condition.

For how long must I take warfarin?

The length of time you must take warfarin depends upon your diagnosis.

Here are some examples:

Deep Vein Thombosis (DVT)	3-6 months
Pulmonary Embolus (PE)	6 months
Atrial Fibrillation	Lifelong
Heart Valve Replacements	Lifelong
Recurrent DVT and PE	Lifelong

What happens when I start warfarin?

When you begin warfarin therapy, all aspects of the treatment will be explained to you. A booklet called **Anticoagulant Therapy Record** will be given to you. The book provides an ongoing record of your blood tests and warfarin dosage. Remember to take this book with you when you visit whoever is monitoring your warfarin or any other health professional such as your doctor or dentist. You will also be given an **Alert Card** which says that you are taking warfarin and names the clinic which deals with your warfarin dosing. Please carry this with you at all times as it will be important in the event of an emergency to inform any healthcare professionals dealing with your care.

When should I take my warfarin?

The usual advice is to take your warfarin at around 6pm each evening. This is useful if your dosage has to be changed on the same day as a blood test which is usually done in the morning. However it is more important that you remember to take your tablets every day at around the same time, so if it is easier and more convenient to take your warfarin at a different time of day then that is what you should do. Try to find a system that helps you to remember to take it. For example take the warfarin half an hour before your evening meal then you will associate the taking of warfarin with eating your meal and it should help you to remember.

What if I miss a dose?

If you forget to take your warfarin at your usual time but remember it later on the same day then take it later when you remember. If it is the following day when you remember then do not take a double dose but make a note of the date and tell whoever is monitoring your warfarin at the next visit. If you take warfarin because you have a metal heart valve you should seek the advice of your clinic when you remember you have missed a dose.

What if I take the wrong dose?

If you make a mistake and find that you have been taking the wrong dose or you accidentally take too much warfarin then you should contact the anticoagulation clinic or your GP as soon as possible.

Where do I get supplies of warfarin?

You should always obtain further supplies of warfarin from your GP before you run out of tablets. Take your record book to the surgery and the doctor will provide you with a prescription. Your community pharmacist will also want to see your record book when dispensing your warfarin tablets. If your prescription is collected for you, please ensure that the person dealing with this has your warfarin dosing record with them. If you pay for prescriptions and are taking additional medication as well as warfarin you may save money by using a Pre-Payment Certificate. Instructions on how to obtain this certificate can be obtained by telephoning **0845 8500030**.

Are there any side effects from warfarin?

The most important side effect of warfarin is a tendency to bruise and bleed. By careful monitoring with blood tests we can control the bleeding tendency. Nevertheless, if you knock yourself you will probably bruise more easily. If you feel the bruising is excessive then ask your GP or Clinic Nurse for advice.

If the bleeding is continuous then you should attend Accident and Emergency as there may be a reason for the bleeding which requires urgent medical attention.

If you observe:

- blood in urine or faeces
- excessively heavy periods (obviously in women)
- nose bleeds
- coughing up blood

you should seek advice from your anticoagulation clinic or your GP.

You should also inform whoever is monitoring your warfarin dose. Warfarin can have other side effects such as rash, hair loss, nausea, diarrhoea and headaches. These are extremely rare but if they do occur they frequently disappear within a short time of starting the drug. It is important to note that there may be other reasons for such effects and it would be unwise to assume they are caused by warfarin without considering other possibilities. It is best to seek the advice of your GP.

How can I help to avoid bleeding?

You should make every effort to safeguard against cutting or injuring yourself:

Some useful advice:

- If you shave - use electric or battery razors
- Use a soft toothbrush for cleaning teeth
- Wear gloves for gardening
- Always wear shoes or slippers to protect your feet
- Seek advice on the kind of sport you wish participate in

What do I do if I cut myself or have a nose bleed?

If you should cut yourself, apply a clean cloth and press on the wound for at least 5 -10 minutes. If after twenty minutes you are still bleeding you should consult your GP or Accident and Emergency Department. If you experience a nose bleed; apply ice and nip the soft part of nose whilst sitting up in a comfortable position. If the bleeding still hasn't stopped in fifteen minutes you should seek advice from the nearest Accident and Emergency Department.

Do other illnesses affect my warfarin?

When you are ill it will generally have an effect on your warfarin requirement and you should inform the clinic or your GP. Certainly if you become ill with fever, vomiting or diarrhoea, which lasts more than 48 hours you should seek advice from your clinic or GP as this may change your sensitivity to warfarin and require your dose to be adjusted. This can best be decided by doing a blood test.

What about other medication?

Many medicines will affect the action of warfarin. Here is a short list of those that are well known to affect warfarin:

Antibiotics: e.g. amoxicillin, metronidazole, erythromycin.

Antifungals: e.g. terbinafine, miconazole, fluconazole.

Anti-epileptic/Anti-spasmodics: e.g. phenytoin, carbamazepine, gabapentin.

Heart Medication: e.g. amiodarone.

Cholesterol lowering drugs: e.g. simvastatin

Pain relief (analgesics) e.g. morphine, dihydrocodeine, tramadol

Thyroxine: e.g. levothyroxine

Gastric Medication: e.g. omeprazole, lansoprazole.

Sex hormones: including the contraceptive pill and HRT

Alternative medicines: e.g. ginko biloba, ginseng.

Because these medicines might affect your warfarin dose this does not mean that you should not have them. If a doctor has prescribed them for you then you need them.

Whenever you are either prescribed a new medicine or a doctor stops one of your regular medicines you must inform whoever is managing your warfarin dosing as soon as possible. You will probably need

Don't worry about any medications you are already taking prior to starting warfarin, given that whoever is monitoring your warfarin is aware of them. If any doctor prescribes a new drug for you, remember to tell him that you are taking anticoagulants and also inform whoever is monitoring your warfarin. If you want to take any over the counter medicines including alternative remedies, you should first discuss this with your local pharmacist and tell them you are taking warfarin.

What medicines should I avoid?

Aspirin also helps to prevent clotting and on rare occasions a doctor may advise you to take both aspirin and warfarin but this is unusual. **So you should not take aspirin and warfarin together unless your Doctor or Hospital Consultant advises you to do so.**

Anti-inflammatory drugs used to treat arthritis, e.g. ibuprofen or diclofenac, can inflame the stomach lining which can cause bleeding. This bleeding may become quite serious when you are also taking warfarin so you should only take them if they are prescribed by a doctor. Some of these medicines can be bought over the counter with different names such as Nurofen (ibuprofen) so **please take care.**

What pain killers can I take?

You can safely take paracetamol or cocodamol - up to 4 tablets each day. If you require 6-8 tablets a day you should inform whoever is managing your warfarin dose.

Some paracetamol and codeine based pain killers, which you can buy over the counter at the pharmacist, can also contain aspirin. You should always check before you buy them as, generally speaking, aspirin should be avoided if you are taking warfarin. If you are ever prescribed stronger pain-killers than paracetamol/co-codamol then please inform whoever is managing your warfarin dose immediately.

What about vaccination?

Some vaccines may increase or decrease the action of warfarin. This does not mean you should not be vaccinated but that some alteration in your warfarin dosage may be necessary. You must inform whoever is managing your warfarin dose of any vaccinations you require. If you plan to have a flu vaccine you should inform the clinic so that you can have your blood tested within a week of receiving it.

What can I eat and drink?

You should eat a well-balanced diet, one which ideally should be high in fibre and include some fruit and vegetables each day. The best advice is that you should not eat or drink excessive amounts of any one kind of food or drink. Certain foods, if consumed in **large amounts** can certainly affect your blood results. These are, green leafy vegetables, liver, egg yolks, blue cheeses, avocado and olive oil. This does not mean that you cannot eat them if you are careful to avoid large quantities.

Cranberry juice may have an effect on warfarin and should be avoided. Chamomile Tea has also been reported to affect warfarin control.

Anticoagulants can be affected by special slimming diets e.g. Slimming World or Weight Watchers mainly because you change the amounts of fruit and vegetables that you eat. Please inform your Anticoagulation Clinic if you intend to change your diet or lose weight.

Can I drink alcohol?

Yes, you can still enjoy a drink! Alcohol increases the effect of warfarin but a daily ration of 2 units is acceptable.

Don't save it all up for one or two nights, but spread it out over the week.

**1 unit = ½ pint beer or lager or cider or
1 small glass of wine or**

1 pub measure of spirit

If you change greatly the amounts of alcohol you take on a daily basis it will be difficult to find a stable dose for you and you will require more blood tests.

Alcohol contributes to heart disease so it is advisable to reduce the amount you drink to about 14 units per week.

What happens when I go on holiday?

Before you go on holiday it is advisable to have a blood test just before you go especially if your holiday is abroad. Take enough warfarin with you to last the entire holiday and a bit extra! If you need to have vaccinations or take malaria tablets, make sure that whoever prescribes them is aware you are taking anticoagulants and also inform whoever is monitoring your anticoagulation that you are taking them.

If you are flying, don't sit for the whole flight - stretch your legs from time to time, avoid alcohol and drink plenty of water and soft drinks. Wear support stockings and do gentle leg exercises whilst sitting. Whilst on holiday eat a healthy balanced diet, don't indulge in excess alcohol and ensure you have adequate amounts of fluid to prevent you from becoming dehydrated.

What if I am planning a pregnancy?

Warfarin can affect the development of a baby in early pregnancy. Women, who are on warfarin, should discuss plans for future pregnancy with their doctor before trying to conceive. If you think you have become pregnant while

on warfarin you should have a pregnancy test as soon as possible and if this is positive make an urgent appointment with your doctor. There are methods of reducing the risks of developing clots during pregnancy which are different to warfarin although they usually require injections.

Don't Forget

By following a few simple rules warfarin treatment will become part of your daily routine. Remember if it has been prescribed for you then it is beneficial for you. A large amount of medical research has shown it helps to improve your condition, and quality of life and may help you live for longer!

Let us know of any changes to your medications, address or telephone number.

If you have any questions the nurse at your Outpatient Clinic or your GP practice is there to help you.

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Recommendation <i>(List from Audit Report)</i>	Action to be Taken <i>(Steps Needed to Make Changes)</i>	Lead <i>(Who Will Do It?)</i>	Deadline <i>(When Will It Be Done?)</i>