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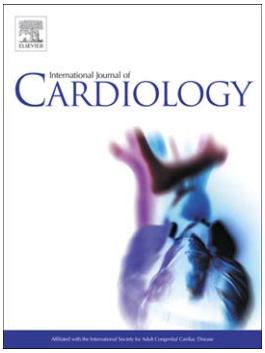

Point-of-Care INR Compared to Laboratory INR in Patients Supported with a Continuous Flow Left Ventricular Assist Device

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Title

Point-of-Care INR Compared to Laboratory INR in Patients Supported with a Continuous Flow Left Ventricular Assist Device

Running Head

Point-of-Care INR in CF-LVAD

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Main Text

Continuous-flow left ventricular assist devices (CF-LVAD) are utilised in patients with end-stage heart failure (ESHF) as a bridge to cardiac transplantation or in some countries, as destination therapy (1). Thrombotic and bleeding events are the most frequent and serious complications in patients with CF-LVAD (2). As such, warfarinisation and a daily reported international normalised ratio (INR) value between 2.0 and 3.0 is required to reduce the thrombotic risk (3). The CoaguChek® XS (Roche Diagnostics, Indiana, North America) has been approved for use as a form of anticoagulation monitoring. However there is limited data in its use for monitoring anticoagulation in patients with a CF-LVAD (4).

We analysed 230 INR values, as measured by CoaguChek® XS and the laboratory (Stago's STA-R Evolution, Leicester, United Kingdom), from 15 patients with CF-LVAD for ESHF as a bridge to transplant at The Prince Charles Hospital (Brisbane, Australia) between December 2013 and August 2015. Blood samples for each of the testing methods were taken on the same day and within a 4-hour window of each other.

Mean age of 40±14 years. 10 (67%) were male and target INR was 2-3 for all patients. 4 (27%) were on amiodarone, mean creatinine was 89±53 umol/L, mean haematocrit 0.32 (+/- 0.05) and no patients had hepatic synthetic or thyroid dysfunction. There was a moderate correlation between laboratory and CoaguChek® XS INR values with a correlation coefficient of 0.86 ($r^2=0.75$, $p<0.001$) shown in Figure 1. Mean INR was significantly different between the laboratory and CoaguChek® XS groups (2.55 vs 2.70, mean difference 0.14; 95% CI: 0.04-0.26, $p<0.01$). Greater variability was seen with laboratory INR values higher than 3.0, with CoaguChek® XS producing higher values (Figure 2).

This study supports the use of point-of-care testing with CoaguChek® XS in patients with ESHF taking warfarin and who have a Heartware® CF-LVAD. However, CoaguChek® XS tended to overestimate the INR in this setting. We advocate point of care CoaguChek® XS use in patients who have demonstrated a stable INR within target values on serial laboratory measurements.

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Figure 1 Correlation between INR as measured by CoaguChek® XS and the laboratory

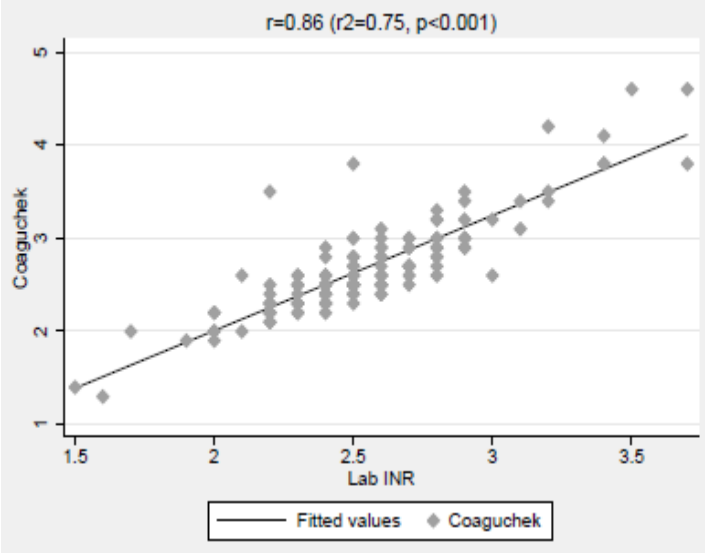

Figure 2 Bland-Altman plot comparing INR as measured by CoaguChek® XS and the laboratory