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Project title
Patient-centered Approach to Improve Education Strategy with Warfarin Therapy: Learning from Patients' Experiences

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Introduction
The use of warfarin for stroke prevention in patients with atrial fibrillation (AF) is recommended but underutilised due to difficult management with warfarin therapy as required to achieve an blood test result with targeted international normalised ratio (INR). The quality of warfarin anticoagulation control is most commonly evaluated by calculating the time in therapeutic range (TTR) using the linear interpolation method of Rosendaal et al. However, the quality of anticoagulation has been poor in Chinese patients, as many common food in Chinese diet contain herbal ingredients which may potentially interact with warfarin. There is a need to improve the efficacy and safety of warfarin anticoagulation.

Objectives
To adopt a mixed-method approach to provide objective evidence on Chinese patients' knowledge and learning experience of warfarin therapy.

Methodology
A mixed-method design was adopted to collect quantitative and qualitative data. The research design includes a phase one quantitative study of a multi-centre, descriptive correlational cross-sectional design including: (1) survey; and (2) chart review and phase two qualitative study with interviews. The survey adopted the Oral Anticoagulation Knowledge (OAK) test developed by Zoella (2006), a 20-item multiple choice validated tool to measure patients' knowledge regarding warfarin. There is a list of 40 common dietary and drug items to test patients' understanding on warfarin-diet interactions. Chart review to collect patients INR of the past one year to compute for the TTR as the outcome.

Result
A total of 292 participants with mean age 61.05 +/- 10.41; women, 56.2%. The mean OAK score was 59.55% +/-19.84%. Significant association was noted between the OAK score and the factors such as patient's age, education level, and the food score (warfarin-diet interaction knowledge), the concern score and the confidence index ($p<0.001$). However, the knowledge score seems to have no association with the INR control (TTR) ($p=0.376$). The mean score of TTR is 57.14% +/- 29.11% from our sample, was higher than the result from a recent study conducted for Chinese patients in Hong Kong (Ho, 2015). From the models of multiple linear regression of the TTR, no significance between variables: gender, education, age, the warfarin knowledge (OAK score), concerns regarding warfarin (concern score), confidence level with warfarin therapy (confidence index) with the INR control. Only the duration of warfarin use was significantly associated with the TTR% (INR control) ($p<0.001$). The TTR of those taking warfarin for one to five years is 33.0 percentage point (95% CI: 0.191, 0.469), higher than those less than one year. We have conducted the

qualitative study with purposive sampling of participants who had good TTR or special patients. We have identified themes on learning of warfarin: learning is a process, and the journey of coming to terms with warfrain therapy. The clinical implication included: (1) the most at risk group for warfarin therapy were old age, less educated, and newly started on warfarin; (2) patients learnt from their own experience and the sharing from others; and (3) patients identify their need for service such as more accessible INR testing sites, online database about updated warfarin information and consultation services.