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Dear Colleagues

The CoaguChek<sup>®</sup> XS system recommended in this guidance has been updated since the National Institute for Care and Excellence (NICE) guidelines [DG14] were published and is no longer available in the UK.

It has been replaced with an updated version, the CoaguChek INRange and NICE have published a summary of main changes.

CoaguChek INRange is now the recommended monitor for use as part of the NHS Grampian Guidance For Primary Care Patients (Adults) On Warfarin Who Are Self-Managing Their International Normalised Ratio (INR) Using Point of Care Coagulometers and this guidance applies to the updated system (CoaguChek INRange).

If you have any queries regarding this letter please do not hesitate to contact the lead author of the guidance.

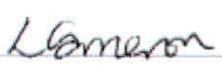

Yours sincerely

A handwritten signature in black ink, appearing to read 'Lesley Coyle'. The signature is fluid and cursive.

**Lesley Coyle**  
Chair of North of Scotland PGD Group

**NHS Grampian Guidance For Primary Care Patients (Adult) On Warfarin  
Who Are Self-Managing Their International Normalised Ratio (INR)  
Using Point Of Care Coagulometers**

<b>Co-ordinators:</b>  Medication Safety Advisor		<b>Approver:</b>  Grampian Primary Care Prescribing Group
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<b>Signature:</b>  		<b>Signature:</b>  
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Uncontrolled when printed

Version 1

**Executive Sign-Off**

This document has been endorsed by the Director of Pharmacy and Medicines Management

Signature:  \_\_\_\_\_

**This document is also available in large print and other formats and languages, upon request. Please call NHS Grampian Corporate Communications on (01224) 551116 or (01224) 552245.**

**Note:** This document was Impact Assessed on 14<sup>th</sup> December 2021

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\* Changes marked should detail the section(s) of the document that have been amended, i.e. page number and section heading.

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# NHS Grampian Guidance For Primary Care Patients (Adult) On Warfarin Who Are Self-Managing Their International Normalised Ratio (INR) Using Point Of Care Coagulometers

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# NHS Grampian Guidance For Primary Care Patients (Adult) On Warfarin Who Are Self-Managing Their International Normalised Ratio (INR) Using Point Of Care Coagulometers

## 1. Introduction

Anticoagulant medicines are used to treat and prevent thrombosis (abnormal blood clots) within the veins or arteries. All anticoagulants are associated with an increased risk of bleeding and must therefore be used with care. Anticoagulants are one of the classes of medicines most frequently identified as causing preventable harm and admission to hospital.

Warfarin has a narrow therapeutic index and regular titration of the dose against the anticoagulant effect in the blood, assessed by the International Normalised Ratio (INR), is essential. Patients should be maintained within their therapeutic range and deviation from the therapeutic range is associated with an increased risk of haemorrhage (if too high), or thrombosis and increased risk of stroke (if too low).

Patient self-management refers to a care model in which patients on oral anticoagulation therapy, measure their own INR, interpret the results themselves, and adjust their dosage according to the value obtained and within the range recommended for treatment.

Self-managing INR may enhance quality of life for some patients who are frequently away from home, who are in employment or education, or those who find it difficult to travel to clinics.

Not all patients are capable of self-managing their INR and some may find it unnecessary because of the high-quality care provided by Primary Care Teams but for carefully assessed and successfully trained patients self-managing is effective for life-long warfarin therapy.

For patients where self-managing INR is not a suitable option switching from warfarin to a Direct Oral Anticoagulant (DOAC) may be more appropriate. NHS Grampian guidance is available to assist with this assessment.

### 1.1. Objectives

The aim of this document is to support NHS Grampian Primary Care Teams to safely and effectively implement self-management of INR for adult patients on warfarin.

### 1.2. Definitions

**Anticoagulants:** Medicines used to treat and prevent thrombosis.

**Self-management:** The ability for the patient to measure their own INR using a coagulometer and titrate their dose of warfarin.

**Coagulometer:** The monitor used to measure the INR.

### 1.3. Clinical Situations

This guidance applies to adult patients in primary care on warfarin who wish to self-manage their INR and have been assessed as suitable by their Primary Care Team.

### 1.4. Patient Groups To Which This Document Applies

- Adult patients who are stable on life-long warfarin and would like to self-manage their INR and are both physically and cognitively able to perform the INR test and undertake titration of doses.

### 1.5. Patient Groups To Which This Document Does Not Apply

- Patients who are only receiving time-limited courses of warfarin (e.g. for less than a year).
- Patients who are not physically or cognitively able to perform the INR test and/or titrate doses.
- Patients under 18 years of age on warfarin who wish to self-manage their INR (refer to specialist services for advice).

## 2. Evidence Base

The [NICE diagnostic guidance \(DG14\) for Atrial Fibrillation and heart valve disease: self-monitoring coagulation status using point of care coagulometers \(the CoaguChek® XS system\)](#) advises that in patients who require long-term anticoagulation, self-monitoring should be considered if preferred by the patient and a set criteria are met<sup>1</sup>.

Anticoagulation UK (a former charitable organisation) noted the following about self managing INR before they closed; convenient, encourages self-care and promotes a positive approach to managing long-term conditions.

Following a review of studies on self-monitoring INR Heneghan et al (2006) assessed that “previous estimates that self-monitoring was feasible for only half of patients requiring anticoagulation therapy might underestimate true numbers”<sup>2</sup>. They also note that “patients who self-tested and adjusted their doses had significantly lower rates of thromboembolic events, which suggests that patients should be given the opportunity, and provided with training, to undertake self-management”<sup>2</sup>.

Roche describe the CoaguChek® XS system as “a convenient, portable and user-friendly instrument for monitoring warfarin therapy. It determines the INR value (International Normalized Ratio) from a drop of capillary whole blood – simple, precise and reliable”<sup>3</sup>. They also cite Kitchen et al (2006) as stating that the CoaguChek® XS system has “lab comparable accuracy”<sup>4</sup>.

### 3. Main Components and Recommendations

#### 3.1. General Principles

If a patient who is stable on life-long warfarin wishes to consider self-management of INR this must be discussed with a member of the Primary Care Team (usually the prescriber).

- Where the patient is assessed as suitable and the Primary Care Team is willing to support this then the procedure described in [section 3.2](#) should be followed.
- Where the patient is assessed as unsuitable or the Primary Care Team is not willing to support the patient to self-manage their INR the reasoning must be discussed with the patient and documented in the patient notes.
- Primary Care Teams may wish to discuss supporting self-management of INR with their indemnity provider.

The procedure described in [section 3.2](#) is detailed in the Assessment and Agreement ([Appendix A](#)) which should be completed for each patient undertaking self-management of INR.

The principles of self-managing INR are:

- Prescriptions are issued in line with NHS Grampian prescribing policies.
- Patient is both physically and cognitively able to perform the INR test and understand titration of the medication.
- Patient is trained and observed in undertaking all aspects of self-managing INR before signing the [Assessment and Agreement](#) prior to commencement.
- In addition to assessing competence prior to commencing self-management of INR, ongoing competence should be assessed at the following intervals by a Healthcare Professional who has experience in using the coagulometer device and is suitably qualified in interpreting INR results:
  - 3 months following commencement,
  - a minimum 6 monthly thereafter.
- The equipment used is purchased by the patient, is a CE-marked point of care coagulometer and is regularly checked via the external quality control programme as outlined in [section 3.2](#). At the time of writing NICE recommends the CoaguChek® XS.
- Patients have a stated INR in line with accepted guidelines and are provided with clear written dosing instructions for their anticoagulant ([dose adjustment tool](#)).
- Patients are given clear instructions on how and when to contact the relevant Healthcare Professional within the Primary Care Team if the INR is outwith agreed parameters.
- Patients understand that if they are admitted to hospital within NHS Grampian they will not be able to self-manage their INR while in hospital.
- Patients and the Healthcare Professional must complete the steps in the NHS Grampian Self-Management of International Normalised Ratio (INR) in Primary Care Assessment and sign the agreement ([Appendix A](#)).
- The patient must be made aware that they may be asked to stop self-managing their INR if there are concerns about their ability to continue self-managing INR, e.g. stability of INR results or failure to adhere to testing requirements.



### 3.2. Procedure

The Standard Operating Procedure steps, actions and rationale are described in this section.

Recording of actions should be completed in [Appendix A](#) - NHS Grampian Self-Management of International Normalised Ratio (INR) Assessment and Agreement.

A copy of the completed Assessment and Agreement should be scanned into the patient's notes along with an entry noting that the patient is commencing self-management of INR. A completed copy should be given to the patient.

Step	Action	Rationale
1. Assessment	<p>Patient identifies themselves as interested in self-managing INR. Healthcare Professional ascertains that the patient meets the following criteria:</p> <ul style="list-style-type: none"> <li>• Patient is stable on life-long warfarin.</li> <li>• Patient is willing to or has purchased the CoaguChek® XS system.</li> </ul> <p>Conversation between Healthcare Professional and patient to discuss benefits and risks of self-managing INR; include but not limited to:</p> <p>Benefits:</p> <ul style="list-style-type: none"> <li>• Enhances quality of life, patient is not restricted by clinic appointments</li> <li>• Enables the patient to participate in self-management of their condition.</li> </ul> <p>Risks:</p> <ul style="list-style-type: none"> <li>• Misinterpreting results or inappropriate titration of doses resulting in haemorrhage or thrombosis.</li> </ul> <p>Healthcare Professional arranges an appointment with the patient to be shown how to undertake INR blood test monitoring, interpretation of results and titration of doses (steps 2-8). The number of appointments required to complete all steps will be dependent on the patient.</p>	<p>To ensure that patients who undertake self-management of their INR have been appropriately assessed to do so.</p> <p>To ensure that the patient understands the benefits and risks of self-managing INR.</p> <p>To ensure the patient is using a CE-marked point of care coagulometer recommended by NICE (CoaguChek® XS system).</p>

Step	Action	Rationale
	<p>The patient's file should be annotated to indicate that they have commenced self-managing of INR and review dates. The read code #66QE – self monitoring of INR may be used as a Problem Read Code on the patient's file problem list at this stage.</p>	
<p>2. INR testing using the CoaguChek® XS system and recording the INR</p>	<p>Using the CoaguChek® <a href="#">XS User's Manual</a>, Healthcare Professional who has experience using the CoaguChek® XS system demonstrates the following to the patient using the patient's own CoaguChek® XS system:</p> <ul style="list-style-type: none"> <li>• Setting up the machine if not already done.</li> <li>• How to use the Code Chip that comes with each pack of test strips.</li> <li>• How to check the expiry date before using each test strip.</li> <li>• How to obtain the blood sample.</li> <li>• How to test the blood sample using the CoaguChek® XS system.</li> </ul> <p>Explain:</p> <ul style="list-style-type: none"> <li>• How to read the results on the CoaguChek® XS system.</li> <li>• The patient's target INR and that a result +/- 0.5 of the target is acceptable.</li> <li>• How to record the INR result in the anticoagulant record (yellow) book.</li> <li>• Frequency of INR testing required as per patient's schedule (referring to the dose adjustment chart).</li> <li>• The preferred timing of tests: tests should be undertaken in the morning on a week day (Monday-Friday) so that patients can contact their Primary Care Team if they need advice on the result and dose adjustment.</li> <li>• How to safely dispose of waste generated during INR testing (sharps, other contaminated waste and packaging) as per <a href="#">NHS Grampian Waste Management Policy</a>.</li> </ul>	<p>To ensure the patient is able to manage all aspects of self-managing INR.</p> <p>To ensure that the patient fully understand the procedures for safely performing an INR-test using a coagulometer (including disposal of waste).</p> <p>To ensure there is an accurate record of INR readings.</p> <p>To ensure the patient understands the testing schedule.</p> <p>To identify any previously unknown reasons why the patient may not be suitable for self-managing INR.</p>

Step	Action	Rationale
	<p>The patient will then undertake the above under supervision of the Healthcare Professional until deemed competent to carry out testing independently. The number of supervised INR tests before commencing testing independently will depend on the individual patient and may require more than one appointment with a Healthcare Professional.</p>	
<p>3. Interpreting INR results and dose adjustments</p>	<p>In addition to the general principles described here the patient's individual requirements in relation to dose adjustments should also be discussed.</p> <p>The Healthcare Professional will confirm the diagnosis and target INR with the patient.</p> <p>The appropriate dose adjustment chart with the patient's target INR (<a href="#">Appendices B-E</a>) will be printed and given to the patient.</p> <p>The Healthcare Professional will explain the following to the patient:</p> <ul style="list-style-type: none"> <li>• How to use the dose adjustment chart for the patient's target INR and determine the appropriate testing schedule.</li> <li>• How to record dose adjustments in the anticoagulant (yellow) book and the reasons for doing so (e.g. admission to hospital).</li> <li>• That if the INR result is outwith the target +/- 0.5 on 3 consecutive tests (as per the patient's testing schedule) the patient must contact the Primary Care Team for review.</li> <li>• The patient must recheck their INR immediately if the result is 4.6 or above at any time. If the result remains 4.6 or above they must contact the Primary Care Team for advice and the next warfarin dose should not be taken until advice has been received.<sup>5</sup></li> <li>• The patient should contact their Primary Care Team if any change from the dose adjustment chart is felt necessary.</li> </ul>	<p>To ensure the patient takes correct dose.</p> <p>To ensure there is an accurate record of dose adjustments.</p> <p>To ensure timely review by a Healthcare Professional when INR results are outwith the target range.</p>

Step	Action	Rationale
	<p>If the target INR changes a new dose adjustment chart (<a href="#">Appendices B-E</a>) will be printed by the Healthcare Professional and given to the patient.</p> <p>The read code #66Q1 – initial warfarin assessment may be recorded in the patient’s file at this stage.</p>	
<p>4. Primary Care Team Review</p>	<p>The patient will attend the Primary Care INR clinic for a face to face review 3 months after commencing self-management of INR and then every 6 months thereafter. The Primary Care Team is responsible for monitoring attendance at the review clinics and all review appointments must be documented in the patient’s notes.</p> <p>Usual warfarin counselling should be given during these reviews, e.g. bruising, bleeding, diet, etc.</p> <p>The patient will attend the appointment with their:</p> <ul style="list-style-type: none"> <li>• Anticoagulant (yellow) book for review of INR results and dose adjustments.</li> <li>• CoaguChek® XS device and an INR test will be performed on both the patient’s device and the Primary Care Team coagulometer. This will be seen as a means of an ‘external’ quality control for the patient’s device.<sup>5</sup></li> </ul> <p>External Quality Control:</p> <ul style="list-style-type: none"> <li>• The Primary Care Team coagulometer will be registered with an external quality assurance scheme, e.g. National External Quality Assurance Scheme (NEQAS), working well and returning within consensus reports.</li> <li>• If INR results from both coagulometers are within 0.5 of each other, assessment would be considered satisfactory.</li> </ul>	<p>To ensure the patient is seen in person by a Healthcare Professional and to ensure continuing suitability for self-management of INR.</p> <p>To ensure that the patient’s CoaguChek® XS device has an external quality control carried out.</p>

Step	Action	Rationale
	<ul style="list-style-type: none"> <li>• If the INR results from both coagulometers is outwith 0.5 of each other the patient should be advised to stop self-managing and seek advice as per the manufacturer's instructions. The patient will be required to attend the Primary Care INR clinic for testing until the monitor is repaired or replaced.</li> <li>• The patient will be required to participate in an assessment of technique and device at the Primary Care INR clinic if the external quality control procedure described above is unsatisfactory on more than one occasion.</li> </ul> <p>The following read codes may be recorded in the patient's file at this stage as appropriate:            #66Q3 – follow up warfarin.            #66QB – annual warfarin assessment.</p>	
<p>5. Ordering, storage of consumables and disposal of orange stream rigid container.</p>	<p>The Healthcare Professional advises the patient how to order the following via prescription or the Primary Care Team:</p> <ul style="list-style-type: none"> <li>• Warfarin tablets</li> <li>• CoaguChek® XS test strips (pack size = 24 strips which should last at least 12 months)</li> <li>• Lancets for finger prick test</li> <li>• Orange stream rigid container for disposal of sharps and contaminated material.</li> </ul> <p>Explain storage of the monitor and test strips (cool, dry place not in the fridge).</p> <p>Patients should be advised to return full locked orange stream rigid containers to a Community Pharmacy for disposal as per <a href="#">NHS Grampian Waste Management Policy</a>.</p>	<p>To ensure the patient understands how to order all items required so that they do not run out.</p> <p>To ensure the patient has the correct amount of consumables for their testing regime.</p> <p>To ensure the safe disposal of sharps and contaminated waste.</p>

Step	Action	Rationale
6. What to do when things go wrong	<p>The patient must contact the Primary Care Team when required to as per the dose adjustment charts.</p> <p>The patient must contact the Primary Care Team when issues with testing or titrating doses occur.</p> <p>If at the 6 monthly external quality control check the INR results from both coagulometers is outwith 0.5 of each other the patient should be advised to stop self-managing and seek advice as per the manufacturer's instructions. The patient will be required to attend the Primary Care INR clinic for testing until the monitor is repaired or replaced and has had a successful external quality control rechecked.</p> <p>Outwith the 6 monthly external quality control check, if the patient experiences issues with the CoaguChek® XS device they should refer to the manufacturer's instructions and contact the manufacturer if the issues cannot be resolved. The patient must attend the Primary Care INR clinic for INR testing until the CoaguChek® XS device is repaired and replaced and has had an external quality control rechecked.</p> <p>For issues with supply of test strips and other consumables, the patient should be advised to contact the Primary Care Team.</p> <p>The patient should be advised to contact the Primary Care Team if using more than 12 strips in a 6 month period as a more frequent review may be needed.</p>	<p>So that the patient knows what to do when things go wrong and can promptly resolve issues to continue to safely self-manage their INR.</p> <p>So that the Primary Care Team are aware at an appropriate time when issues occur.</p>
7. Stopping self-managing INR	<p>The patient must inform the Primary Care Team if they are intending moving away or stopping self-managing their INR so that alternative management arrangements can be made.</p>	<p>To ensure that alternative arrangements can be made for management of INR if necessary.</p> <p>To ensure safety of the patient while self-managing INR.</p>

Step	Action	Rationale
	<p>The patient should be made aware that if they are admitted to hospital within NHS Grampian they will not be able to self-manage their INR whilst an in-patient.</p> <p>The patient must be made aware that they may be asked to stop self-managing their INR if there are concerns about the patient's ability to continue self-managing INR, e.g. stability of INR results or failure to adhere to testing requirements.</p> <p>Primary Care Teams should follow their local high risk medicines protocol on how to manage high risk medicines if the patient does not attend for their 6 monthly reviews.</p>	
<p>8. Self-management of INR assessment and agreement (<a href="#">Appendix A</a>)</p>	<p>The Healthcare Professional and the patient should complete the assessment in <a href="#">Appendix A</a> and sign the agreement. This should be scanned into patient's electronic record and the patient should keep the paper copy.</p>	<p>To ensure that both the Healthcare Professional and the patient are in agreement that the patient has received all the necessary information to safely self-manage their INR.</p> <p>To ensure both the patient and the Primary Care Team understand their roles and responsibilities.</p>

#### 4. References

- (1) [National Institute for Healthcare Excellence \(NICE\) Guidance \(2017\) Atrial Fibrillation and heart valve disease; self-monitoring coagulation status using point-of-care coagulometers \(the CoaguChek® XS system\)](#) [accessed 02/02/2022]
- (2) [Heneghan, C. et al. \(2012\) Self-monitoring of oral anticoagulation: systematic review and meta-analysis of individual patient data. Lancet 379: 322-34](#) [accessed 02/02/2022]
- (3) Roche Diagnostics [accessed 02/02/2022] [CoaguChek® XS system \(roche.com\)](#)
- (4) Kitchen, DP. Munroe, S. Kitchen, S. Jennings, I. Walker, ID. (2008) Results from the first year of an external quality assessment programme for the uses of CoaguChek® plus monitoring INRs. British Journal of Haematology Vol. 141 Supplement 1: p188
- (5) Urgent Field Safety Notice PFSN 18 Deviations of high (>4.5) CoaguChek® INR values due to masterlot calibration issue SBN-CPS-2018-014-v2.0 [accessed 11/10/2021] [MDA-2018-033 FSN.PDF \(hscni.net\)](#)

#### 5. Distribution list

NHS Grampian Primary Care Staff

#### Appendices

- A. [NHS Grampian Self-Management of International Normalised Ratio \(INR\) in Primary Care Assessment and Agreement](#)
- B. [Warfarin Dose Adjustment Chart for Self-managing INR in Primary Care Target INR 2.0](#)
- C. [Warfarin Dose Adjustment Chart for Self-managing INR in Primary Care Target INR 2.5](#)
- D. [Warfarin Dose Adjustment Chart for Self-managing INR in Primary Care Target INR 3.0](#)
- E. [Warfarin Dose Adjustment Chart for Self-managing INR in Primary Care Target INR 3.5](#)



## Appendix A - NHS Grampian Self-Management of International Normalised Ratio (INR) in Primary Care Assessment and Agreement

To be completed for all patients undertaking self-management of INR in Primary Care. Refer to NHS Grampian Guidance for Primary Care Patients (Adult) on Warfarin who are Self-managing their International Normalised Ratio (INR) Using Point of Care Coagulometers.

Patient Name:		GP Practice:	
Date of Birth:		Indication:	
CHI Number:		Target INR:	
<b>Step 1: Assessment</b>			<b>Tick when completed</b>
The patient is stable on life-long warfarin.			
The patient is willing to or has purchased the CoaguChek® XS system.			
<p>Benefits and risks have been discussed with the patient (including but not limited to):</p> <p>Benefits:</p> <ul style="list-style-type: none"> <li>Enhances quality of life, patient is not restricted by clinic appointments.</li> <li>Enables the patient to participate in self-management of their condition.</li> </ul> <p>Risks:</p> <ul style="list-style-type: none"> <li>Misinterpreting results or inappropriate titration of doses resulting in haemorrhage or thrombosis.</li> </ul>			
<p>An appointment has been arranged for the patient to be shown how to undertake INR blood test monitoring, interpretation of results dose adjustment (steps 2-9).</p> <p><b>Date of appointment:</b></p> <p><b>Note:</b> The number of appointments required to complete all steps will be dependent on the patient.</p>			
<p>The patient's file has been annotated to indicate when they commenced self-managing of INR.</p> <p>Record the read code #66QE - Self monitoring of INR as a Problem Read Code on the patient's file and forthcoming review dates.</p>			
<p><b>Step 1 Completed</b></p> <p>Signature: _____ Date: _____</p> <p>Designation: _____</p>			

Step 2: INR testing using the CoaguChek® XS system and recording the result		Tick when completed
Demonstrate	How to set up the machine (if not already done).	
	How to use the Code Chip that comes with each pack of test strips.	
	How to check the expiry date before using each test strip.	
	How to obtain the blood sample.	
	How to test the blood sample using the CoaguChek® XS system.	
Explain	How to read the results on the CoaguChek® XS system.	
	The patient's target INR and that a result +/- 0.5 of the target is acceptable.	
	Frequency of INR testing required as per patient's schedule (referring to the dose adjustment chart).	
	The preferred timing of tests.  Tests should be undertaken in the morning on a week day (Monday-Friday) so that patients can contact their Primary Care Team if they need advice on the result and dose adjustment.	
	How to safely dispose of waste generated during INR testing (sharps, other contaminated waste and packaging) as per <a href="#">NHS Grampian Waste Management Policy</a> .	
	Explain how to record the INR result in the anticoagulant (yellow) book.	
<p>Supervise the patient undertaking the above until deemed competent to carry out testing independently.</p> <p>The number of supervised INR tests before commencing testing independently will depend on the individual patient and may require more than one appointment with a Healthcare Professional.</p> <p><b>Dates of further appointments (if required):</b></p> <p>Date of appointment:</p>		

Date of appointment:	
Date of appointment:	
<b>Note:</b> this should be done by a Healthcare Professional who has experience using the CoaguChek® XS system.	
<b>Step 2 Completed</b>	
Signature:	Date:
Designation:	

<b>Step 3: Interpreting INR results and dose adjustments</b>		<b>Tick when completed</b>
Confirm diagnosis and target INR with the patient.		
Print the appropriate dose adjustment chart with the patient's current target INR ( <a href="#">Appendices B-E</a> ) and give to the patient. <b>Note:</b> If the target INR changes a new dose adjustment chart must be printed for the patient.		
Explain	How to use the dose adjustment chart and determine the appropriate testing schedule.	
	How to record dose adjustments in the anticoagulant (yellow) book (including the importance of this).	
	That if the INR result is outwith the target +/- 0.5 on 3 consecutive tests (as per the patient's testing schedule) the patient must contact the Primary Care Team for review.	
	If the INR result is 4.6 or above at any time the patient must recheck their INR immediately. If the result remains 4.6 or above they must contact the Primary Care Team for advice and the next warfarin dose should not be taken until advice has been received.	
	Any patient specific advice regarding INR testing and dose adjustments (if any).	
Record the read code #66Q3 – initial warfarin assessment in the patient's file.		
<b>Step 3 Completed</b>		
Signature:		Date:
Designation:		

<b>Step 4: Primary Care Team Review</b>	<b>Tick when completed</b>
<p>Explain that the patient must attend the INR clinic with the Primary Care Team for a face to face review in 3 months' time and then again every 6 months.</p> <p><b>Three month appointment date:</b></p> <p><b>Six month appointment date:</b></p>	
<p>Usual warfarin counselling should be given during these reviews, e.g. bruising, bleeding, diet, etc.</p>	
<p>Explain that the patient must bring the following to their appointments:</p> <ul style="list-style-type: none"> <li>• Anticoagulant (yellow) book for review of INR results and dose adjustments.</li> <li>• CoaguChek® XS device for an 'external quality control procedure'.</li> </ul>	
<p>Explain the 'external quality control procedure':</p> <ul style="list-style-type: none"> <li>• INR test will be performed on both the patient's device and the Primary Care Team coagulometer.</li> <li>• If INR results from both coagulometers are within 0.5 of each other, assessment would be considered satisfactory.</li> <li>• If the INR results from both coagulometers is outwith 0.5 of each other the patient should be advised to stop self-managing and seek advice as per the manufacturer's instructions. The patient will be required to attend the Primary Care INR clinic for testing until the monitor is repaired or replaced.</li> <li>• The patient will be required to participate in an assessment of technique and device at the Primary Care INR clinic if the external quality control procedure described above is unsatisfactory on more than one occasion.</li> </ul>	
<p>Record the appropriate read code in the patient's file:  #66Q3 – follow up warfarin assessment.  #66QB – annual warfarin assessment.</p>	
<p><b>Step 4 Completed</b></p> <p>Signature: _____ Date: _____</p> <p>Designation: _____</p>	

<b>Step 5: Ordering, storage of consumables and disposal of orange stream rigid container.</b>		<b>Tick when completed</b>
Explain how to order	Warfarin tablets	
	CoaguChek® XS test strips (pack size = 24 strips which should last at least 12 months)	
	Lancets for finger prick test	
	Orange stream rigid container for disposal of sharps and contaminated material	
Explain how to store the monitor and test strips (cool dry place, not in the fridge).		
Explain that full locked orange stream rigid containers should be returned to a Community Pharmacy for disposal as per <a href="#">NHS Grampian Waste Management Policy</a> .		
<b>Step 5 Completed</b> Signature: _____ Date: _____ Designation: _____		

<b>Step 6: What to do when things go wrong</b>		<b>Tick when completed</b>
Explain that the patient must contact the Primary Care Team when: <ul style="list-style-type: none"> <li>• Required to as per the dose adjustment charts.</li> <li>• Issues with testing or titrating doses occur.</li> </ul>		
Advise the patient to refer to the CoaguChek® XS User's Manual if they experiences issues with the device.		
If issues continue the patient should contact the manufacturer and attend the Primary Care INR clinic for testing until the monitor is repaired or replaced and has had a successful external quality control re-checked.		
Advise the patient to contact the Primary Care Team with issues with supply of test strips and other consumables.		
The patient should be advised to contact the Primary Care Team if using more than 12 strips in a 6 month period as a more frequent review may be needed.		
<b>Step 6 Completed</b> Signature: _____ Date: _____ Designation: _____		

<b>Step 7: Stopping self-managing INR</b>		<b>Tick when completed</b>
Explain	That the Patient must inform the Primary Care Team if they are intending moving away or stopping self-managing their INR so that alternative management arrangements can be made.	
	That the patient will not be able to self-manage their INR if they are admitted to an NHS Grampian Hospital as an in-patient.	
	That they may be asked to stop self-managing their INR if there are concerns about their ability to continue, e.g. stability of INR results or failure to adhere to testing requirements, etc.	
Primary Care Teams will follow their local high risk medicines protocol on how to manage high risk medicines if the patient does not attend for their 6 monthly reviews.		
If patients stop self-managing their INR the reasons why will be discussed with the patient and will be recorded in the notes and the read code #66QE removed as a Problem Read Code.		
<b>Step 7 Completed</b> Signature: _____ Date: _____ Designation: _____		

<b>Patient Agreement:</b> I confirm that I have had the steps documented above explained to me and I agree to adhere to the conditions detailed.		
PRINT NAME:	Signature:	Date:
<b>Healthcare Professional:</b> I confirm that I have explained the steps documented above and that the patient/carer has demonstrated the ability and understanding to undertake self-management of INR.		
PRINT NAME:	Signature:	Date:

## Appendix B - Warfarin Dose Adjustment Chart Self-Managing INR In Primary Care – Target INR 2.0

If you are unsure how to use this chart you must speak to your Primary Care Team for guidance.

General health, periods of illness, changes of diet, habit, routine or medication may affect your INR result.

You must speak to your Primary Care Team before altering your Warfarin dose if you have:

- missed any warfarin doses
- started or stopped a medication
- had any changes in health, lifestyle or diet.

<b>TARGET INR 2.0</b>	
<b>INR</b>	<b>ACTION</b>
<b>1.0 or less</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek® XS.               <ul style="list-style-type: none"> <li>• If INR is 1.0 or less on the second test contact your Primary Care Team immediately to discuss the result.</li> </ul> </li> </ul>
<b>1.1 to 1.4</b>	<ul style="list-style-type: none"> <li>➤ Increase your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 3mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 2mg and 3mg on ALTERNATE days you will now take 3mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>1.5 to 2.5 acceptable range</b>	<ul style="list-style-type: none"> <li>➤ <b>Keep taking your current dose of Warfarin</b></li> <li>➤ <b>Retest INR as per testing schedule overleaf</b></li> </ul>
<b>2.6 to 3.0</b>	<ul style="list-style-type: none"> <li>➤ Decrease your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 1mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 1mg and 2mg on ALTERNATE days you will now take 1mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>

<b>3.1 to 4.5</b>	<ul style="list-style-type: none"> <li>➤ Decrease your Warfarin dose by 1mg. Take this dose every day. <ul style="list-style-type: none"> <li>• If your dose is currently 1mg contact your Primary Care Team for advice.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>4.6 or above</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek® XS. <ul style="list-style-type: none"> <li>• If INR result is still 4.6 or above contact your Primary Care Team immediately to arrange an INR test using the practice coagulometer. The Primary Care Team may need to send a venous sample to the laboratory to confirm the result.</li> </ul> </li> <li>➤ <b>DO NOT</b> take your next dose of warfarin until testing has been undertaken by the Primary Care Team and advice on further management regarding warfarin dosing has been given by the Primary Care Team.</li> </ul>

<b>TESTING SCHEDULE</b>		
<b>Number INR results within acceptable range</b>	<b>Definition</b>	<b>Test again in</b>
One	<p>This is the first test where your INR is within the acceptable range.</p> <p>You must start again at this testing frequency even if your INR was only outwith the acceptable range once.</p>	2 weeks
Two	You are testing again after 2 weeks and your INR is still within the acceptable range.	4 weeks
Three	You are testing after 4 weeks and your INR is still within the acceptable range.	6 weeks
Four or more	You are testing after 6 weeks and your INR is still within the acceptable range.	6 weeks



## Keeping a Record of your INR and Warfarin Doses

The example below shows how you should use your anticoagulant therapy record book (yellow book) to record your:

- INR target
- INR test results
- Warfarin dose
- When your next test is due.

### Anticoagulant Treatment Record

*My Target INR is: 2.0*

Date	INR	Daily dosage (mg)	Comments	Signature
16/08/21	2.0	2mg	Check INR again in 2 weeks 30/08/21	
30/08/21	1.2	2mg (Mon, Wed, Fri, Sun) 3mg (Tue, Thurs, Sat)	Check INR in 7 days 06/09/21	
06/09/21	1.4		Phoned Primary Care Team for advice	

## Appendix C - Warfarin Dose Adjustment Chart Self-Managing INR In Primary Care – Target INR 2.5

If you are unsure how to use this chart you must speak to your Primary Care Team for guidance.

General health, changes of diet, habit, routine or medication may affect your INR result.

You must speak to your Primary Care Team before altering your Warfarin dose if you have:

- missed any warfarin doses
- started or stopped a medication
- had any changes in health, lifestyle or diet.

<b>TARGET INR 2.5</b>	
<b>INR</b>	<b>ACTION</b>
<b>1.0 or less</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek® XS.               <ul style="list-style-type: none"> <li>• If INR is 1.0 or less on the second test discuss the result with your Primary Care Team.</li> </ul> </li> </ul>
<b>1.1 to 1.5</b>	<ul style="list-style-type: none"> <li>➤ Increase your Warfarin dose by 1mg. Take this dose every day.</li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>1.6 to 1.9</b>	<ul style="list-style-type: none"> <li>➤ Increase your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 3mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 2mg and 3mg on ALTERNATE days you will now take 3mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>2.0 to 3.0 acceptable range</b>	<ul style="list-style-type: none"> <li>➤ <b>Keep taking your current dose of Warfarin</b></li> <li>➤ <b>Retest INR as per testing schedule overleaf</b></li> </ul>
<b>3.1 to 3.5</b>	<ul style="list-style-type: none"> <li>➤ Decrease your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 1mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 1mg and 2mg on ALTERNATE days you will now take 1mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>

<b>3.6 to 4.5</b>	<ul style="list-style-type: none"> <li>➤ Decrease your warfarin dose by 1mg. Take this dose every day. <ul style="list-style-type: none"> <li>• If your dose is currently 1mg contact your Primary Care Team for advice.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>4.6 or above</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek® XS. <ul style="list-style-type: none"> <li>• If INR result is still 4.6 or above contact your Primary Care Team to arrange an INR test using the practice coagulometer. The Primary Care Team may need to send a venous sample to the laboratory to confirm the result.</li> </ul> </li> <li>➤ <b>DO NOT</b> take your next dose of warfarin until testing has been undertaken by the Primary Care Team and advice on further management regarding warfarin dosing has been given by the Primary Care Team.</li> </ul>

<b>TESTING SCHEDULE</b>		
<b>Number INR results within acceptable range</b>	<b>Definition</b>	<b>Test again in</b>
One	<p>This is the first test where your INR is within the acceptable range.</p> <p>You must start again at this testing frequency even if your INR was only outwith the acceptable range once.</p>	2 weeks
Two	You are testing again after 2 weeks and your INR is still within the acceptable range.	4 weeks
Three	You are testing after 4 weeks and your INR is still within the acceptable range.	6 weeks
Four or more	You are testing after 6 weeks and your INR is still within the acceptable range.	6 weeks

## Keeping a Record of your INR and Warfarin Doses

The example below shows how you should use your anticoagulant therapy record book (yellow book) to record your:

- INR target
- INR test results
- Warfarin dose
- When your next test is due.

### Anticoagulant Treatment Record

*My Target INR is: 2.5*

Date	INR	Daily dosage (mg)	Comments	Signature
16/08/21	2.5	2mg	Check INR again in 2 weeks 30/08/21	
30/08/21	1.6	3mg 2mg (Mon, Wed, Fri, Sun) 3mg (Tue, Thurs, Sat)	Check INR in 7 days 06/09/21	
06/09/21	1.3		Phoned Primary Care Team for advice	

## Appendix D - Warfarin Dose Adjustment Chart Self-Managing INR In Primary Care – Target INR 3.0

If you are unsure how to use this chart you must speak to your Primary Care Team for guidance.

**General health, changes of diet, habit, routine or medication may affect your INR result.**

You must speak to your Primary Care Team before altering your Warfarin dose if you have:

- missed any warfarin doses
- started or stopped a medication
- had any changes in health, lifestyle or diet.

### TARGET INR 3.0

INR	ACTION
<b>2.0 or less</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek<sup>®</sup> XS.               <ul style="list-style-type: none"> <li>• If INR is 2.0 or less on the second test discuss the result with your Primary Care Team.</li> </ul> </li> </ul>
<b>2.1 to 2.4</b>	<ul style="list-style-type: none"> <li>➤ Increase your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 3mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 2mg and 3mg on ALTERNATE days you will now take 3mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>2.5 to 3.5 acceptable range</b>	<ul style="list-style-type: none"> <li>➤ <b>Keep taking your current dose of Warfarin</b></li> <li>➤ <b>Retest INR as per testing schedule overleaf</b></li> </ul>
<b>3.6 to 4.0</b>	<ul style="list-style-type: none"> <li>➤ Decrease your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 1mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 1mg and 2mg on ALTERNATE days you will now take 1mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>4.1 to 4.5</b>	<ul style="list-style-type: none"> <li>➤ Decrease your warfarin dose by 1mg. Take this dose every day.               <ul style="list-style-type: none"> <li>• If your dose is currently 1mg contact your Primary Care Team for advice.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>

**4.6 or above**

- Re-check INR using CoaguChek® XS.
  - If INR result is still 4.6 or above contact your Primary Care Team to arrange an INR test using the practice coagulometer. The Primary Care Team may need to send a venous sample to the laboratory to confirm the result.
- **DO NOT** take your next dose of warfarin until testing has been undertaken by the Primary Care Team and advice on further management regarding warfarin dosing has been given by the Primary Care Team.

<b>TESTING SCHEDULE</b>		
<b>Number INR results within acceptable range</b>	<b>Definition</b>	<b>Test again in</b>
One	This is the first test where your INR is within the acceptable range.  You must start again at this testing frequency even if your INR was only outwith the acceptable range once.	2 weeks
Two	You are testing again after 2 weeks and your INR is still within the acceptable range.	4 weeks
Three	You are testing after 4 weeks and your INR is still within the acceptable range.	6 weeks
Four or more	You are testing after 6 weeks and your INR is still within the acceptable range.	6 weeks

## Keeping a Record of your INR and Warfarin Doses



The example below shows how you should use your anticoagulant therapy record book (yellow book) to record your:

- INR target
- INR test results
- Warfarin dose
- When your next test is due.

### Anticoagulant Treatment Record

My Target INR is: 3.0

Date	INR	Daily dosage (mg)	Comments	Signature
16/08/21	3.0	2mg	Check INR again in 2 weeks 30/08/21	
30/08/21	2.3	2mg (Mon, Wed, Fri, Sun) 3mg (Tue, Thurs, Sat)	Check INR in 7 days 06/09/21	
06/09/21	2.1		Phoned Primary Care Team for advice	

## Appendix E - Warfarin Dose Adjustment Chart Self-Managing INR In Primary Care – Target INR 3.5

If you are unsure how to use this chart you must speak to your Primary Care Team for guidance.

General health, changes of diet, habit, routine or medication may affect your INR result.

You must speak to your Primary Care Team before altering your Warfarin dose if you have:

- missed any warfarin doses
- started or stopped a medication
- had any changes in health, lifestyle or diet.

<b>TARGET INR 3.5</b>	
<b>INR</b>	<b>ACTION</b>
<b>2.0 or less</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek® XS.               <ul style="list-style-type: none"> <li>• If INR is 2.0 or less on the second test discuss the result with your Primary Care Team.</li> </ul> </li> </ul>
<b>2.1 to 2.5</b>	<ul style="list-style-type: none"> <li>➤ Increase your Warfarin dose by 1mg. Take this dose every day.</li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>2.6 to 2.9</b>	<ul style="list-style-type: none"> <li>➤ Increase your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 3mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 2mg and 3mg on ALTERNATE days you will now take 3mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>
<b>3.0 to 4.0 acceptable range</b>	<ul style="list-style-type: none"> <li>➤ <b>Keep taking your current dose of Warfarin</b></li> <li>➤ <b>Retest INR as per testing schedule overleaf</b></li> </ul>
<b>4.1 to 4.5</b>	<ul style="list-style-type: none"> <li>➤ Decrease your current dose by 1mg on ALTERNATE days, for example:               <ul style="list-style-type: none"> <li>• If you currently take 2mg every day you will now take 1mg on Monday, Wednesday, Friday and Sunday and take 2mg on Tuesday, Thursday and Sunday.</li> <li>• If you currently take 1mg and 2mg on ALTERNATE days you will now take 1mg every day.</li> </ul> </li> <li>➤ Repeat INR in 7 days.</li> <li>➤ If there have been 3 consecutive INR tests where the result has been above or below the acceptable range contact your Primary Care Team for advice.</li> </ul>



<b>4.6 or above</b>	<ul style="list-style-type: none"> <li>➤ Re-check INR using CoaguChek® XS. <ul style="list-style-type: none"> <li>• If INR result remains 4.6 or above on the second test contact your Primary Care Team to arrange an INR test using the practice coagulometer. The Primary Care Team may need to send a venous sample to the laboratory to confirm the result.</li> </ul> </li> <li>➤ <b>DO NOT</b> take your next dose of warfarin until testing has been undertaken by the Primary Care Team and advice on further management regarding warfarin dosing has been given by the Primary Care Team.</li> </ul>
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<b>TESTING SCHEDULE</b>		
<b>Number INR results within acceptable range</b>	<b>Definition</b>	<b>Test again in</b>
One	<p>This is the first test where your INR is within the acceptable range.</p> <p>You must start again at this testing frequency even if your INR was only outwith the acceptable range once.</p>	2 weeks
Two	<p>You are testing again after 2 weeks and your INR is still within the acceptable range.</p>	4 weeks
Three	<p>You are testing after 4 weeks and your INR is still within the acceptable range.</p>	6 weeks
Four or more	<p>You are testing after 6 weeks and your INR is still within the acceptable range.</p>	6 weeks

## Keeping a Record of your INR and Warfarin Doses

The example below shows how you should use your anticoagulant therapy record book (yellow book) to record your:

- INR target
- INR test results
- Warfarin dose
- When your next test is due.

### Anticoagulant Treatment Record

*My Target INR is: 3.5*

Date	INR	Daily dosage (mg)	Comments	Signature
16/08/21	3.5	2mg	Check INR again in 2 weeks 30/08/21	
30/08/21	2.7	2mg (Mon, Wed, Fri, Sun) 3mg (Tue, Thurs, Sat)	Check INR in 7 days 06/09/21	
06/09/21	2.3		Phoned Primary Care Team for advice	