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## Coagulation and Fibrinolysis

## Switching warfarin patients to a direct oral anticoagulant during the Coronavirus Disease-19 pandemic

The Coronavirus Disease-19 (COVID-19) pandemic provided a particular challenge for those providing anticoagulation monitoring for vitamin K antagonist (VKA) therapy. When the UK government announced a lockdown period on the 20th March 2020, a number of factors came together, which made VKA monitoring difficult. These included (i) patients reluctance to leave their homes for INR testing, (ii) certain food supplies in supermarkets being out of stock, meaning that patients regular diets were disrupted, (iii) patients becoming unwell, with and without the virus, meaning that a proportion were prescribed antibiotics in the community, potentially impacting on their VKA control, and (iv) a rise in demand for district nursing services, meaning that testing was delayed for many patients [1,2]. Across King's College Hospital Foundation NHS Trust (KCH), which comprises two hospital sites, a 900 bedded tertiary centre in inner-city South East London (Denmark Hill, DH) and a 500 bedded site in Bromley (Princess Royal University Hospital, PRUH), there were 3800 patients on VKA therapy.

In response to this challenge, NHS England [3] published guidance which provided a blueprint for a pragmatic approach to switching suitable VKA therapy patients to a direct oral anticoagulant (DOAC). With the announcement of lockdown, all the face-to-face clinics in our anticoagulation services, apart from our DVT outpatient services at both sites, were converted to telephone clinics. We describe our experience, and that of our patients, of switching from VKA to DOAC during the pandemic, as well as the lessons learnt during this time [9,10].

Our approach to switching during the pandemic is summarised in Fig. 1.

Over the initial 8 week period, 186 patients were switched from VKA to a DOAC virtually, of which 133 (71.5%) were surveyed for their feedback at one month (74 at the PRUH and 59 at DH). This cohort of patients had a mean age 79 (sd 1.88) years and a mean time in therapeutic range (TTR) of 66%. The majority of patients (n = 108, 81%) were prescribed anticoagulation for non-valvular atrial fibrillation, 20 patients (15%) for the secondary prevention of VTE and 5 patients (4%) had another indication for anticoagulation. Edoxaban was the most frequently prescribed DOAC (n = 85, 65%), followed by apixaban (n = 38, 29%) and rivaroxaban (n = 10, 7%). Side effects to DOACs were reported by 12.7% (17/133) of patients, with dizziness, itching and headaches most commonly reported (Table 1). At 1 month follow up, 96% of patients continued on their initially prescribed DOAC as side effects were minor/tolerable, with 90% of patients reporting they were very satisfied/satisfied with their DOAC. Four patients (3%) switched back to warfarin and 1 patient (0.8%) switched to an alternative DOAC due to side effects.

Patients were asked how long warfarin was stopped prior to starting the DOAC and the majority of patients were able to confirm they completed the switch from VKA to DOAC following the advice provided

by the clinician (92%). However there were some patients who did not fully follow instructions provided to them, e.g. 11 patients stopped warfarin for  $\geq 4$  days, before starting the DOAC.

From our experience, it's clear that some patients may benefit from further information to reinforce advice provided during the telephone consultation regarding logistics of stopping the VKA and starting the DOAC. This could include providing a written summary of the advice given with the medication or a follow up call once the medication had been received.

Most patients rated the quality of their consultation over the phone as excellent/very good (80%) and just over half (52%) expressed a preference for virtual consultations versus face-to-face, mainly due to the convenience this offered and reluctance to attend a hospital setting during the pandemic. 15 patients (12%) did state they would have preferred a face-to-face consultation and the remainder (35%) did not have a preference for either. Recent correspondence in the British Medical Journal [5,6] from primary care clinicians demonstrate that although telephone consultations have a role in service delivery, a wholesale change is not appropriate for all, particularly those on the wrong side of the digital divide.

Long-term adherence to DOAC therapy has been reported to be sub-optimal; with a reported 65.9% adherence at one year [7]. Patients' adherence beliefs are affected by numerous factors, which in part may be influenced by the clinician-patient interaction. Outside of a pandemic setting, our own group have reported on short term changes in beliefs (medication: overuse, harm, necessity and concerns) and quality of life in 142 poorly controlled patients, switched from warfarin to a DOAC [8]. Our results demonstrate that patients experience significant early changes in beliefs and quality of life following a switch from warfarin to a DOAC, representing a shift towards belief patterns predictive of improved adherence. It is important to establish if these improvements are also seen when the switch process occurs through the telephone and what long term adherence rates are.

As most patients (>90%) remain on a DOAC, we regard this switching initiative during the pandemic a success, overall. We hope by sharing our experiences, this will benefit other centres, given the potential for further surges of the pandemic and the resulting difficulties in monitoring INRs. The virtual switching process is one example of how the pandemic experience has accelerated the use of remote consultations within our Trust. It is clear that remote consultations have a role in the anticoagulation clinic and wider healthcare, however there is still a role for face-to-face consultations. How best to use remote consultations in standard clinical care and what support might be required for patients further down the line, to ensure early benefits are maintained, requires some attention. Further research is required to assess how retention of information compares to face-to-face consultations and which patients

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**Fig. 1.** Warfarin to DOAC virtual switching process.

**Table 1**

Side effects, as reported by patients at 1 month, including bleeding.

Side effect	n=	Outcome		
		Total (17)	Continued DOAC	Switched back to warfarin
Dizziness	2	2		
Itching	2	1	1	
Headaches	2	2		
Tiredness	2	2		
Intermittent ankle oedema	1	1		
Aching joints	1		1	
Rash	1	1		
Hypotension	1			1
Epistaxis	1		1	
PR bleeding	1	1		
Haematuria	1		1	
Self-resolving epistaxis	1	1		
haemorrhoid related PR bleed	1	1		

are more likely to benefit from the virtual offering. Whilst most of our patients were positive about the virtual model, it is uncertain, without the backdrop of a pandemic, this would still be the case. Our experience from the first COVID-19 wave suggests that telephone switching of warfarin patients to a DOAC is safe and most patients find such an initiative favourable.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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