

# Warfarin management in patients on continuous anticoagulation therapy undergoing total knee replacement

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## INTRODUCTION

In Australia, 40 675 TKRs were performed in 2009 the majority of which were in patients over 60 years of age. In the population requiring TKR there is likely to be a proportional increase in patients with medical comorbidities requiring long-term warfarin therapy.

The three most common indications for oral anti-coagulation are atrial fibrillation, mechanical heart valves and venous thromboembolism (VTE).

The management of peri-operative anticoagulation therapy for patients receiving long term warfarin who are at high risk of thromboembolism remains controversial. The risk of bleeding needs to be balanced against the risk of thromboembolism.

Current guidelines recommend discontinuation of warfarin pre-operatively, with a bridging regimen using low-molecular-weight heparin in the peri-operative phase while the INR (international normalised ratio) normalises. In this study we investigated whether it is safe to continue established long-term warfarin therapy during TKR.

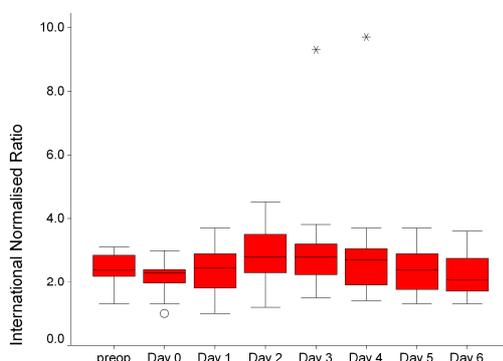
## METHODS

We retrospectively identified 24 consecutive patients receiving long-term warfarin therapy who required TKR between 2006 and 2008 (warfarin-continued group) under the care of the senior author (LP). As a control, we collected the same data from a group of age- and gender-matched patients not on long-term warfarin therapy undergoing routine TKR (control group).

## RESULTS

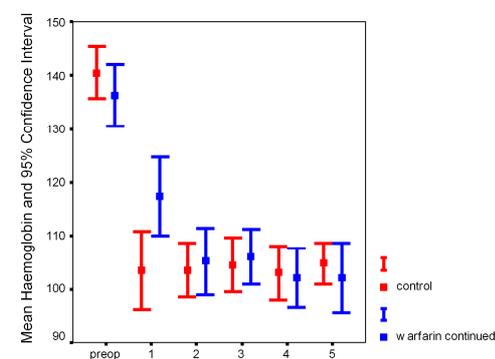
### INR for Warfarin Group

The mean INR was 2.2 (1.0 to 3.0) preoperatively and 2.6 (1.5 to 5.0) post-operatively. There were no surgical delays caused by a high INR level. The mean change in INR during the peri-operative phase was minimal (Fig. 1).



**Transfusion.** There was no significant difference between the groups with the rates of blood transfusion.

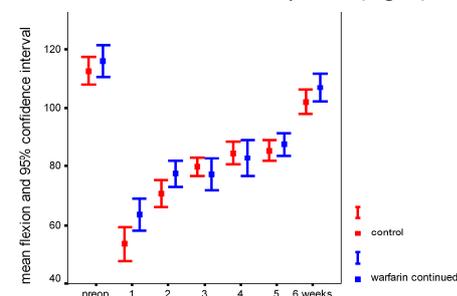
**Haemoglobin.** The pre- and post-operative haemoglobin levels in both groups are shown in Figure 3.



**Complications.** There was no significant difference between the groups in the rate complications (Table IV).

Complications	Warfarin continued group	Control group
Bleeding		
Delayed wound healing	1	0
Gastric ulcer haemorrhage	0	1
Embolism		
Deep-venous thrombosis	1	2
Pulmonary emboli	0	2
Transient ischaemic attack	1	0
Other		
Interruption of anticoag. therapy	1	0
Paralytic ileus	1	0
Superficial wound infection	0	1
Total	5	6

**Range of movement.** There was a significant difference in the mean range of flexion between the groups at days one and two ( $p = 0.01$  and  $0.03$ , respectively), but no differences at other review points (Fig. 4).



## CONCLUSION

This study has shown that maintaining warfarin therapy in patients undergoing TKR is safe and effective, with a stable therapeutic window of anticoagulation being achievable.