Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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comprehensive national assessment of mortality statistics. Our ecologic study is not able to explain the reasons for the observed trends and is limited by the lack of individual-level data on death certificates regarding socioeconomic status (and other social determinants) as well as preexisting history of CVD. Although the incidence of SCD had steadily decreased since the 1950s, the possibility that previous gains may now be reversed is an urgent call to action, particularly in urban counties.

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TO THE EDITOR

A New Method for Supine 12-Leads Electrocardiogram

Chieng et al[1] should be congratulated for the pertinent article on the usefulness of prone electrocardiogram (ECG) in the evaluation of cardiac patients. After the outbreak of the COVID-19 pandemic in December 2019, numerous therapies have emerged for the treatment of acute distress respiratory syndrome (ADRS) associated with the infection. Prone ventilation has proven to significantly reduce mortality rates in patients with ADRS,[2] and has been increasingly used in this population.

ECG in the prone position is usually recorded transposing to the back the location of the precordial electrodes. Chieng et al[1] concluded that this anatomic mirror ECG can be "useful for ST-segment/T-wave abnormalities in limb leads, BBB detection, and rhythm monitoring" but "is unreliable for the detection of anterior myocardial injury" because the anatomic mirror leads obtained from the back are unpredictably different from the standard precordial leads recorded in the supine position.

Based on the classic concept of mirror-image ECG,[3] we have recently presented a different method to register ECGs in patients in the prone position.[4] According to the dipole theory, there is an antipodal area for each precordial point where an inverted ECG lead can be recorded. The position of these antipodal areas in the back goes up in a rough line from the left scapular line at the fifth intercostal level (mirror V_1) to the right anterior axillary fold at the second intercostal level (mirror V_6).

The mirror precordial leads obtained in this manner show low amplitude but are qualitatively similar (although inverted!) to the standard precordial leads.

We propose using mirror leads (M1-M6), which allows ST-segment change interpretation, as an alternative to recording the transposed posterior precordial leads (V_1p-V_6p) in the prone position, described by Chieng et al.[1]

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THE AUTHORS' REPLY

We thank Dr Diz-Díaz and colleagues for the letter reporting a novel method for recording electrocardiograms (ECGs) in patients nursed in a prone position for acute hypoxemic respiratory failure from COVID-19-related acute respiratory distress syndrome. As the COVID-19 pandemic rages on with a surge in hospitalizations following the arrival of the Omicron variant, a large-scale international meta-trial has confirmed the beneficial effects of prone positioning in improving oxygenation and reducing the need for intubation.[1,2]

We previously reported "Prone and Supine 12-Lead ECG Comparisons: Implications for Cardiac Assessment During Prone Ventilation for COVID-19" in the *Journal*. We described the diagnostic utility of the prone back ECG, with the precordial leads V_1-V_6 placed on the back of a prone-positioned patient in an exact mirror-image position to the precordium (V_1p-V_6p).[3] The prone back ECG was reliable for the detection of ST-segment/T-wave abnormalities in limb leads, and identification of bundle branch block and rhythm monitoring but was not useful for the detection of anterior myocardial injury. We congratulate Dr Diz-Díaz and colleagues for investigating the placement of these precordial leads on the corresponding antipodal locations on patients' backs to obtain a mirror-image ECG.[4] The positions of these leads (M1-M6) extend up diagonally from the left scapular line at the fifth intercostal space to the right anterior axillary fold at the second intercostal space. The recorded "mirror" 12-lead ECG showed lower amplitude with inverted QRS/T-wave morphologies in M1-M6 compared with the standard V_1-V_6 precordial leads.[4]

The proposed mirror lead (M1-M3) positions are unlikely to overcome the challenges in interpreting anterior wall motion abnormalities. We hypothesize that differences in the ST and T-wave between the supine and prone positions in leads V_1-V_3 are explained by the change in position of the ECG leads in relation to the wavefront vector for depolarization (ST-segment) and repolarization (T-wave). In addition, the heart is in a more ventral position in the prone position, coupled with increased muscle and bone between the heart and the prone ECG leads. We certainly look forward to seeing the outcomes of this novel prone ECG recording technique in a larger patient population with a range of cardiac pathologies, including anterior myocardial injury.

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