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1. Introduction and Who Guideline applies to

This guide is intended for all staff working within the UHL Anticoagulation Service who include, specialist nurses, administration staff and all other staff within this department.

The following checks and balances will be adhered to in order that we are able to demonstrate our governance arrangements are sufficient to minimise preventable harm to our patients.

The following check and balances and the results of a regular audit programme will also evidence to regulatory bodies, such as the NPSA, that our service is safe.

Contents

2. Guideline Standards and Procedures

This section may include or comprise a flow chart but, in any event, should be set out in a logical order.

Guidance for Referral

Any patients taking coumarins, on admission to a UHL Hospital ward, maybe referred to the Anticoagulation INReach Service for advice and guidance on safe and appropriate monitoring.

Referrals to the Anticoagulation Service will be made using the following routes:

ICE referral system;

- The administrators and/or nominated Nurse in Charge for the day will triage all referrals, declining immediately if it has not been completed with enough information to facilitate safe warfarin dosing by contacting the named referrer with an explanation as to why the referral has been declined and then using the electronic referral decline.

- ICE referral to be actioned/ cancelled as appropriate.
- All referral queries must go via the Clinical Nurse Specialist, or where significant risk or clinical uncertainty exists, via the on call SpR for Haematology.

- The date of the clinic appointment will be established based upon a balance of the following criteria:

1. **Stability of the patient's INR and dosing regime.**
2. **Urgency of the referral**
3. **Cut off point of inputting patients into clinic**

Anticoagulation mailbox

- Under no circumstances should e-mails be deleted from the anticoagulation inbox. They are to be archived in the actioned referrals folder. Each referral in the inbox should be red flagged (this is to identify the e-mail when dragged across to the

actioned box as it is possible to drag more than 1 referral across at a time). ONLY when the e-mail is in the actioned folder the following steps must be done. This is to acknowledge the e-mail has been dealt with and not inadvertently transferred to the actioned folder:

- All new initiations will be subject to the initiation SOP (see page 8)

- Patient details will be added to DAWN, to the following standard:

Referral received

1. Check for patient on DAWN (use **Search All** enter patients DOB, S number, NHS number and first few letters of name separately as they may be known to us but not active). If known to AS reactive and make a new treatment plan. **DO NOT REACTIVATE** old plan. Continue to follow Referral Check List and add referral.

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INReach Patient

1. Any patients referred to UHL-INReach Anticoagulation Service clinic will be reviewed and where appropriate, be seen within 24 hours excluding bank holidays and weekends.

Referral Check List (Appendix 11)

Personal Screen

1. Surname
2. First Name
3. S Number (S0000000) format.
4. NHS Number (000 000 0000) format.
5. Address
6. Sex
7. DOB
8. Telephone contact
9. Next of Kin (if we have it)

Treatment Plan

1. Diagnosis
2. Date treatment started
3. Induction, Maintenance or Bridging
4. INR target range.
5. Medication type (eg. Warfarin Mixed tablets daily)
6. **THEN ACTIVATE THE PLAN**

Documentation

1. On the front screen in the comments box add Referral details as follows: for example;

a. ICE referral received from LRI ward 22, on 01/01/2015 @ 22:00 hrs completed by A.Body under consultancy of Dr Clever.
b. Reason for Admission: SOB
c. Indication for Anticoag: Other
d. Target Range stated: 1.5-2.5
e. Duration stated: 6 weeks
f. Latest INR: 1.5 (date if applicable)
g. Estimated Date of Discharge: 03/01/2015
h. If missing information noted on referral please state eg. No INR or warfarin doses stated, No other comments or medications stated.

2. In Transport Tab add INReach ward, location for INReach patients.
3. In History Tab add all known INR's from referral
4. Add date for new appointment

Drugs Tab

1. Add all known current medication

Owners Tab

1. Add GP details

Groups Tab

1. Enter status i.e. NHS, Private Patient or Over Seas Visitor.

Notes Box on Front Screen, and Transport Tab

1. All extra useful information regarding patient eg. Blind, Mobility Problems should be added to this box.

Preferred Clinic

1. Add in clinic, if patient is to be seen in clinic

Changes of Appointment

1. Reschedule appointment into appropriate clinic - CHECK as will always defer to preferred clinic each time appointment unscheduled.
2. If re-booked into an unscheduled slot then type name of clinic in the dosing notes box, as only the time is shown and not the clinic on the appointment details.
3. Add to DAWN reason for change on front screen
4. Access Events tab and select reason for change of appointment.
5. Inform administration team of change so HISS can be updated

Patient Deceased

1. Make note on DAWN regarding death
2. If Hospital Appointment existing, inform administration team who will confirm this on hospital HISS system/ inform Data Quality Team
3. Stop Treatment Plan
4. Un-schedule Appointment
5. Deactivate Patient accordingly– Deceased

Guidance for Initiation

- ONLY patients referred via ICE inpatient referral, or the haematology department will be initiated by the UHL-INReach Anticoagulation Service.

- For all outpatient appointments, specific communication needs should be identified prior to the appointment, recorded on DAWN and arrangements made via the Clinical Nurse Specialist or Matron if appropriate, i.e. interpreters (NMC 2015).

- All current medication should be reviewed at initiation (NPSA WC 1 2007, NMC 2015).

- Prior to initiation the nurse must review the indication, target INR, range and significant co-morbidities and blood results to identify any special instructions, investigations including abnormal blood test results or issues from which advice will need to sought (NPSA WC 1 2007, NMC 2015).

- The Initiating Nurse will seek advice and guidance from the supporting Haematology team if the needs of the Patient and complexity of the case is beyond the Nurses level of competence and capability (NPSA WC 1 2007, NMC 2015).

Initiating warfarin

- For AF patients a CHA_2DS_2-VASc Score to be calculated and documented on DAWN.

- A HAS BLED or ORBIT score to be calculated when appropriate and documented on DAWN. The HAS BLED or ORBIT score is subject to change and reviewed at every attendance. *it is not always a reason not to anticoagulated a patient

- Patients will be made aware of treatment choices that are available (NICE Guidelines NICE 2021).

- For Initiation we would use a slow dose regime, either Tait and Seffick or Oates et al. especially if the Patient has CCF, known kidney disease, impaired liver function, poor nutrition, potentiating medications, and patients at higher risk of bleeding.The Initiating nurse will ensure any previous VKA dosing history is taken into account and dosed for 4 days and advised that they will require an INR on day 5 (Ansell e tal 7 ACCP conference 2004 , Baglin et al 2006, Tait and Seffick 1998, Oates et al 1998 B J C P Aug 46(2):157-161.

- The clinic nurse will also review FBC (for significant thrombocytopenia), LFT, U&E's and APTT, if they are available from a recent hospital admission- and there is no clinical reason to suspect they may have changed significantly.

- If none of the above tests are available for review or there is significant clinical suspicion that the results may have changed, a venous sample for all of the above will be taken; this will include a venous INR.

- All new initiations will follow the slow initiation regimens of either the Tait and Seffick (1998), Janes (2004) or the Oates et al (1998).
  Fennerty (1988) Algorithm is not recommended (10mg,10mg, 5mg) due to its higher bleeding risk and increased risk of warfarin necrosis.
  Please refer to (Insite document B44/2016)

Guidance for Clinics

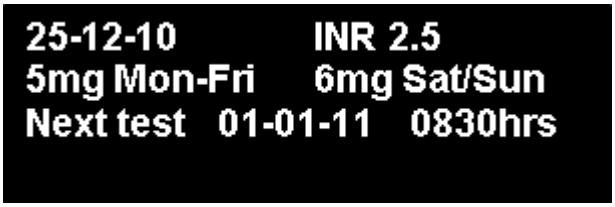
The complex UHL-INReach Anticoagulation Service will follow the procedure detailed below:

- All clinics have 15 minute time slots or 30 minute allocated slot for 6 month quality control clinic appointment and new patients.

General clinic principles:

- The clinic room requires cleaning prior to the start of clinic, any time during clinic and following completion. Any blood spillage will need to be dealt with at the time as per UHL blood spillage protocol.
- UHL-INReach anticoagulation uses CoaguChek PRO II for NPT. All machines used are registered with NEQAS and UHL Point of care team. All machines that are in current use have weekly QC test performed and results are recorded in AC booklet provided by POCT.
- CoaguChekPRO II meter will be used routinely to obtain INR readings however patients with Antiphospholipid antibodies these results require corroboration alongside V/S iLAB INR at regular intervals and at times when the patient feels they are in an active phase of the disease (Roche 2016).
- All patients are to have timed appointments.
- Patients to keep their yellow books on their person.
- Use all timed slots before using the overbook facility.
- Call patients in time order, if patient is late will have to wait until there is available time to attend to them.
- Greet and welcome patient. Confirm correct patient, check name, address, GP practice details (not GP name as results are sent out to practice not individual GP).
- Confirm correct diagnosis, INR range and target.
- Ensure complete details in yellow book and AS contact number entered.
- Stick new results label over previous appointment date, do not cover previous dosing or INR date and result.

- If unable to print new results label this must be handwritten in black ink on a blank sticky label in the format below. Stick new results label over previous appointment date, do not cover previous dosing or INR date and result.



- Read label back to patient to confirm dose instruction, next test date and venue of appointment.
- If the patient has previously not taken the correct dose advised please get the patient to sign the dose label and document on DAWN that label has been signed.

Guidance for Dosing

- The UHL Anticoagulation Service (UHL AS) uses DAWN Version 11 dosing decision support software.

- The decision support software exists to support the decision maker; in the UHL AS this is a Registered Nurse.

- The decision support software must not be relied upon to reliably and accurately dose every patient in every clinical situation - it is a guide only.

- The service will accept results from UHL AS NPT machines or from the laboratory iLAB system or ICE.

- The nurse will review each dose and the preceding doses / INR's, medications, and the patient's clinical status prior identifying and issues which you need to seek advice before making a decision to accept or modify the support software's recommendation of both dose and time interval between appointments.

- The patient will receive a dose expressed in mg in their anticoagulation record; the patient will also receive a further clinic appointment date and time in their anticoagulation record.

- Changes to the patient's current dosing regime will be highlighted to the patient in their anticoagulation record and via a conversation either in clinic or via the telephone to confirm a dose change.

- Patients with a Venous/NPT INR of greater than 6.0 should be contacted as a priority during the clinic and the Management of Warfarin Overdose Policy followed (Trust ref: B44/2016)

- If the Venous/NPT INR is greater than 8.0 then they will be advised to take Vitamin K orally as per UHL PGD HEM11 at the time of clinic attendance if patient in unable to wait for an urgent venous INR result, for patients with a higher risk of thromboembolic events the INR is ideally tested by V/S prior to the administration of vitamin K, and omit the warfarin dose. All patients who have INR >8.0 present to clinic the following day for review and repeat INR, as per the Management of Warfarin Overdose Policy (Trust Document: B44/2016). If unable to see the patient on the next day following Vitamin K administration, provided there is no active bleeding and emergency contact numbers have been given to patient, advice to omit warfarin until next test date can be given to patient without administering Vitamin K.

- There are four categories for bleeding, each with associated actions as found on the UHL Tait and Sheffick initiation algorithm. Please note the following actions:

1, Life threatening haemorrhage Stop Warfarin 5mg Vitamin K by slow injection (refer to IV policy) Consider administering clotting factors	3, INR high without haemorrhage INR >4.5 withhold Warfarin for 1-2 days and review INR >8.0 give 1 mg Vitamin k by slow injection
2, Less Severe haemorrhage Withhold Warfarin for 1 or more days and review And/or give 1-2 mg vitamin K by slow injection	4, Unexpected bleeding at therapeutic levels Investigate underlying cause 5, Contact the UHL Anticoagulation INReach Service for further advice if required.
NB: Take care in reversing anticoagulation in patients with prosthetic valves	

- In case of bleeding and/or high INR contact the UHL anticoagulation Service for further advice if required
  - A note will be made on the patient's DAWN record of the actions taken, and advice given by the nurse to the patient.
  - Bleeding incidents will be recorded on DAWN in the events tab.
  - An unusual INR will need corroborating by repeat NPT and / or V/S whenever possible if INR unusually high (Roche 2015).

INReach dosing guidance

Be aware that these are acutely ill patients

Review medications on each visit.

Be aware of the changes in diet and eating habits

Check if on Intravenous or oral antibiotics

Inpatient INRs should be reviewed at least twice weekly.

Daily INR's should be avoided wherever possible.

Review bloods wherever necessary i.e. on initiation, elderly patients >75yrs+.

Refer to appendix 7 for drugs that affect warfarin

General principles to follow when dosing patients

BLEEDING WHILST ANTICOAGULATED: 4 CATEGORIES

- High INR's present the patient with a greater risk of mortality / morbidity
- Dose changes will take up to 5 days to reflect in the patients INR. For 10% dose changes a repeat INR taken in 2 – 3 weeks if there are no concerning issues or recent factors identified to account for required VKA dose change.
- Enquire of the patient what dose of warfarin they have been taking.

- Establish from the patient what their health has been like recently.
- Ascertain from the patient if they have had a change in medication since the last clinic visit and / or change to their diet.
- Ascertain from the patient if they have has any bleeding events and any changes to the colour of urine or stool.

Guidance for Acute Thrombotic Patients

- ‘Acute Thrombotic Patients’ relates specifically to Pulmonary Embolus (PE) and Deep Vein Thrombosis (DVT).

- Acute thrombotic patients with sub therapeutic INR will be referred to clinical Lead or covering Haematologist for treatment dose of LMWH in the first 6 weeks of diagnosis (BCSH Keeling et al 2005)

- A supply of LMWH will be given to the patient and appropriate arrangements will be made to ensure safe administration either via educating the patient or use of the district nursing service via SPA (email lptchs.spa@nhs.net).

- Acute Thrombotic Patients are difficult to manage and will be discussed by junior staff with colleagues to ensure that the risk to the patients is mitigated against in a timely manner.

Guidance for DNA

- All DNA's will have their record reviewed by a nurse on DAWN and an appropriate repeat appointment made. The maximum permissible time for a clinic appointment for a patient who has not attended is 1 week.
- All reasonable effort should be made to ascertain why the patient has not attended, i.e. are they an inpatient, have they forgotten, are they deceased? Document on DAWN what steps have been taken to contact patient.

  Under no circumstances will a clinic DNA list have batch appointments made.

- First non attendance to clinic, use DNA button on DAWN, this generates the DNA count and reschedules the patient. Print 'DNA Letter (cc GP) and post to patient and copy to GP.
- If patient continues to DNA further letters (2 and 3) will be sent to patient and GP. If patient DNA's a 4th time the GP practice should be contacted by phone and informed that the patient will be discharged from our service for safety reasons. A letter explaining this will be sent to the patient and the GP.

Guidance for Post Clinic

- The clinic list will be reviewed by the nurse to ensure that every patient who attended the clinic has been dosed.

- Patients should not be suspended on DAWN. The patient should remain active with a clinic appointment and a note placed against the patient's record to indicate that they are abroad for a max of 12 weeks. If in-patient move appointment on 1 week later.

- For all remote dosing changes will be telephoned out by the clinic nurse and highlighted in the patient held record.

- Clinic nurses will be responsible for posting anticoagulation record books back to patients.

- At the end of the day the following actions to be undertaken to ensure all patients are accounted for and have future appointments:

    i) Check that the clinics list 'Test Work list 'is empty of patients.
    ii) Check clinic list 'Test Work list' on 'any date' setting. All patients on this list should have an appointment time. If they do not this means the patient has not been scheduled for a future appointment correctly. Go into the patient's record and schedule appropriately.
    iii) Check 'No Next Test Date' list is empty

UHL Anticoagulation Service INReach policy.

The nurse will act as an ambassador for the UHL Anti-coagulation Service at all times.

The INReach service is not a mobile INR service. Wards can be advised and supported on making their own arrangements for purchasing NPT equipment. INReach will not train ward teams on NPT use, however INReach is available to offer dose advice on suitable inpatients on VKA and provide advice and support to teams on appropriate oral anticoagulants when requested.

The UHL-INReach Anticoagulation Service offers a site based INReach service at the – LRI. Remote service offered for GH and LGH.
HOURS OF SERVICE:
Mon-Fri 08:30-16:30
Helpline 0796 0779941
Mon-Fri 09:00– 16:00

Any complex patients admitted on a VKA will require a UHL-INReach anticoagulation service referral on admission to hospital ward via ICE.
The remit of the service is to provide an anticoagulation plan and monitoring (if required) by the offer of VKA dose advice if patient is deemed appropriate for this service.

Assist wards on the initiation of oral anticoagulants by offering support to medical staff in ensuring the right anticoagulant at the right dosage is commenced for the patient.

Route of care will be recorded in the patient medical notes, if bedside education has taken place the checklist is filed in the patient's notes.

The **prescribing** for administration of VKA by nursing staff remains the responsibility of the medical staff.

The patient who is admitted on to the INReach service may have a bedside visit by Clinical Nurse Specialist (CNS) for NPT, educational assessment and education needs.

The INReach patient will have:

- Completed Yellow anticoagulant record sticker or a completed printout attached inserted into the patient's medical notes (Appendices…and….)
- UHL AS will record the INR result on the warfarin chart clearly stating whether it is venous/NPT and machine number and for doctors to see notes for dosing advice this should be highlighted with a YELLOW highlighter for visibility.
- Record VKA dose advice in medical notes using yellow sticker for visibility adding any further relevant information on the side of the sticker ensuring it is clearly dated, timed and signed. Or

- Record VKA dose advice in medical notes using printout template ensuring it is clearly dated, timed, signed and attached into patient's medical notes.
- Record the next planned INR visit and or discharge appointment details.
- Record any further comments/discussions alongside the dosing label ensuring documentation is dated, timed and signed legibly.

The CNS will prioritise patients from their INReach list for the day, follow up of warfarin related admissions and visit the referred patient to

- Confirm all patient identifiable data
- History of VKA including patients VKA dosing
- Confirm reason for admission
- Expected date for discharge
- Any bleeding events, colour of urine and stool
- Past anticoagulation education
- Take INR NPT using CoaguChek PRO II, document INR result on Patient notes.
- Complete patient VKA education if appropriate.
- Complete Patient education checklist and save on AC shared drive and attach to Dawn records where applicable. Communicate and inform Medical and nursing staff of plan of anticoagulation care

The clinical Specialist Nurse will seek the advice and guidance if patient is beyond their competence to manage and refer to Haematologist on call. The clinical Nurse specialist is not a Haematologist and some patients will require referral to the on call team for specialist advice.

For each ward / patient visited, the INReach nurse will record the following information:

INReach: Seen for 1st review on ward:……
Patient's known usual dose:
NPT/Venous INR: (*INR + machine UQ number if NPT*)
Dosed Advised:
LMWH: (*is it required*)
Noted Interacting Medications:
Suggested next test date (for ward):
Anticoagulation f/u required: Yes/No
Any further information:

In patient Notes: Insert completed INReach yellow label as per appendix 13.
Document any further information on notes besides the yellow label.

Discharging of INReach patients

Ward Medical staff and Nurses are responsible for the safe discharge of patients by ensuring an anticoagulation discharge (ACDL) letter has been appropriately COMPLETED.

The UHL Anticoagulation Service offers a site based INReach service at –LRI and a remote review for referrals sent from LGH and GH
Not all inpatients on a VKA will require UHL Anti-coagulation service to obtain NPT INR

and dose patients.

The CNS will identify patients that will need further review by the INReach team such as highly complex patients or patients with on-going high risk factors. The Clinical Specialist Nurse will seek the advice and guidance if the patient is beyond their competence to manage and refer to Haematologist on call. The clinical Nurse specialist is not a Haematologist and some patient will require referral to the on call team for specialist advice.

HELPLINE

Available between 09:00am till 16:00hrs

Mainly set up for GP advice, however, can be also used internally for advice and guidance.

Typical day roles and responsibilities of an Anticoagulation Nurse:

- Review clinic for the day, check if all patients are still inpatients via patient centre, Review recent bloods, and check medications via eMeds.
- Add/update name of ward on transport (if required) for inpatients.
- Prioritise and visit patients on the wards as per the day's list.
- Offer advice, support and management as required, including follow up appointment if necessary – document action and plan in patient's notes. (Use yellow label for visibility or printout)
- Clearly document on Dawn actions taken, care given, and plan for patient clearly mentioning the next steps (for next person to action this accordingly)
- All patients not requiring further follow up on the ward to go on to tracking clinic until discharged, discharge letter reviewed (ensure completed appropriately otherwise liaise with discharging ward) and or GP appointment confirmed with discharged patient.
- Review referrals from ICE on site allocated throughout the day.
- Prioritise referrals accordingly i.e. decide which are for in-reach to be seen on the day and which can wait until next day and or which do not require such.
- Contact wards for further information as and when necessary.

- Close patient records if above mentioned has been met.

The Administrator will:

- Review and process referrals from ICE, via posted letters, via the anticoagulation inbox and fax. (verbal referrals are not accepted)
- Contact wards for further information (where necessary)
- Non- INReach patients to go to tracking clinic for day 4 from referral date.
- Review tracking and follow up accordingly, (note; if still inpatient they may require nurse visit to review anticoagulation management) liaise with the nurse at patient's location or input onto appropriate INReach clinic for the day. If discharged, check that anticoagulation discharge letter has been done appropriately and liaise with

ward if discharge letter is poor quality.

- Answer the phones and take messages or request nurse to take over if unable to resolve query.
- Create/close clinics, add/reduce clinic slots as requested and authorised by the Lead Nurse.
- Input clinic patients and Patient Self testers onto HISS.
- Act as agents for telephone calls received in the anticoagulation office.
- Assist in coordinating team meetings through booking rooms, informing relevant parties as well as taking minutes.
- Request medical notes as required by the CNS

***NOTE – This service is currently restricted to those patients that are already self- testing and known to the UHL Anticoagulation Service due to the new service focus of the INReach service. No New patients will be accepted onto this service.**

Aim of service:

- Provide patients with a choice
- Encourage patient empowerment through education
- Improve and maintain stability of INR
- To adopt a patient centred approach within anticoagulation

WHAT KIND OF PATIENT IS SUITABLE FOR SELF TESTING?

- Patients on anticoagulation
- Patients who possess both the necessary skills for self-testing and the financial wherewithal to purchase meter.
- Patients who are highly motivated and in possession of necessary cognitive functions.
- Proven record of good attendance at clinic/or evidence of commitment of self-testing.
- Able to demonstrate competence in performing tests independently (Contract of competence issued to patients successfully completing Training)
- If patient registered with a county GP the GP is in agreement and willing to prescribe consumables (test strips, lancets). Patient is also required to purchase their own machine from Roche. All consumables, etc will be provided by UHL AS for patients who are registered with a City GP practice.

TESTING DEVICE

Coaguchek XS or Newer

- ROCHE Diagnostics
- Compact hand held device
- Uses a drop (10µl) of capillary blood
- INR obtainable in less than 10 minutes (typically 5-6 in experienced hands)

Courtesy Roche Diagnostics

UHL GUIDELINE FOR MONITORING OF PATIENT SELF-TESTING

- Patient booked to ‘Patient Self-Testing Clinic’ for on going monitoring.
- Twice yearly update sessions (every 6 months) for review.

All patients to be equipped with:

- Machine for NPT
- Lancets
- Test strips.
- Sharps bin
- Record book

QUALITY CONTROL REVIEW SHOULD INCLUDE:

- Obtaining a good capillary sample
- Relevance of INR reading
- Good record keeping
- Importance External Quality Assurance (EQA performed at 6 monthly review appointments in UHL AS clinic).

PATIENT SELF-TESTING PROCEDURE

1. Patient performs INR at home on day of pre-arranged testing and contacts telephone or e-mail UHL AS between 08:30 -15:30 for dosing advice. (all calls recorded)
2. Patient will then be informed of their dose by Anticoagulation Nurse and next test date agreed (INR result & dose will be confirmed by email/letter/dose label to both the patient and their GP)
3. Review as necessary

RECORD KEEPING

- UHL AS to keep parallel record of all INR’s as provided by patient
- Telephone appointments to be booked on HISS
- Every INR and dose change(s) will be entered into yellow book by the patient via dose label sent in post.
- Any change(s) in other medication to be entered onto patient’s record in the DAWN database.
- Yellow book to be taken to any doctor or hospital appointment

VALIDATION OF THE MACHINE

UHL AS will provide an External Quality Assurance by comparative testing of patient’s capillary blood INR by the patient’s own CoaguChek XS and by the Anticoagulation Clinic CoaguChekPRO II machine at the 6 month review appointment.

Evidence to support this model of care

- Menedez-Jandula (2005) Comparing self-management of Oral Anticoagulant Therapy with Clinic Management

- Gardener (2004) Patient self-testing is reliable an acceptable alternative to laboratory INR monitoring
- Barnado (1995) -83% within target range with no major bleeding.

3. Education and Training

None

Guideline intended for awareness.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Therapeutic Time in range (TTR). Daily, weekly, monthly activity	Dawn clinical Software. Audits	Lead Anticoagulation Nurse Specialist	Quarterly	Data presentations

5. Supporting References (maximum of 3)

National patient safety agency (NPSA)

National Institute for Clinical Excellence (NICE)

6. Key Words

Anticoagulation, warfarin, DOAC, NOAC, INReach.

CONTACT AND REVIEW DETAILS	
Guideline Lead: Heather Hewitt Anticoagulation Specialist Nurse, Julia Weston Anticoagulation Specialist Nurse	**Executive Lead:** Styliani Salta Consultant Haematologist
Details of Changes made during review: Includes Anticoagulation INReach service Policy, Updated referrals criteria.	

Appendix 1

THERAPEUTIC RANGE INDICATION TARGET INR. The table is for information only. Target INR should be issued by the relevant treating physician (cardiac surgery, cardiology etc…)

Table 1

Therapeutic recommended uses and International Normalised Ratios (INRs) for those uses (British Society of Haematology)	
Pulmonary embolus	2.0 - 3.0
Venous Thrombosis (DVT)	2.0 - 3.0
Prophylaxis of postoperative deep vein thrombosis (general surgery)	2.0 - 2.5
Prophylaxis of postoperative deep vein thrombosis in hip surgery and fractures	2.0 – 3.0
Myocardial infarction: prevention of venous thromboembolism	2.0 – 3.0
Transient ischaemic attacks	2.0 – 3.0
Tissue heart valves	2.0 – 3.0
Atrial fibrillation *	2.0 – 3.0
Valvular heart disease	2.0 – 3.0
Recurrent deep vein thrombosis and pulmonary embolism	3.0 – 4.5
Arterial disease including myocardial infarction	3.0 – 4.5
Mechanical prosthetic valves (see table 2)	
Recurrent systemic embolism	3.0 – 4.5
Intravascular stent	2.5 – 3.5

Table 2

Recommended INR for prosthetic valves		
	Sinus rhythm normal left atrial size (i.e. most aortic valve replacement patients)	**Atrial fibrillation enlarged left atrium (i.e. most mitral valve replacement patients)**
Low thrombogenicity prosthesis	2.0 – 3.0	2.5 – 3.5
Other prostheses	3.5 – 4.5	3.5 – 4.5

Dosage Regimens

The average dose of warfarin required daily is around 5 mg (range 1-9mg) but may vary markedly because of several factors. Warfarin should be given once daily (5-6pm is an ideal time) and is given as a tablet for oral administration. Tablet strengths are 0.5mg (white), 1 mg (brown), 3 mg (blue), 5 mg (pink).

All patient who are being initiated on to warfarin will require 1mg warfarin tablets only

Dosage should always be described in terms of milligrams, <u>not</u> numbers of tablets, and aim for NO daily dose fluctuations.

Appendix 2

ADVICE TO PATIENTS HAVING DENTAL TREATMENT

www.npsa.nhs.uk/health/alerts
https://webarchive.nationalarchives.gov.uk/20171030131257/http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=61777&p=3

Leaflet available in a range of languages

Patients are advised to continue with warfarin therapy when attending for dental treatment. However they will need to check their INR the day before the appointment to ensure INR is ≤3.0

PRE-OPERATIVE MANAGEMENT OF WARFARIN – Bridging

See INSITE Bridging plans

http://insitetogether.xuhl-tr.nhs.uk/pag/pagdocuments/Anticoagulation%20Bridging%20Therapy%20for%20Elective%20Surgery%20and%20Procedures%20UHL%20Guideline.pdf

In general:

- Bridging plans remain the responsibility of the operator who is in the best position to assess risk of bleeding versus the risk of thrombosis.
- Obtaining a written bridging plan and supplying LMWH cover is the responsibility of the operator.

All the bridging plans are the responsibility of the surgeon.

DISCONTINUING WARFARIN

Patients who are due to discontinue or there are queries regarding anticoagulation treatment plan, the length of therapy or on-going indication are to be discussed with the referrer or seek advice from a haematologist

Appendix 3

NEAR PATIENT TESTING AND MAINTENANCE OF ORAL ANTICOAGULATION THERAPY

STANDARDS AND CRITERIA (NPSA STANDARDS)

These standards are the **minimum** required for safe practice and are aimed at reducing error in this part of the patient management process. There are 6 standards with performance criteria (PC)

Standard S1

There is a clear patient referral system that identifies patient information.

PCS1 Patient name and contact details
PCS2 Patient Date of Birth and gender
PCS3 NHS/Hospital Number
PCS4 Any special instructions, investigations (including abnormal blood test results)
PCS5 Signature of requesting person and their contact details

Standard 2

There is a clear understanding and confidence in using the GP IT system for patient management, and evidence that patient information can be accessed and updated.

PCS6 The practitioner can access a patient management plan and identify indications for warfarin therapy.

PSC7 The practitioner knows how to access and update the following information:

a) Medication changes
b) Changes in diet
c) Changes in physical and mental health
d) Current warfarin therapy and duration of treatment
e) Recent admissions to secondary care / A&E

PSC8 The practitioner can confidently use the Practice IT systems that support patient anticoagulation management.

Standard 3

There are correct safety checks in place prior to Near Patient Testing procedure.

PSC9 The patient's identity is confirmed using:
a) Full Name
b) Date of Birth
c) First line of address

PSC10 The patient's 'Yellow Booklet' is used to confirm the patient's correct Identity.

PSC11 The patient's 'Yellow Booklet' is checked for recent INR recordings and dosages.

PSC12 The practitioner is aware of the system in place should the patient forget their 'Yellow Booklet' or if it is not holding up to date information.

PSC13 The 'Yellow Booklet' can be replaced if lost, damaged or full.

PSC14 Patient verbal consent is obtained prior to the procedure.

PSC15 If there is a carer present during the procedure consent for their presence is obtained.

PSC16 Patient medical history/side effects are reviewed since last attendance:
a) Verbal
b) Using IT systems / electronically

PSC17 If the patient is unable to confirm patient identity details, these are confirmed with their carer.

Standard 4

The correct procedure is followed in Near Patient Testing.

PSC18 Ensures code number matches test strip

PSC19 Correctly switches on meter

PSC20 Correctly checks battery level, date and time

PSC21 Patient ID entered (if applicable)

PSC22 Test strip correctly inserted

PSC23 Waits until hourglass symbol and 'bleep' before progressing

PSC24 Correctly interprets the blood drop icon and 120-second countdown

PSC25 Patients finger is correctly pricked in line with Infection Control Policies

PSC26 Blood correctly applied to cover the semi-circular transparent sample application area within 15 seconds

PCS27 Blood is placed against the side of the sample application area

PSC28 Correctly interprets patient test result on display area

PSC29 Safely interprets < > signs and actions to be taken if noted

PSC30 Analyser is correctly cleaned and stored

PSC31 Patient results are correctly entered onto IT system and into patients 'Yellow Booklet'

PSC32 Patient follow up appointment is arranged according to need

Standard 5

There are robust quality control checks in place.

PSC33 There is a clear audit trail of quality control checks for each analyser

PSC34 The control aliquots are stored safely in correct conditions

PSC35 The test strips are stored safely in correct conditions

Standard 6

Practitioners have an understanding of error symbols on the analyser.

PSC36 Staff can correctly identify a minimum of 5 error signs (to be taken from training manual).

Appendix 4

QUALITY CONTROL AND ASSURANCE

There are three main methods of ensuring reliability and accuracy of results in the practice setting.

1. INTERNAL QUALITY CONTROL

FOR THE COAGUCHEK PRO II MACHINE

This will be performed at least once a week or prior to testing on the first patient in every clinic. It is the responsibility of the nurse to ensure their own Coaguchek PRO II machine is Quality controlled. The nurse on duty at the hospital clinic must check that a quality control has been done on the hospital Coaguchek PRO II machine during the week.

Liquid Quality Control

1. Open lid of vial and remove rubber cap.
2. Hold pipette with sealed neck pointing upwards, then cut off the end of the cap with scissors (do not hold pipette close to your face).
3. Apply gentle pressure to reservoir to transfer entire contents of pipette into vial.
4. Ensure pipette does not come into contact with the dried control plasma.
5. Close container again and ensure you have pipette to hand.
6. Swirl the vial using circular motion to completely dissolve all the control plasma.
7. DO NOT shake the vial or turn it on its side.
8. Select QC Test from the Main Menu Screen.
9. Insert test strip as directed on screen.
10. Select CODE number from the list shown, or select NEW CODE if opening new lot of quality control solutions.
11. Insert new code chip if required.
12. Apply sample from pipette to test strip as directed on screen.
13. Result is displayed, with the range displayed in brackets below result.
14. Document your result on internal quality control log sheet found on the AC shared drive

2. NATIONAL EXTERNAL QUALITY ASSURANCE SCHEME

UK NEQAS FOR BLOOD COAGULATION: NEAR PATIENT TESTING SCHEME

It is the responsibility of the nurse to ensure their own Coaguchek PRO II machine is NEQAS quality controlled. The nurse on duty at the hospital clinic must check that a NEQAS quality control has been done on the hospital Coaguchek PRO II machine during the week this is due

The Scheme

The purpose of the Scheme is to provide external quality assessment (EQA), as a part of the overall quality assurance, for tests of blood coagulation carried out on instrument systems designed for ‘near-patient’ testing at all sites, whether within or remote from hospital laboratories. The aim of the Scheme is to promote high standards of performance

and practice, achieved with the UK NEQAS primary aim of education, by provision of independent, objective and impartial information.
The British Society for Haematology has published guidelines for the evaluation and use of NPT devices, underlining the importance of EQA of these instruments (Clin. Lab. Haem. 1995, 17, 301-310). The guidelines also promote the importance of a close liaison between the decentralised site and the local Haematology department.

Registration

The participant registered should be the centre responsible for performing the tests. If the daily testing is carried out by a GP surgery, the surgery should be registered. Data from participants will be treated with strict confidentiality. Each registered participant will be given a unique participation number, which should be quoted in all correspondence. Use of this number will assist in maintaining confidentiality in survey correspondence.

Participation

Participating centres will be sent four surveys per year, including samples for Prothrombin Time (PT) and/or Activated Partial Thromboplastin Time (APTT). Each participant will receive one or two samples for the tests for which they are registered, per survey. The samples will be appropriate for the system registered. In the case of UK NEQAS supplied samples, this will be lyophilised human plasma which has been screened for hepatitis B surface antigen (HBsAg), and for antibodies to hepatitis C virus and human immunodeficiency virus types 1 and 2 (anti-HIV-1+2).

Participants will be provided with instructions on reconstitution and testing of the samples.

A closing date for return of results will be given. Results will be analysed, and individual reports sent to participants approximately one week after the closing date.

Performance analysis

Approval has been granted by the National Quality Assurance Advisory Panel for Haematology for the application of performance criteria. A median result will be calculated for each reagent/instrument group, and the percentage deviation of individual laboratories from this median will be determined. This figure will indicate how close to the 'consensus' result individual results are from other users of the test system, and performance 'outwith consensus' is defined as a result greater than a 15% deviation from the reagent group median.

An overall report on the operation of the Scheme will be distributed, initially on an annual basis. UK NEQAS for Blood Coagulation, and the Near Patient Testing EQA Scheme have been awarded full Unconditional Accreditation by Clinical Pathology Accreditation (CPA (UK) Ltd.) in the EQA Scheme Accreditation programme.

For further details, please contact the Scheme Manager, UK NEQAS for Blood Coagulation, Rutledge Mews, 3 Southbourne Road, Sheffield S10 2QN U.K.

Tel: 44 (0)114 267 3300 Fax: 44 (0)114 267 3309

E-mail: negas@coagega.demon.uk

Appendix 5

SIDE EFFECTS OF WARFARIN

Bleeding related to warfarin therapy is a drug-induced condition and represents the most frequent complication of anticoagulation therapy. Its severity varies from increased bruising to death. Hemorrhagic complications may be manifested by signs of symptoms that do not indicate obvious bleeding – for example, headaches, pains in the chest, abdomen and joints, swellings, shortness of breath and other unexplained symptoms. Almost any organ of the body can be involved. It is important therefore to investigate any unexplained condition for haemorrhage.

Bleeding most often occurs in the nasopharynx, gastrointestinal tract, soft tissue and the urinary tract. In a third of these patients, investigation leads to identification of previously unknown lesions, even when the INR is elevated (BSH 1990, Landefeld and Beyth 1993). Intracranial bleeding, although rare, is associated with raised systolic and diastolic blood pressure and increased age (Landefeld and Beyth 1993, Laupacis et al 1994).

Risk Factors – Contraindications to Warfarin

Contra-indications to warfarin must be considered alongside an individual assessment of each patient, his / her medical conditions, home situation and additional support. It is important also to assess the mental condition of the patient as mental impairment or lack of cooperation can mean the patient is unlikely to maintain the correct dosage.

Studies have shown that bleeding is approximately three times more common in intensively treated patients (INR 3.0 – 4.5) than less intensively treated patients. It is not known if the intensity of anticoagulation therapy has decreased in the past 10 years in response to these studies (Kearon and Hirsh 1997, Landefeld and Beyth 1993). There is also a cumulative factor. The risk of bleeding is greatest in the first month of therapy, reducing at year one, but it then continues to increase by approximately 3% per year.

The issue of whether the frequency of bleeding increases with age (65 years or more) remains controversial (Landefeld and Beyth 1993, Laupacis et al 1994).

Other risk factors for bleeding are poor patient compliance, medication errors, drug interactions and co-morbid illness, for example:

- Serious cardiac illness / recent myocardial infarction
- Liver dysfunction
- Renal insufficiency
- Poor general condition
- Severe anaemia
- Atrial fibrillation
- History of cerebrovascular accident
- History of gastrointestinal bleeding

Severity Index

It is important to classify the occurrence and severity of bleeding for monitoring and evaluation of the patient's condition. However, definitions in the literature vary widely. Landefeld (1989) devised a 3-POINT system that identifies the amount of blood loss, the rate of bleeding and the consequence of bleeding. Other methods record bleeding that is major and of no consequence (Landefeld and Beyth 1993).

Bleeding Severity Index

No	Bleeding Severity	Additional Notes
1	Extended bruising with contact	May be simple side effect if INR in -range
2	Bruising without contact(s)	Acceptable within range INR
3	Prolonged bleeding (haemorrhoids, menorrhagia)	INR may be raised
4	Haematuria, epistaxis, melena, haemoptysis, bleeding gums	Further investigations
5	Hospital admission requiring medical intervention with haemorrhage	INR between 6.0 and 8.0
6	Hospital admission requiring medical intervention with haemorrhage	INR between 8.0 > 10.0
7	Life – threatening haemorrhage	
8	Death caused directly by warfarin	

Appendix 6

FACTORS THAT AFFECT ANTICOAGULATION CONTROL

DIET

Some foods affect the individual's response to warfarin. Vitamin K (phylloquinone), for example, may cause INR variability. High concentrations are commonly found in green leafy vegetables, beef liver, rapeseed oil, green tea and some other products. Patients should be advised not to make changes in their level of consumption of these foods, as stopping, starting or changing will affect the INR value. Dietary supplements will potentiate the action of warfarin. In general, a low fat diet is recommended.

Common foods that affect anticoagulation control

FOODS THAT ANTAGONISE
Avocado
Broccoli
Brussel Sprouts
Cabbage (fresh boiled or raw green)
Lettuce (dark green / red)
Spinach
Collards
Endive
Kale
Watercress
Ice Cream in large quantities (1 litre)
Soya bean products
Swiss hard cheese
Cranberry juice

FOODS THAT POTENTIATE
Fish oil supplements
Vitamin E supplements
NB: This list is not exclusive

Alcohol consumption has a variable effect on anticoagulation control. Patients should be advised to take only moderate amounts. Stopping, starting or changing will affect the INR value.

- Moderate intake is not considered to be problematic (2 units daily)
- Heavy regular intake may reduce the anticoagulation effect
- Acute intake may enhance the anticoagulation effect and result in an inaccurate reading. The INR should therefore be taken again after one week to re-establish stability.

Alternative / Complementary therapy

Acupuncture	contraindicated in pts on warfarin
Aromatherapy	Avoid leg massage in pts with a history of DVT
Herbal Remedies	Avoid in pts on warfarin
Homeopathy	Avoid if concentration of treatments <12c or <30x

Alternative Therapy potential interactions

HERBAL MEDICINE	POTENTIAL INTERACTION WITH WARFARIN
Danshen	Increased bleeding time
Devils Claw	Blood disorders visible on skin- purpura
Dong Quai	Increased bleeding time and widespread bruising
Feverfew	Inhibition of herbal effects, altered bleeding time
Garlic	Altered bleeding time, inhibits platelet aggregation
Gingko	Altered bleeding time, inhibits platelet aggregation, hypertension
Ginseng	Altered bleeding time, possible addictive effect, manic episodes, headaches, tremor, altered glucose concentrations
Glucosamine	Altered bleeding time
Papaya	Increased bleeding time
St John's Wort	Induces some cytochrome p450 enzymes, so reducing blood concentrations of warfarin

Clinical factors which affect anticoagulation control

INTERNAL POTENTIATING FACTORS (INCREASE SENSITIVITY TO WARFARIN)

Hyperthyroidism
Cardiac failure
Renal failure
Liver damage
Biliary obstruction
Fever
Infectious disease
Cholestasis
Malnutrition / weight loss
Alteration in intestinal absorption
Carcinoma
Radiation therapy

INTERNAL ANTAGONISTIC FACTORS (DECREASE SENSITIVITY TO WARFARIN)

Hypothyroidism
Diabetes mellitus
Oedema
Hyperlipidemia
Visceral carcinoma
NB: This list is not exclusive

Concomitant drug therapy

Giving drugs that interact with warfarin should generally be avoided. Where it is not possible, the client may require more frequent monitoring or changes in anticoagulation management. This is particularly so when a new drug is started, the dose is adjusted or the drug is stopped.
Clients should be advised to inform the nurse of any change in their medication.

Warfarin and Aspirin

Aspirin should only be taken in association with warfarin when prescribed by a specialist in accordance with the client's medical history. Greater care is needed in monitoring these clients, not only because of aspirin's ability to displace warfarin into the circulation but also because of the increased bleeding risk with the association of two antithrombotic medications. In this situation, the prothrombin time control does not reflect the potential risk of bleeding.

Appendix 7

DRUGS THAT INTERACT WITH WARFARIN (list not exhaustive. Check BNF or Drug Information at UHL if in doubt)

POTENTIATING DRUGS	ANTAGONISTIC DRUGS
Gastrointestinal Tract	
Antacids (magnesium salts)	Cholestyramine
Cimetidine	Clestipol
Liquid paraffin and other laxatives	
Cardiovascular System	
Amiodarone	Spironolactone
Clofibrate	
Dextrothyroxine	
Diazoxide	
Dipyridamole	
Ethacrynic Acid	
Quinidine	
Sulphinpyrazone	
Respiratory System	
Antihistamines	
Central Nervous System	Carbamazepine
Chloral Hydrate and related products	
Barbiturates	Haloperidol
Chlorpromazine	Phenytoin
Dextropropoxyphene	Primidone
Diflunisal	
Mefenamic acid	
Monoamine oxidase inhibitora	
Tricyclic antidepressants	
Triclofos sodium	
Infections	
Amino glycosides	Griseofulvin
Gentamicin	Rifampicin
Kanamycin	
Neomycin	
Streptomycin	
Tobramycin	
Endocrine System	
Anabolic steroids	Oral contraceptives
Chlorpropamide	
Corticosteroids	
Danazol	
Glucagon	
Metoclopramide	
Propylthiouracil	
Sulphonylureas e.g gliclazide	
Thyroxin	
Tolbutamide	
Malignant disease and	

immunosuppression	
Cyclophosphamide	
Mercaptopurine	
Methotrexate	
Tamoxifen	
Musculoskeletal and joint disease	
Allopurinol	
Aspirin and the salicylates	
Azapropazone	
Diflunisal	
Fenclofenac	
Fenoprofen	
Flufenamic acid	
Flurbiprofen	
Indomethacin	
Ketoprofen	
Mefenamic acid	
Naproxen	
Malignant disease and immunasuppression	
Paracetamol (high daily doses, with dextropropoxyphene)	
Distalgesic / coproxamol	
Alternative medicines	Gingko biloba
	St Johns Wort

IF ANY OF THE FOLLOWING MEDICINES ARE PRESCRIBED, PRESCRIBER TO ENSURE THAT THE INR IS CHECKED 4-7DAYS AFTER STARTING *OR STOPPING* TREATMENT SO THAT WARFARIN DOSES CAN BE ADJUSTED IF NECESSARY:

Cholestyramine (Questran)↓

Amiodarone (Cordarone X)↑↑↑
Propafenone (Arythmol)↑

Ciprofloxacin (Ciproxin)↑
Clarithromycin (Klaricid)↑↑↑
Erythromycin↑↑↑
Metronidazole↑↑↑
Norfloxacin (Utinor)↑
Ofloxacin (Tarivid)↑
Rifampicin ↓↓↓

Nalidixic Acid (Negram, Mictral)↑
Tetracyclines ↑
Trimethoprim ↑

Fluoxetine (Prozac)↑
Fluvoxamine (Faverin)↑
Sertraline (Lustral)↑
Paroxetine (Seroxat)↑

Carbamazepine ↓↓↓
Phenobarbitone ↓
Phenytoin ↑
Primidone ↓

↑Fluconazole (Diflucan)↑↑↑
Griseofulvin ↓
Itraconazole (Sporanox)↑↑↑
Ketoconazole (Nizoral)↑↑↑
Miconazole (Daktarin)↑
NB includes Daktarin Oral Gel

Bezafibrate (Bezalip)↑↑↑
Ciprofibrate (Modalim)↑↑↑
Clofibrate (Atromid-S)↑

Fenofibrate (Lipantil)↑↑↑
Gemfibrozil (Lopid)↑
Simvastatin (Zocor)↑
Atorvastatin (Lipitor)↑
Disulfiram (Antabuse)↑↑↑

Danazol (Danol)↑
Tamoxifen (Nolvadex)↑↑↑

Oral Contraceptives ↓

Thyroxine ↑

Cimetidine ↑↑↑
Lansoprazole (Zoton)
Omeprazole (Losec)↑
Sucralfate (Antepsin) ↓
↑

Influenza Vaccine ↑

Low dose Aspirin
Tramadol ↑

Appendix 8

CRITICAL INCIDENT / SIGNIFICANT EVENT ANALYSIS

In March 2007 the National Patient Safety Agency published a Patient Safety Alert “Actions that can make anticoagulant therapy safer”. It recommends an annual audit of the service provided. This should be included in the annual collection and reporting to the PCT of all critical / significant events.

Definitions

Serious adverse event

- Bleeding: if admitted to hospital or if surgery was required to stop bleeding and if bleeding led to reduction in Hb of 2g/L or more +/- requiring blood transfusion

- Thrombotic: Transient Ischaemic Attack (with observed neurological deficit), or Stroke, recurrent Deep Vein Thrombosis and Pulmonary Embolism, Systemic embolism

Non-serious event

All cases of bleeding with no significant associated medical consequences e.g. bruising, small epistaxis, and microscopic haematuria

Appendix 9

PROCEDURE FOR OBTAINING SUPPLIES OF TESTING STRIPS AND CONTROL SOLUTION

Detailed below is the information practices will need in order to ensure that they have adequate supplies of the strips and control solution for the monitoring of their patients.

If you do not currently have an account set up with the supplier Roche Diagnostics, you will need to set one up.

Their contact details are:

Roche Diagnostics Limited
Charles Avenue
Burgess Hill
West Sussex
RH 15 9RY

To order your supplies, please contact Roche Customer Services on:

Telephone Number: 0808 100 9998
Fax Number: 0808 100 8060
Email Address: @roche.com

If you need to set up an account with Roche then please contact Roche Customer Services using any of the above details.

UHL Ordering can be made by the catalogue on CEDAR. Please be aware that the budget holder will be responsible for paying the invoices. Failure to do so may jeopardise your supplies.

Appendix 10

REFERRALS CHECK LIST FOR DAWN

SEARCH ALL – Surname

A

1. Already on (But Treatment Stopped)
2. Reactivate Patient (Front Screen) Check all details are correct
3. If stopped for more than 3 months make a new treatment plan

(DO NOT REACTIVATE THE PREVIOUS TREAMENT PLAN)

B

1. Patient not found – **NEW PATIENT**

- ☐ Name – Please use upper and lower case as appropriate
- ☐ Address
- ☐ 'S' Number
- ☐ NHS Number
- ☐ DOB
- ☐ Phone
- ☐ GP Details (on treatment plan and in owners)
- ☐ Referral Details (on treatment plan and on front screen)
- ☐ Previous INR's
- ☐ Drugs

☐ any other comments added to record

Appointment Details

Date……

Time……

☐	LRI F/U	☐	Patient Aware
☐		☐	
☐		☐	
☐	LRI Initiation	☐	Appt slot blocked
☐		☐	i
	Other……	☐	
☐		☐	
☐	INReach	☐	Ward/ UHL Satff Aware

Signed……

Appendix 12 Daily Clinics List

	Clinic Name	Clinic Type	Tel No	Capacity
MONDAY				
	INReach (LRI+ remote GH and LGH) Patient Self Testers	In Reach Service	16720	Ad Hoc
	Complex clinic LRI	Nurse Led		8
TUESDAY				
	INReach (LRI+ remote GH and LGH) Patient Self Testers	In Reach Service	16720	Ad Hoc
WEDNESDAY				
	INReach (LRI+ remote GH and LGH)	In Reach Service	16720	Ad Hoc
	Complex clinic LRI	Nurse Led		8
	Patient Self testers			
THURSDAY				
	INReach (LRI+ remote GH and LGH) Patient Self Testers	In Reach Service	16720	Ad Hoc
FRIDAY				
	INReach (LRI+ remote GH and LGH)	In Reach Service	16720	Ad Hoc
	Complex clinic LRI	Nurse Led		8

Appendix 13

INREACH DOCUMENTATION GUIDE

INReach: Seen for 1st review on ward:……
Patient's known usual dose:
NPT/Venous INR: (*INR + machine UQ number if NPT*)
Dosed Advised:
LMWH: (*is it required*)
Noted Interacting Medications:
Suggested next test date (for ward):
Anticoagulation f/u required: Yes/No
Any further information:

INReach follow up on ward:
NPT/Venous INR: : (*INR + machine UQ number if NPT*)
Dose advised:
Medication Changes:
LMWH: (*is it required*)
Recent Bloods: Medics to review.
Dose advised has been documented in patient's notes via yellow label.
Next INR test date, (ward to test and dose patient) on:

Patient seen at……as **newly initiated** onto ..... (name of DOAC)
Age:
Gender:
Weight:
Latest creatinine:
Calculated CrCl : (*Cockroft Gault*)
Dosage:
Checklist
Orange booklet
Information leaflet
Alert Card
All education given following the checklist and patient seems to have good understanding. Completed checklist attached to notes. Aware to contact GP or ward for any queries post discharge. I have documentation also done in patient's notes. Input to tracking to follow up ACDL.

Appendix 15 Warfarin Chart

ANTICOAGULATION TREATMENT CHART

University Hospitals of Leicester NHS Trust

Hospital	
Ward	
Indication	
Target Range	
Duration	

STOP DALTEPARIN

If patient is on dalteparin and INR in range

Tait and Seffick Algorithm. This initiation algorithm should ONLY be used for patients who are being started on warfarin for the first time Do NOT use this algorithm when re-initiating treatment with warfarin

1. **Check Baseline Bloods (FBC, UE's, LFT's INR & APTT)**
2. **Prescribe Warfarin on Drug Chart daily**
3. **Consider Heparin cover for higher risk patients and should continue until INR is in range for two consecutive tests.**
4. **Heparin cover should be for a minimum of 5 days**
5. **Commence Warfarin at 5mg Daily for FOUR DAYS and check INR on Day 5**

INR on day 5	Dose for days 5-7	INR on day 8	Dose from day 8
<=1.7	5mg	<=1.7 1.8-2.4 2.5-3.0 >3.0	5mg x 7 days 5mg x 7 days 4mg x 7 days 3mg x 4 days
1.8-2.2	4mg	<=1.7 1.8-2.4 2.5-3.0 3.1-3.5 >3.5	5mg x 7 days 4mg x 7 days 3.5mg x 7 days 3mg x 4 days 2.5mg x 4 days
2.3-2.7	3mg	<=1.7 1.8-2.4 2.5-3.0 3.1-3.5 >3.5	4mg x 7 days 3.5mg x 7 days 3mg x 7 days 2.5mg x 4 days 2mg x 4 days
2.8-3.2	2mg	<=1.7 1.8-2.4 2.5-3.0 3.1-3.5 >3.5	3mg x 7 days 2.5mg x 7 days 2mg x 7 days 1.5mg x 4 days 1mg x 4 days
3.3-3.7	1mg	<=1.7 1.8-2.4 2.5-3.0 3.1-3.5 >3.5	2mg x 7 days 1.5mg x 7 days 1mg x 7 days 0.5mg x 4 days omit x 4 days
>3.7	0 mg	<2.0 2.0-2.9 3.0-3.5	1.5mg x 4 days 1mg x 4 days 0.5mg x 4 days

Patients usual Dose:

UHL Anticoagulation INReach Service

1. Available for INReach, ward based service, offering advice on dosing, management and patient education.
2. Discharge advice
3. Ward referrals taken via ICE
4. Verbal referrals not accepted

anticoagulation@UHL-tr.nhs.uk

Patient telephone number:0116 258 6720

Clinician: 16720 Helpline: 0796 077 9941

Please ensure Adult Anticoagulation Discharge Letter is completed on discharge for ALL anticoagulation patients...

BLEEDING WHILST ANTICOAGULATED: 4 CATEGORIES

1, Life threatening haemorrhage Stop Warfarin 5mg Vitamin K by slow injection (refer to IV policy) Consider administering clotting factors	3, INR high without haemorrhage INR >4.5 withhold Warfarin for 1-2 days and review INR >8.0 give 1 mg Vitamin k by slow injection
2, Less Severe haemorrhage Withhold Warfarin for 1 or more days and review And/or give 1-2 mg vitamin K by slow injection	4, Unexpected bleeding at therapeutic levels Investigate underlying cause 5, Contact the UHL Anticoagulation INReach Service for further advice if required.
NB: Take care in reversing anticoagulation in patients with prosthetic valves	

Completed By (BLOCK CAPITALS):	Signature:	Date:

UHL_warfarin-chart_V1_01.2019

Date	INR	Dalteparin? Y/N **URGENT REVIEW** if INR within or > range	Warfarin dose	Signature	Print Name	Time Given	Administered by

Appendix 16 New to Warfarin Checklist

University Hospitals of Leicester NHS
NHS Trust

Checklist for New Patients taking warfarin

Patient details

Hospital	
Ward	
Date	
Diagnosis	
Anticoagulant	
Range	
Duration	

Please state yes or no for each point once patient has been informed of the following:

For All Patients:	Y or N
1. Clinical need for anticoagulation therapy	
2. How Heparin works (if applicable)	
3. How Warfarin works / Drug Interaction and the need to inform anticoag clinic if medications change and to seek advice if planning to buy over the counter medications	
4. How/When to take and What to do if a dose is accidentally missed	
5. Need for Regular INR monitoring (Using a Calendar for dose adjustments and appointments)	
6. Obtaining supply of medication from: Hospital initially: Repeat prescriptions from GP	
7. Visiting other healthcare professional e.g. dentists	
8. Aware of possible side effect e.g. bruising & bleeding and what to do	
Things that can affect the control of anticoagulation:	
9. Advise on alcohol consumption Need for moderation (no more than 2 units/day) Not to "binge" - and the effect of alcohol combined with warfarin.	
10. Dietary advice given, especially regarding avoidance of crash diets	
11. Lifestyle issues discussed - smoking, exercise, weight control and work	
12. For women only, contraception, periods, pregnancy and HRT	
13. Ensure medics are aware of the need to complete the adult anticoagulation discharge letter	
To be given to patient :	
1. Oral anticoagulation "patient information booklet" and anticoagulation alert card	
2. Completed yellow warfarin dosing book	
Notes for Doctors:	

Name of Person Completing form……..

Signature…….Date……

Appendix 17 Continuing Warfarin Checklist

University Hospitals of Leicester NHS
NHS Trust

Checklist for Patients Continuing with Warfarin

Patient details

Hospital	
Ward	
Date	
Diagnosis	
Anticoagulant	
Range	
Duration	
Usual Dose at home	

Please state yes or no for each point once patient has been informed of the following:

For all Patients:	Y or N
1. Does the patient have a yellow book and anticoagulation alert card?	
Confirm patient understands the following:	
1. The need for regular dosing and monitoring	
2. Awareness of drug and food interactions	
3. Awareness of the side effects and what to do should they have a problem	
On Discharge:	
1. Complete yellow book including doses of warfarin for at least 4 working days	
2. Check that anticoagulation discharge letter has been completed by medics	
3. Provide contact numbers for patients local anticoagulation service. E.g. GP surgery	
4. Ensure that patient has been offered an anticoagulation "patient information booklet"	
Notes for Doctors:	

Name of Person Completing form……..

Signature…….Date……

Appendix 18 New to DOAC Checklist

University Hospitals of Leicester NHS
NHS Trust

Checklist for New Patients Taking Direct Oral Anticoagulants

Patient details

Date	
Diagnosis	
Anticoagulant	
Dose	
Latest Creatinine	
Age and Weight	
Creatinine Clearance	

Please state yes or no for each point once patient has been informed of the following:

FOR ALL PATIENTS:	Y or N
1. Clinical need for anticoagulation therapy	
2. How the DOAC works?	
3. How Heparin works (if applicable)	
4. Need for yearly Kidney function monitoring 6 monthly	
5. Using a calendar to remember dose / appointments	
6. Obtaining supply of medication from: Hospital initially Repeat prescriptions from GP	
7. Discuss current drug therapy and need to inform clinic/GP of change in medication	
8. Discuss over the counter medication and herbal remedies	
9. To ask their local pharmacist for advice on medications and possible interactions	
10. Advise on alcohol consumption Need for moderation (no more than 2 units/day) Not to "binge"	
11. Aware of possible side effects of therapy, e.g. bleeding, bruising	
12. For women only, contraception, periods, pregnancy and HRT	
13. Dietary advice given, especially regarding avoidance of crash diets	
14. Orange information Booklet given with alert card.	
15. Lifestyle issues discussed - smoking, exercise, weight control and work	
16. Contact numbers given	

Name of Person Completing form……..

Signature……Date……