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**Prone and Supine 12 Lead Electrocardiography Comparisons: Utility of the Prone ECG for the Detection of Cardiac Conditions in Patients Requiring Prone Ventilation with COVID-19**

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**Background:** Unwell COVID-19 patients are at risk of cardiac complications. Prone ventilation is recommended but poses practical challenges to acquisition of a 12-lead ECG. The effects of prone positioning on the ECG remain unknown.

**Objectives:** To describe expected changes in a mirror image prone ECG compared with normal supine including a range of cardiac conditions.

**Methods:** 100 patients each underwent 3 ECGs—standard supine front (SF); prone position with praecordial leads attached to front (PF); and prone with praecordial leads attached to back in a mirror image to front (PB).

**Results:** Prone positioning was associated with QTc prolongation (PF 437+/-32ms vs SF 432+/-31ms, p<0.01; PB 436+/-34ms vs SF 432+/-31ms, p=0.02). In leads V1-3 on PB ECG, a qR morphology was present in 90% and T wave polarity change in 84%. In patients with anterior ischaemia, ST changes in V1-3 on supine ECG were no longer visible on



PB in 100% and replaced by a R wave in V1. Bundle branch block (BBB) remained detectable in 100% on PB, with left BBB appearing as right BBB on PB in 71% and QRS narrowing with qR in V1 for RBBB. ST/T wave changes in limb leads and arrhythmia detection were largely unaffected in PB.

**Conclusion:** As expected the prone back ECG is unreliable for the detection of anterior myocardial injury but remains useful for ST/T wave abnormalities in limb leads, BBB detection and rhythm monitoring. The prone ECG is a useful screening tool with diagnostic utility in COVID-19 patients who require prone ventilation.

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