

Position statement: Anti-coagulants and Risk Assessment

Document information

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1. BACKGROUND AND AIM

- 1.1 This paper has been developed following concerns raised by the Police Federation of England and Wales over officers who have been removed from operational duties following being prescribed warfarin on the basis that the enhanced risk of bleeding placed the individual in question at an unacceptable risk. There was concern that management practices varied significantly across the country.
- 1.2 Following the initial circulation of this paper, the Police Medical Appeal Board have adjudicated on an appeal relating to the use of anticoagulants. The advice and position of this document has therefore been amended to reflect this.
- 1.3 Through subsequent engagement with occupational health and safety professionals and staff association representatives it is clear that this is a significantly complex issue and it is not possible to provide a definitive position and rigid criteria as to how officers and staff on such medication should be deployed. This is primarily for the following reasons:
 - The significant number of anticoagulant drugs, their impacts and the broad range of medical conditions in which they are used.
 - The broad range of roles officers and staff will perform.
 - An inherent variation in the level of risk appetite that exists in clinical experts
- 1.4 Ultimately the decision as to whether to limit the deployment of officers and staff as a result of such medication remains at the discretion of the individual chief officer but it is hoped that the information below will assist managers to make informed decisions and reassure officers and staff of the associated risks.
- 1.5 Due to the high prevalence of the use of anticoagulants, such as warfarin, it is already likely that all forces have officers and staff serving who are already using such medication. Many of whom may not have declared this to their employer and may be indifferent to the perceived risks.

2. ANTI-COAGULANTS

- 2.1 Anticoagulants are a class of drugs that work to moderate the coagulation (clotting) of blood. Warfarin is the main oral anticoagulant prescribed in the United Kingdom and is used in the treatment of various medical conditions such as deep vein thrombosis and pulmonary embolisms.
- 2.2 It should be noted that there are a number of anticoagulant drugs and that novel oral anticoagulants (NOACs) and the pharmaceutical use of existing anticoagulants, is developing all the time. NOACs do not require monitoring of their dosage (e.g. rivaroxaban) and are likely to be seen much more. Furthermore there are also a number of commonly prescribed drugs, not specifically associated and used as anticoagulants,



such as aspirin, which will also have a similar, if reduced, effect.

- 2.3 The effect of warfarin is demonstrated by its influence on the International Normalised Ratio (INR), which is a measure of the coagulation pathway. In a healthy individual whom is not on any medication this would normally be 1.0. When it is administered the effect of the drug will be measurable by an increase in this number. In contrast to warfarin NOACs do not have a significant inter and inpatient variability in dose response and don't have the requirement for regular laboratory monitoring of the dose effect.
- 2.4 As with many drugs there is the potential for side effects and negative interactions with other medication. For the purpose of this paper the position statement is looking specifically at the risk associated with inhibited clotting of blood.

3. THE POSITION OF POLICE MEDICAL APPEAL BOARDS (PMAB)

- 3.1 While recognising the need for comprehensive risk assessments, the position of the PMAB board in a recent hearing was that for officers taking warfarin there is an absolute risk of intracranial hemorrhage (ICH), and ICH can follow a minor head injury regardless of INR. On this basis, the board took the position that a police officer taking warfarin anticoagulation is not fit to perform the normal duties of a police officer due to the risk of incurring an ICH during arrest and restraint.
- 3.2 In light of this decision, forces should be aware that officers seeking ill health retirement, who are required to take warfarin indefinitely as part of their treatment, are more likely to be successful in an appeal regardless of the underlying medical condition.
- 3.3 Where officers taking warfarin are identified, efforts should be made to articulate the specific risk to them and ascertain their own perspective of appetite for that risk.

4. RESEARCH

- 4.1 At the time of writing a great deal of academic research has been conducted on the impact of anticoagulants. However, no research that we are aware of has been conducted to inform the risk such drugs pose to operational deployment. A review of material to inform a similar position statement for colleagues in the fire service made the following observations:



- It is recognised that there is a significant¹ increase in the risk of deep and superficial bruising with associated morbidity although there does not appear to be an increase in risk of fatal bleeding following trauma without head injury².
- There is a small but devastating risk of brain haemorrhage following head trauma. A review of 3,436 patients admitted with trauma found that those with intracranial haemorrhage (a hemorrhage, or bleeding, within the skull) on warfarin were 3.1 times more likely to die and had an increased risk of intracranial haemorrhage compared to those on aspirin and clopidogrel of RR (relative risk ratio) 1.6 and an overall increased risk of intracranial haemorrhage of 49.8%³.
- A study, steering the position of the PMAB, identified that 15.9% of patients on anti-coagulation had intracranial bleeding after minor and minimal head trauma and found no significant differences in INR⁴.
- The risk of mortality in intracranial haemorrhage with oral anticoagulant therapy is in excess of 50%, with the risk increased with elevated systolic blood pressure and previous cerebral ischaemia (a condition involving insufficient blood flow to the brain)⁵ although this compares with an overall mortality risk for those not on oral anticoagulants of around 40%.
- A study of all anticoagulated patients admitted to trauma centres in Pennsylvania from 1995-2000 found no clinically significant difference in functional status at discharge between those on warfarin and controls in both head and non-head injured groups, suggesting that anticoagulation with warfarin does not adversely affect mortality or length of stay in patients with head or other injuries⁶.
- Anticoagulant-associated intracerebral haemorrhage accounts for nearly 20% of all intracranial haemorrhage, and among patients using warfarin for atrial fibrillation the annual risk of intracranial haemorrhage is 0.3-1%. This includes other factors such as hypertension and age, and the percentage arising from trauma was not noted⁷. A Cochrane review comparing antiplatelet therapy to anticoagulation for non-valvular atrial fibrillation (abnormal heart rhythm characterized by rapid and

¹ In this respect the use of the word significant reflects a statistical significance of the research and not to explain the degree of injury.

² Mina AA et al. Complications of preinjury warfarin use in the trauma patient. *J Trauma*. 2003 May;54(5):842-7

³ Bonville DJ et al. Impact of preinjury warfarin and antiplatelet agents on outcomes of trauma patients. *Surgery*. 2011;150(4):861-8.

⁴ Intracranial Bleeds after Minor and Minimal Head Injury In Patients on Warfarin, published in the journal of *Emergency Medicine* in 2015

⁵ Cavallini A et al. Warfarin-associated cerebral hemorrhage. *Neurol Sci*. 2008;29(Suppl 2):S266-8.

⁶ Wojcik R et al. Preinjury warfarin does not impact outcome in trauma patients. *J Trauma*. 2001;51(6):1147-52.

⁷ Flaherty ML. Anticoagulant-associated intracerebral haemorrhage. *Semin Neurol*. 2010;30(5):565-72.



irregular beating) concluded that intracranial haemorrhages were increased (OR 1.98, 95% CI 1.20-3.28)⁸. With regard to other anticoagulants (NOACs), the risk of major bleeding with rivaroxaban and with enoxaparin appears to be dose dependent and when used for the prophylaxis of deep vein thrombosis the spontaneous rate of major bleeding is <1%, and 1% at the higher dose used to treat DVT. There is a paucity of evidence for the incidence of traumatic complications as yet.

- **Overall there is sufficient evidence to suggest that mortality is significantly increased in head-injured patients on warfarin, and this risk is directly related to INR level.**

4.2 In a similar exercise, following clinical opinion being sought for a policing context, the literature review conducted to inform decisions on risk the advice was primarily based on a large American study included all the patients admitted to 402 trauma centres from 2002 to 2007.⁹ Observations were as follows:

4.3 Of the more than 1,400,000 patients that were entered (had sustained significant trauma), 36,270 were on warfarin. These were then compared with patients with other similar characteristics (i.e. age, gender, type and severity of injury etc.) and the groups compared statistically. In this study once all these factors had been taken into account a number of conclusions could be come to:

- Younger patients with a severe head injury have a 50% increase in mortality.
- In all trauma in all patients the odds ratio for death for those taking warfarin was 1.72 (95% confidence interval 1.63 – 1.81*).

*95% certainty that the true value lies between 1.63 and 1.81.

4.4 The big failing of this study is that it did not separate out risk from general trauma to the younger (<65) age group or take the INR into account. There is evidence that with those patients with an INR of <4 (typically patients treated for a deep vein thrombosis

⁸ Aquilar M, Hart R, Pearce LA. Oral anticoagulants versus antiplatelet therapy for preventing stroke in patients with non-valvular atrial fibrillation and no history of stroke or transient ischemic attacks. Cochrane Database Syst Rev. 2007;18(3):CD006186.

⁹ [Prevalence and implications of preinjury warfarin use: an analysis of the National Trauma Databank](#)
Dossett, Lesly A; Riesel, Johanna N; Griffin, Marie R; Cotton, Bryan A; NLM. Archives of surgery (Chicago, Ill. : 1960) 146. 5: 565-70. (May 2011)



aim to keep their INR at around 2.5) do not have an increased risk from head injury.¹⁰ These studies are uncommon however. Over an INR of 4 the risk increased ten-fold.

- 4.5 Other studies (ROCKET-AF trial , ARISTOTLE trial, phase III ENGAGE AF-TIMI 48 trial) demonstrate that novel oral anticoagulants (NOACs) such as Dabigatran, Rivaroxaban, Apixabaran and Edoxaban are at least as effective as well-controlled vitamin K antagonist therapy (warfarin) and seem to have the advantage of better safety, particularly with regard to intracranial haemorrhage.

5. ASSESSMENT OF RISK

- 5.1 It should however be recognised that, as with any operational risk assessment, the risk outlined above must be balanced with the likelihood of the situation occurring, the effect of PPE, and care must be taken to avoid a paternalistic approach unless the significance of the risk outweighs this.¹¹ As stated above, the use of commonly prescribed over the counter drugs such as aspirin also carry a reduced risk and it would be disproportional and intrusive to seek to risk assess all officers taking such medication.
- 5.2 From the fire service position statement the findings advised any decision on fitness for operational firefighting should take into account the likely risk of head injury in a role where it is standard procedure to wear protective helmets. Clearly the operational environment faced by a fire fighter and that faced by a police officer is not comparable.
- 5.3 In conclusion, the medical practitioner steer for the risk assessment relating to police officers is there probably is an increase in mortality for those taking warfarin pre-trauma and there is some evidence that on an INR between 1 and 4 that effect is much less important. Overall, it does seem clear that head injury is more likely to lead to death for those taking warfarin.

6. CONCLUSION

- 6.1 As stated above, the prevalence of the use of such drugs makes it highly likely that all forces already have a number of serving officers and staff on this medication. It is advised that forces seek to establish whether officers and staff are currently using such medication but should remain open to any disclosure an individual may seek to make and, foster a culture where officers and staff are comfortable to be open about medical conditions.

¹⁰ Hylek EM, Singer DE. Risk factors for intracranial haemorrhage in outpatients taking warfarin. *Ann Intern Med* 1994 Jun1;120(11):897-902.

¹¹ *Coxall v Goodyear* [2002] EWCA Civ 1010; [2002] TLR 335 CA.



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- 6.2 It is also advisable that those on anticoagulants inform their line manager in order to ensure that this is captured in subsequent risk assessments. It is also important that, if placed on such medication, officers and staff seek guidance from their specialist to understand the effects of their medication and the impact this will have on the INR and therefore bleeding risk.
- 6.3 Management are advised to encourage individuals on anticoagulants to inform their colleagues of their medication in the event of an incident where they may require first aid and note that the need is to understand the impact of the medication, not necessarily the underlying medical condition, which officers and staff are under no obligation to divulge.
- 6.4 Ultimately, it is recognised that subsequent deployment is an issue of risk appetite not only of the organisation but also of the officer in question and potentially that of the medical practitioners such as the FMA.
- 6.5 In light of the above, risk assessments conducted to inform management's decisions whether to deploy officers should focus on the risks of head trauma, and take into consideration the wishes of the individual officer.

