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NHS Sheffield Clinical Commissioning Group

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Approved by Medicines Safety Group: march 2018 Review date: May 2021

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Cover note to accompany Good Practice Guidance on the Management of Anticoagulant Therapy (Warfarin) in the Care Home Setting

This is **an update** to the previous medicines management guidance issued 2014. This guidance can be adapted to your own systems to make them practical to your working environment.

What are anticoagulants?

Anticoagulants are drugs used to prevent blood clotting. Warfarin is the most commonly used anticoagulant that requires regular INR monitoring but there are others such as acenocoumarol and phenindione, which may be prescribed if warfarin is not appropriate. There are also anticoagulants given by injection e.g. dalteparin and newer oral agents e.g. rivaroxaban and apixiban that do not require routine monitoring. This guidance specifically refers to warfarin.

Why was this guidance produced?

We are aware that anticoagulants are a high risk group of medicines that can contribute to hospital admission. This guidance was initially produced in response to The National Patient Safety Alert, '*actions that can make anticoagulation therapy safer (2007)* to promote safer management of anticoagulant therapy in the care home setting.

What is the guidance about?

The guidance explains the conditions warfarin is used for; defines International Normalised Ratio (INR); the management of raised INRs; and gives good practice recommendations for care home staff, clinicians and community pharmacies in managing anticoagulant therapy for service users.
We have provided a laminated guide for quick reference to be displayed appropriately in the care home.

Good Practice Guidance on the Management of Anticoagulant Therapy (Warfarin) in the Care Home Setting

KEY MESSAGES

- **Oral anticoagulant therapies are one of three classes of drugs most frequently associated with fatal medication errors in primary care.**
- **It is essential that you have written safe practice procedures for the administration of anticoagulants that require routine monitoring.**
- **Care workers administering or supporting service users to take anticoagulants must be trained to undertake their duties**

Background information

Anticoagulants are drugs used to prevent blood clotting. Warfarin is the most commonly used anticoagulant that requires regular monitoring to determine the dose but there are others such as acenocoumarol and phenindione; these may be prescribed if warfarin is not appropriate. The principles apply to all three but this guidance specifically relates to warfarin.

There are also anticoagulants given by injection e.g. dalteparin and newer oral agents, e.g. rivaroxaban and apixiban, that do not require routine INR monitoring. This guidance does not apply to these agents.

The table below shows the strength and colour of different warfarin tablets available.

Strength of warfarin	Colour of tablet
0.5mg*	White
1mg	Brown
3mg	Blue
5mg*	Pink

NB * To reduce the risk of dosing errors, in Sheffield it is recommended that 0.5mg and 5mg strength tablets are not prescribed.

INR (International Normalised Ratio)

Warfarin works to thin the blood so that it takes longer to clot. The blood test that measures how long the blood takes to clot is called the INR. A normal INR (for someone not taking warfarin) is 1.0. If the INR is 2.0 this means it takes approximately twice as long for the blood to clot compared with a normal sample. The dose of warfarin that a service user needs to take will depend on their INR test result. Every service user taking warfarin has a target INR within an acceptable range, which depends on the condition being treated. The dose of the warfarin required to achieve the target INR varies for each person. Regular blood tests are needed to ensure that the INR is within the desired range as both low and high INR results are potentially dangerous.

❋The higher the INR result the longer it will take for the blood to clot❋

Clinical indications

The most common indications for oral anticoagulation are shown below. Please note there may be some variation in target and duration due to individual patient factors. The target range is generally taken to be within 0.5 of the target. i.e. a target INR of 2.5 equates to a range of 2-3.

INR target	Acceptable INR range	Indication	Duration
2.5	2.0 - 3.0	Atrial fibrillation (irregular heart beat) Deep vein thrombosis (clot in the leg) Pulmonary embolus (clot in the lung)	Life-long 3 to 6 months 6 months
3.5	3.0 – 4.0	Recurrent deep vein thrombosis and pulmonary embolism (if occurs while anticoagulated with INR>2)	Life-long
Mechanical prosthetic valves – all patients will be discharged from the cardio-thoracic unit with a recommended target INR range			

Management of anticoagulant therapy

Management of the service user's therapy can take place at the hospital, GP practice or the community pharmacy. Health care workers may visit the care home to take blood samples and then the INR test will be performed at the appropriate centre where management takes place. Alternatively, a near patient INR test may be conducted.

Dose

The daily maintenance dose of warfarin is usually 1–9 mg but may vary markedly. It is taken at the same time each day, generally administered around 6pm. This is to allow any urgent change to the warfarin dose to be made following a blood test earlier that day. The dose of warfarin may be changed if the service user's INR is not well controlled e.g. due to acute illness, introduction of other medication.

Side-effects

The main adverse effect of all oral anticoagulants is bleeding and bruising which is why it is important that the INR does not rise above the recommended range for each patient. Raised INRs cause an increased risk of bleeding, which in severe cases may need to be treated as a medical emergency and result in admission to hospital. Warfarin can have other effects such as rash, hair thinning /loss, nausea, diarrhoea and headaches. However, such effects are extremely rare and should they be experienced will frequently disappear within a short time of starting the drug.

Report to GP **urgently** if there are signs of

- Excessive bruising (including severe and spontaneous)
- Blood in urine or faeces (this may present as black faeces)
- Blood in vomit/ sputum
- Nose bleeds
- Coughing up blood
- Excessively heavy periods (where applicable)

Or

- The service user is experiencing falls

Hospital attendance is required urgently if the service user

- is involved in major trauma, including falls
- suffers significant blow to the head
- is unable to stop bleeding

Management of raised INRs

If there is major bleeding this must be treated as a medical emergency and admission to hospital will be necessary.

If the INR reading is above the target range it may be necessary to stop the warfarin treatment. This will be under the instruction of the clinician managing the service user's warfarin treatment e.g. the GP, haematologist at the hospital or the nurse in the anticoagulation clinic.

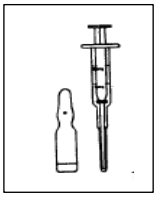
There are certain circumstances when the INR reading is so high that the hospital haematologist will be consulted.
Under the instruction of the haematologist or the nurse at the anticoagulation clinic it may be necessary to administer vitamin K (phytomenadione).

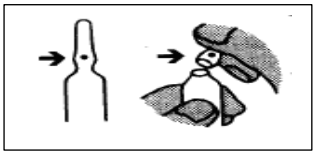
Vitamin K reverses the anticoagulant effect of warfarin and is a very important treatment. It should be given as soon as possible.
Oral administration of vitamin K may be administered from an ampoule or a capsule. The ampoule is called **Konakion™ MM Paediatric (2mg in 0.2ml) which in this situation is administered orally. The capsule is called Neokay™ and is given by the anticoagulant clinic if the patient cannot attend clinic. The dose to be given is dependent on the on the INR.**

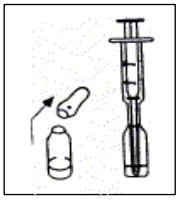
The prescriber may supply this directly to the care home or may instruct the staff to obtain this urgently via a prescription from the community pharmacy. Please note if your usual pharmacy does not have this in stock it must be obtained from elsewhere. The pharmacies listed below are suggested:

- Associated Chemists, 55 -59 Wicker
- Vantage Pharmacy, 2 Ridgeway Rd, Manor Top
- Well Pharmacy, 58 Greno Crescent, Grenoside
- Charnock Pharmacy, Charnock Health Centre, White Lane

Administration of Konakion™ MM Paediatric 2mg in 0.2ml







NB This ampoule is intended for oral administration

- The principles of hand hygiene should be maintained throughout
- Check the dose to be administered
- Check expiry date of ampoule and ensure the product is in date before use
- Shake the ampoule until the liquid is in the bottom of the ampoule
- Snap off the top of the ampoule making sure the spot is facing towards your thumb
- Put the oral dispenser into the ampoule; pull the plunger up slowly to draw the medicine into the dispenser until it is level with the required dose (0.1ml = 1mg, 0.2ml = 2mg).
- Put the dispenser into the service user's mouth at the back of the tongue and gently push the plunger in to give the medicine **Offer a glass of water as the solution has a very bitter taste**
- Discard the empty ampoule appropriately in the sharps bin

Administration of Neokay 1mg capsules

The capsule form is called **Neokay 1mg. Only the capsule contents are swallowed – the capsule itself is <u>not</u> swallowed.** This is usually only supplied from the hospital anticoagulation clinic.

- The principles of hand hygiene should be maintained throughout
- Check the dose to be administered.
- Check expiry date of the capsule and ensure product is in date before use.
- **Only the capsule contents are swallowed – the capsule itself is <u>not</u> swallowed.**
- Cut the nipple off the end of the capsule with a pair of clean scissors.
- Squeeze the entire contents of the capsule into the service user's mouth.
- The service user should then swallow the contents down with a glass of water.
- Discard the empty capsule appropriately

The above instructions on administration of vitamin K can also be found on the reverse of the quick reference guide to management of warfarin.

Interactions with warfarin

There are a large number of drugs that interact with warfarin, which can enhance or reduce its effect and subsequently alter the INR. Some examples of these are antibiotics, antifungals, antiepileptics, heart medication, NSAIDs (e.g. ibuprofen). For further information on other drugs check the current BNF Appendix 1: Interactions, under 'Coumarins'.

Over the counter medicines, including herbal remedies and food supplements can cause potentially serious interactions with warfarin, which can affect the INR. Examples of these are miconazole oral gel (Daktarin® gel), fluconazole capsules, glucosamine tablets.

NB: the anticoagulant effect of warfarin maybe enhanced by prolonged regular use of analgesia e.g. paracetamol.

Certain food and drink could affect the INR e.g. some food supplements and green vegetables, alcohol, cranberry juice.

The organisation where the INR test is performed must be informed of **any** change to medication since last INR.

Dental Treatment

If a service user is prescribed warfarin, certain types of dental procedure e.g. tooth extraction, can cause more prolonged bleeding than would otherwise occur.

The dentist may request an extra INR test before the service user's treatment is started if they consider this necessary. This INR test should be within three days of the procedure therefore always let the dentist know that your service user is prescribed warfarin.

After treatment it is important to look after the blood clot that forms so that bleeding does not start again.

- Allow the service user to rest while the local anaesthetic wears off and the clot fully forms (usually takes 2-3 hours)
- Paracetamol is generally the preferred painkiller – do not use ibuprofen, aspirin, diclofenac or naproxen as painkillers for dental pain. If the service user is prescribed regular low dose daily aspirin (75mg to 300mg) consult the GP for advice.
- Avoid rinsing the mouth for 24 hours unless specifically advised to do so
- Avoid giving hot liquids or hard foods for the rest of the day.

If bleeding is prolonged or restarts contact the dentist for advice.

If antibiotics are prescribed by the dentist, always inform the clinician managing the service user's anticoagulation as soon as possible as this may affect the INR. An extra INR test may be requested.

Oral anticoagulant therapy – important information for dental patients can be found at the link below
http://www.nrls.npsa.nhs.uk/resources/?entryid45=61777&p=11

Good Practice Guidance For Care Home Staff

Good practice guidance 1 – service user commencing treatment
When a service user is initiated on warfarin, this should be recorded in the care plan stating:

- where anticoagulant therapy is managed (at the anticoagulation clinic at the hospital, GP practice or community pharmacy)
- date the warfarin commenced
- medical condition it is prescribed to treat e.g. atrial fibrillation
- INR target and range
- date of next INR test – *contact prescriber if not stated**
- current dose, in milligrams (**not** number of tablets)
- time of day the dose is to be given
- date to stop treatment , if applicable

*Always ensure that dosing instructions have been given up to the next INR test.

The clinician managing the anticoagulant therapy will supply the NPSA Oral Anticoagulant Therapy Book important information for patients. Ensure that carers and patients, if applicable, understand the content of this book.

The MAR chart must contain the following information:

- service user's name and date of birth
- date the warfarin commenced
- current dose, in milligrams (**not** number of tablets) stating planned daily dose regime until next INR test
- time of day the dose is to be given
- date of next INR test
- two signatures which confirm that the current daily dose regime has been checked against the clinicians instruction

See example of MAR chart p11

You may wish to consider appending the current written confirmation from the clinician managing the anticoagulant to the MAR chart. Dose instructions will be provided in different formats depending on who has provided the dosing instructions. This may be an 'Anticoagulant Record Book' (yellow book) or an anticoagulation dosing letter or information sheet.

Good practice guidance 2 – maintaining service user's warfarin treatment record
Periodically the service user will need to have a blood test to determine the INR reading. It should be established at the onset where the test is performed. The test may result in a change in the warfarin dose. The frequency of the blood test is dictated by the INR reading and is specific to each service user. The date of the next INR test will be decided at the time of dosing and should be documented in the care plan.

- For effective handover of information to staff working on different shifts ensure appropriate staff are aware if a service user has had an INR test and when/how results are expected to be received. This may result in the next dose of warfarin being altered.
- The information received from the clinician managing the anticoagulation will include the date of the last INR test, the dose of warfarin, and the date of the next INR test.
- This information should be made available to the prescriber (when requesting

a repeat prescription) and to the community pharmacist (when having prescription dispensed) so a check can be made to ensure monitoring is up to date.

- When a patient is discharged from hospital they may be prescribed warfarin doses for a few days only. The care home should contact the ward which discharged the patient if:
  - The dosing instructions run out before the next INR test.
  - There is no date for the next INR test
- Complete an incident report / concern form if a resident is discharged from the hospital without a written warfarin dosing.

See good practice guidance 3 for receiving changes to warfarin dose

Good practice guidance 3 – receiving changes to the warfarin dose

Where the dose of the warfarin is changed due to the INR reading (see good practice guidance 2) or changes to other medication the service user may be taking then:

- Observe service user's anticoagulant record for current dose of warfarin.
- Any changes to the dose received by telephone must be verified by another suitably qualified staff member and a written copy or fax requested. If receiving confirmation of dose via the fax machine ensure fax is loaded with paper. Written confirmation will ensure there is documentation of the change in dose from the clinician managing the service user's therapy.
- The following advice has been received from the Sheffield Teaching Hospital (STH) Anticoagulation Clinic:
  - If there is an urgent change to the warfarin dose or the anticoagulant clinic need to discuss anything regarding a service user's warfarin regime, the anticoagulant clinic will contact the care home as soon as possible on the day of the INR test. Following discussion, a confirmation fax regarding the dose will be sent to the care home.
  - If the anticoagulant clinic does not contact the care home on the day of the INR test, the care home are advised to maintain the current dose of warfarin until the next dosing instructions are received by fax or post. This is as per instructions in the anticoagulation dosing letter.
  - If new dosing instructions have not been received by the following day of the last INR test, the care home should contact the anticoagulant clinic.
- When new dosing instructions have been received the MAR must be updated with the new dose and date of the next INR test. Two signatures are required to check the daily dose regime with the clinician's instruction.
- It is safe practice to attach written confirmation of the warfarin dose supplied by the clinic or the prescriber to the MAR chart.
- If the information received from any organisation involved in the warfarin management is incomplete and not satisfactory then complete a concern form.

Good practice guidance 4 – administering the medication

Due to the variable dose of warfarin, it is unsuitable to be placed in a monitored dosage system e.g. NOMAD. Therefore it will be supplied by the pharmacy in an original pack. This will normally be labelled 'Take as directed'. If more specific dosing instructions have been included on the label, they should always be verified against the latest dosing instruction letter or yellow book.

- Check the service user's current dosage instructions (in anticoagulant record book or equivalent) against the handwritten dosage schedule on the MAR to ensure they are the same.

- Check if there are different strengths prescribed in order for the service user to receive the prescribed dose.
- Check if the service user is prescribed a variable dose (different doses to be given on different days e.g. 2mg one day alternating with 3mg the next)
- When variable doses are prescribed, document on the MAR chart and in the care plan the combination to be used in order for the service user to receive the correct dose e.g. 2mg dose = 2 x 1mg tablets, 3mg dose = 1 x 3mg tablet
- Check the service user's name, the drug name, strength of the tablets and expiry date on the original pack supplied by the community pharmacy.
- Warfarin should be taken at the same time each day, generally around 6pm. This is to allow any urgent change to the warfarin dose to be made following a blood test earlier that day.
- It is very important that warfarin is given daily as prescribed. Missing doses of warfarin may have serious consequences. Please ensure all staff are aware of this. It is not acceptable to omit a dose of warfarin due to the service user sleeping.
- If a dose is missed at the prescribed time it can still be administered on the same day (i.e. before midnight). If staff realise the previous day's dose was missed, a double dose must **not** be taken. The missed dose must be documented and reported to the clinician managing the service user's warfarin as soon as possible. Subsequent doses should be taken at the usual time.

You may wish to consider routine auditing of MAR charts for warfarin administration (see sample audit p11)

Good practice guidance 5 – signing the MAR following administration

- The MAR chart is signed immediately after care home staff have administered the warfarin to the service user.
- If there is a combination of tablets to be taken then this must be entered on the MAR chart to inform others of how the dose was given.

Good practice guidance 6 – routine documentation regarding warfarin

Due to different factors affecting the INR, regular recording of the following should be documented in the service user's clinical notes. Inform the clinician who manages the service user's warfarin, as soon as possible, (GP, hospital anticoagulant clinic, community pharmacist) of:

- change to diet, alcohol intake
- changes to other medications (e.g. antibiotics, changes to long term medication)
- change in general health e.g. falls
- any signs of bruising / bleeding

Following receipt of this information, the clinician may choose to change the patient's warfarin dose or take the next INR test sooner than was originally planned.

The dosing letter provided by the STH Anticoagulation Clinic includes a standard set of questions to be answered at each INR test. Care home staff should ensure that this form is completed. The answers to these questions provide important information for the clinic to help them decide the patient's warfarin dose. If the phlebotomist from STH visits the care home to take a blood sample for the INR test, the completed dosing letter should be handed to the phlebotomist.

Good practice guidance 7 – observing for adverse effects with warfarin or high INR reading

✳The main adverse effect of warfarin is bleeding and bruising✳

- Any medicine should be considered to interact with warfarin unless otherwise known not to interact.
- Some service users may be particularly sensitive to the effects of warfarin due to their age, disease state or other medication that they are taking.
- Acute episodes of illness, changes in disease state and significant changes to diet may affect anticoagulation.
- Any changes to service user's regular daily medication may affect anticoagulation.
- Over the counter medication, herbal remedies, cranberry juice and alcohol are to be taken with caution. Alert prescriber if service user is known to be taking any of the above. Any other prescribed medication that interacts with warfarin will be listed in the current BNF in appendix 1: Interactions section under "Coumarins".
- Observe for any excessive or unexplained bruising, blood in urine or faeces, blood in vomit/sputum, excessively heavy periods, heavy or prolonged nose bleeds, coughing up blood. Contact GP immediately.
- If there is major bleeding this must be treated as a medical emergency and admission to hospital will be necessary.

Good practice guidance 8 – service user carrying 'Anticoagulant Alert Card'

- An Anticoagulant Alert Card is provided with the NPSA oral anticoagulant therapy booklets. The alert card must be completed informing healthcare professionals of all appropriate details in case of emergency. The hospital also provide a similar anticoagulant alert card
- The alert card is to be carried with the service user when leaving the care home e.g. day excursions

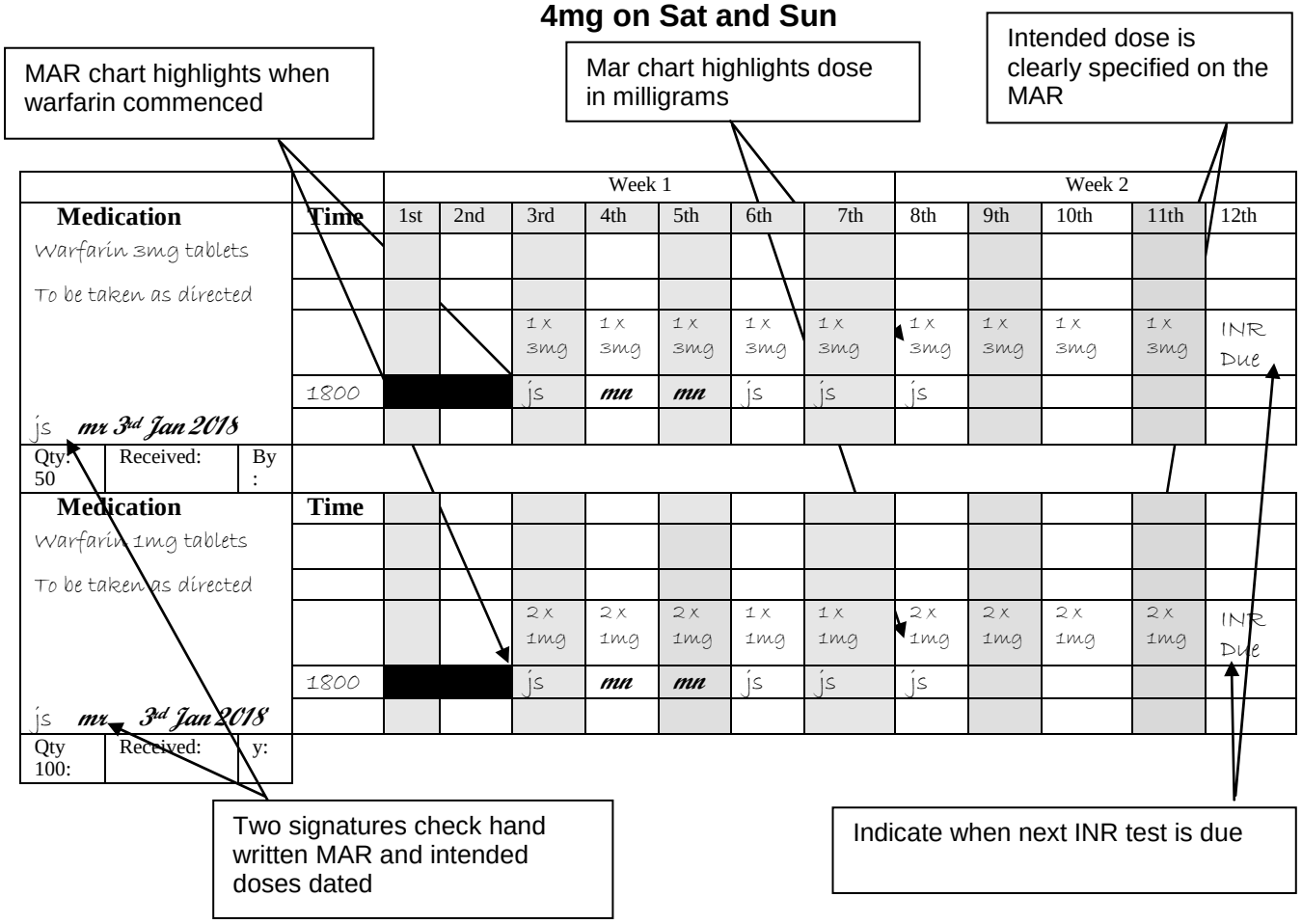
Link to NPSA alert card
www.npsa.nhs.uk/EasySiteWeb/GatewayLink.aspx?alId=2274

Good practice guidance 9 – Intermediate care

- Ensure any intermediate care resident that is ready to be discharged to their own home has received appropriate counselling on how to manage their warfarin.
- Inform home care agencies of the need to contact the Anticoagulant Clinic, if warfarin is managed at the hospital, as they will require contact details to communicate any change in dose due to the results of the INR.

Example of MAR chart

Anticoagulant dose regime = 5mg on Mon, Tues, Wed, Thurs and Fri, 4mg on Sat and Sun



Sample MAR Chart Audit

You may wish to perform an audit periodically on the MAR sheet, below is an example

MAR chart audit	yes	no	Action required
Does the MAR chart clearly state the service users name and date of birth?			
If the MAR chart is handwritten, has it been signed by two members of staff?			
Is the intended warfarin dose clearly specified on the MAR chart?			
Is the intended warfarin dose clearly specified on the MAR chart signed with 2 signatures?			
Is the dose of warfarin written in milligrams (mg) not number of tablets?			
Can you clearly see what dose of warfarin was administered to the service user on each day?			
Does the dose administered on the MAR chart match the current dose recorded in the anticoagulant book or dosing letter from hospital/ dosing note from the surgery?			
If a dose was omitted, is the reason clearly stated on the MAR chart? Please state if not applicable			
Has the date of the next INR test been recorded on the MAR?			

Good Practice Guidance For Clinicians

Good practice guidance 1 – prescribing

- Prescribe warfarin in 1mg and 3mg strengths. Only prescribe 0.5mg and 5mg strengths in exceptional circumstances.

Good practice guidance 2 – information for patients

- Ensure service users and care home staff receive appropriate verbal and written information at the start of therapy and when necessary throughout their treatment e.g. receiving an anticoagulant information book and understand its contents.

Good practice guidance 3- checking INR

- Clinician should check that the service users' INR is being monitored regularly before they issue a repeat prescription for anticoagulant medication.

Good practice guidance 4 – communicating change in dose to care home

- The care home should receive written confirmation of any change in dose (any change to the warfarin dose communicated via the telephone to the care home must be followed with written confirmation).

Good practice guidance 5 – prescribing warfarin with clinically significant interacting medicines

- Arrange additional INRs to be taken
- Inform the care home staff of the new medication and its effects on warfarin.

Good Practice Guidance For Community Pharmacists

Good practice guidance 1 - information for service users and care home staff

- Ensure service users and care home staff receive appropriate verbal and written information at the start of therapy and when necessary throughout their treatment e.g. received an anticoagulant information book and understand its contents.

Good practice guidance 2 – dispensing warfarin

- Pharmacists, as well as prescribers, should check that the patient's INR is being monitored regularly before they dispense a repeat prescription for anticoagulant medication.
- The repeat prescription should only be dispensed if the INR is at a safe level.
- Warfarin tablets are not suitable to be in monitored dosage systems.

Good Practice guidance 3 – dispensing vitamin K

- On request for vitamin K, ensure there is a process in place for prompt supply.
- If the pharmacy is out of stock of vitamin K please direct the request to another pharmacy (see page 4)

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