Warfarin self-monitoring: an option for the patient on long-term anticoagulation. Patient training process and outcomes

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Let’s turn our attention to the 1940’s, the time when Warfarin was discovered.

On 5 July 1948, Sylvia Beckingham 13, was the first patient to be treated on the NHS.
An Archaic, Persistent and Enduring Anticoagulant!

- Problems with Warfarin
  - Has narrow range/requires frequent INR tests to ↓ bleeds
  - Potential interactions with alcohol, drugs, diet
  - DOACs for newly diagnosed AF, Apixaban was found to be the safest drug; 34% decrease in major bleed risk

Why still use Warfarin?
- Only licenced drug to manage mechanical heart valve
- Used in the manage of thrombophilia
- Choice of anticoagulant in congenital heart disease
- Inexpensive 28 tablets Warfarin 3mg £0.62
  vs Apixaban 5mg £26.60.

*Risks and benefits of direct oral anticoagulants versus warfarin in a real world setting: cohort study in primary care BMJ 2018;362*
Why consider self-management?

Our starting point........

Self-managed anticoagulation: results from a two-year prospective randomized trial with heart valve patients.


Self-monitoring can improve the quality of patient oral anticoagulation therapy when compared to standard monitoring.

In conclusion, self-monitoring or self-management can improve the quality of oral anticoagulant therapy, leading to fewer thromboembolic events and lower mortality, without a reduction in the number of major bleeds. Self-monitoring and self-management are not feasible for all patients, which requires the identification and education of suitable patients.

Nice Guidelines…

‘Self-monitoring of coagulation status in adults and children on long-term warfarin therapy who have atrial fibrillation or heart valve disease is recommended as an option if the person prefers this form of testing and the person or their carer is both physically and cognitively able to self-monitor effectively’.

NICE DG14.
History of patient POC INR meters in BHSCT

Pre 2000

‘S’ meter 2000-2006

‘XS’ meter 2006-2017

INRange meter 2017
improved features including on-board stats for assessment of INR; TTR/mean INR
Initial Contact

- Expression of interest from patient, cardiologist, GP, haematologist, practice nurse, pharmacist, or carer.
- Information letter +/- telephone call to the patient outlining training process, cost to patient (£299) and primary care & need to discuss with their GP – agreement required.
- GP agreement form must be received before training can be arranged.
GP agreement necessary to confirm:

- Agree that the patient attends training.
- Happy to prescribe Coaguchek® test strips and Accu-Chek (softclix) lancets.
- Happy to take over the patient’s supervision of Warfarin management once training is completed, usually after the patient has been using the meter for at least 12 weeks.
Training: one 4 hour session

- Anticoagulant therapy and its action
- The benefits of accurate monitoring and the therapeutic range
- The effects of alcohol, medications, diet, infection/illness
- Instruction, maintenance and quality control of the Coaguchek® meter (meter provided to practice on)
- 6 practice INRs at each session, final one unsupervised
- Manipulating the dose of warfarin using algorithm
- Record keeping
- Test-score at least 7 or more in a 10 question
  
  e.g. What action does Vitamin K have on your blood?
  
  Name a drug that may increase the effect of warfarin.
  
  How long does it take before a dose of warfarin has its full effect?
**TABLE FOR ALTERING YOUR WARFARIN DOSE**

DESIRED THERAPEUTIC RANGE = 2.5-3.5

<table>
<thead>
<tr>
<th>INR</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LESS THAN 1.5</td>
<td>Call Health Care Professional</td>
</tr>
<tr>
<td>BETWEEN 1.5 - 2.4</td>
<td><strong>Increase</strong> Warfarin Dose *, Retest In One Week</td>
</tr>
<tr>
<td>BETWEEN 2.5 - 3.5</td>
<td><strong>Stay On Same Dose, Retest In One Week</strong></td>
</tr>
<tr>
<td>BETWEEN 3.6 - 4.0</td>
<td><strong>Decrease</strong> Warfarin Dose *, Retest In One Week</td>
</tr>
<tr>
<td>GREATER THAN 4</td>
<td>Call Health Care Professional</td>
</tr>
</tbody>
</table>

*Changing your Warfarin dose.
Warfarin Dose may be changed by a total of 1mg or 2 mg **per week** a total of 3mg or 4 mg **per week** (the change in the weekly total of Warfarin will depend on how much Warfarin you take per week and how far you are out of your therapeutic range.)
I, the above named patient, have undergone training and supervised practice of the Coaguchek XS Device. I have had opportunities to ask questions and I am fully aware of the procedures, expectations and responsibilities in self-managing my warfarin therapy.

I may be withdrawn from the self-management programme if;

1. I fail to follow the guidelines of the training programme which include:

   - Weekly INR testing unless otherwise advised by a health care professional.
   - Using the provided table to guide you on when and how to alter your Warfarin dose.
   - Recording all INR results and Warfarin doses in the record book.
   - Attending review appointments to enable supervision and assessment of Warfarin management and to allow the performance of a quality control test on the Coaguchek meter.

2. deemed in my best interest due to unstable INR results.
Initial support & assessment

- Once patient begins using meter:
- Liaise weekly for **4-6 weeks** to report INR results and proposed dosage.
- First review **week 4-6**.
  
  Check sampling procedure, INR results, record keeping, answer any queries. Then go ‘solo’.

- Final review usually **week 16** to assess practice again before discharging patient to you and your team.
- Telephone support available Mon- Fri throughout.

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Assessment

- Visual: record book, meter memory/stats
- Download results to view trend
Discharge Plan

- Agreed at 2nd review.
- Letter to GP indicating D/C & recommended review procedure outlined;

1. QC: Coaguchek XS INR result is compared to an INR analysed by hospital laboratory or unit/practice Coaguchek XS meter. Results must agree within +/- 0.5 as per British Haematology Society (The meter does not need to be calibrated).
2. Review of sampling technique, record keeping and dosing.
3. An overall assessment of management is discussed.
4. Named contact person(s) and details arranged with patient (usually the nurse).
Self-management may not solve patient non-compliance or dangerous behaviour.
Case study: Mechanical Mitral Valve, INR range 3.0-4.0

- Referred due to poor venous access.
- Husband supportive/takes lead in care
- At review two INR > 7.0
  five INRs > 5.0
- TTR 17%
  Issues
  - Infrequent testing, illogical dosing/incorrect use of algorithm,
  - Excess and inconsistent alcohol use
  Outcome
  Self-management deemed unsafe, referred back to INR clinic
Case study: Mechanical Aortic Valve, INR range 3.0-4.0

26 Jan 2019 — 25 Apr 2019

- Above target range: 43.8%
- Within target range: 12.4%
- Below target range: 43.8%
Case study: Mechanical Aortic Valve, INR range 2.5-3.5

Problem – confidence/too frequent testing Lorna

![Graph showing INR levels from December 2018 to May 2019. The graph indicates the percentage of test results that fell within or outside the target range.]

- Above target range: 13.6% (17)
- Within target range: 75.2% (94)
- Below target range: 11.2% (14)
Case study: Mechanical Aortic Valve, INR range 2.0-2.5

Excellent record keeping
INR very stable
Patient Characteristics

- **Pie Chart:**
  - 31% MALE
  - 69% FEMALE

- **Bar Chart:**
  - **Patient location**
  - Numbers trained in each Board/Trust Area
  - **Board/Trust Areas:**
    - N: 15
    - S: 8
    - E: 25
    - W: 4
Time in Therapeutic Range for patients with AF

N = 44
TTR Range  36-100%
Mean TTR 80.1%

Percentage TTR in last 6 months

- < 1 Yr: 99.5%
- 1-2 Yrs: 74.5%
- 2 - 5 Yrs: 86.8%
- 5 - 10 Yrs: 80.7%
- 10 - 16 Yrs: 76.7%
What the patient says...

- “I have been getting Warfarin test from 1/1/1985 (30+yrs) and I wish I had this long ago. It is great not to have to depend on other people all the time”.

- “I have learned the importance of careful and precise monitoring, the need to make dosage changes timely and correctly and the need to anticipate changes, when there is a need to monitor more often and also when it is crucial to contact a professional for advice”.

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When might you consider self-management training for your patient?

- Frequent missed appts at INR clinic
- Frequently away from home
- In employment or education
- Unable to travel to clinics
- Lower than expected TTR and DOAC not an option.
- Poor venous access
- To reduce in consultations at clinic
- To reduce patient anxiety
- To facilitate a sense of control for the patient
Barriers to patients self-management

- Cost of the meter - £299
- Cost of test strips Box 24 - £69.90
- No GP support
- Non-compliance
- Drug/alcohol misuse
Thank you for listening

Any Questions?