



## Cardiac Monitoring Outside the ICU During the COVID-19 Outbreak

### COVID-19 AND CARDIOVASCULAR CARE

Due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), COVID-19 has significant implications for the cardiovascular care of patients.

Those with COVID-19 and preexisting cardiovascular disease (CVD) have an increased risk of severe disease and mortality. COVID-19 is associated with multiple direct and indirect cardiovascular complications. Further, therapies under investigation for COVID-19 management may have cardiovascular side effects.<sup>1</sup>

The purpose of this document is to show how Hillrom diagnostic cardiology solutions can help support the cardiac assessment and monitoring needs of COVID-19 patients outside the ICU.



### ECG MONITORING TO IDENTIFY CARDIAC ABNORMALITIES IN COVID-19

Recently published studies show cardiovascular disease is a known risk factor for developing COVID-19 and can be associated with a more severe clinical course.<sup>2,3</sup> This is confirmed by a case report of the clinical course seen in those with stage IV heart failure (HF) infected with COVID-19. Severe HF cases with underlying comorbidities such as congenital heart disease, diabetes, hypertension and known arrhythmias with concurrent pneumonia were associated with a larger cardiac burden. Left ventricular dilation, reduced ejection fraction and elevated cardiac enzymes were contributing factors resulting in increased mortality.<sup>4</sup>

A meta-analysis showed that at least 8.0% of patients with COVID-19 suffered acute cardiac injury.<sup>3</sup> Cardiac injury from COVID-19 is due to viral myocarditis, hypoxemic burden and cytokine storm,<sup>5</sup> manifesting as arrhythmia, myocarditis and acute coronary syndrome.<sup>1</sup> Another meta-analysis from COVID-19 literature shows an increase in cardiac biomarkers. The authors of the study hypothesize that identification of patients with possible cardiac injury could predict the progression of COVID-19 towards a worse clinical picture.<sup>6</sup>

Arrhythmias, as a complication of COVID-19, were shown to occur in 16.7% of cases in one study.<sup>7</sup> Acute myopericarditis can occur as a complication associated with the disease. This presented on ECG analysis as minimal diffuse ST segment elevation and associated ST segment depression with T wave inversion in different leads on a 12-lead ECG.<sup>8</sup>

Additionally, in those admitted with multiple comorbidities, the effect of medication interaction and risk of QT prolongation is of concern. Hospitalized patients come under higher risk for developing Torsades de Pointes than outpatients with the same QT prolonging drugs. Elderly hospitalized patients with underlying heart disease who may also have renal or hepatic dysfunction, electrolyte abnormalities or bradycardia and to whom drugs may be administered rapidly via the intravenous route are of particular concern. Concomitant administration of cytochrome P450 inhibitors (e.g., imidazole antifungals, macrolide antibiotics), QT prolonging drugs and drugs that cause electrolyte imbalances increase the risk. It is recommended to perform surveillance ECGs before and after initiation of these drugs.<sup>9</sup>

## HILLROM™ CARDIOLOGY SOLUTIONS SUPPORT MANAGING CARDIAC CONDITIONS OF COVID-19

Hillrom's resting ECG devices and continuous ECG monitors can provide facilities with safe and accurate ECG surveillance to support their COVID-19 clinical protocols.

The Welch Allyn® ELI® 280 and ELI 380 Resting ECGs with a Wireless Acquisition Module (WAM™) can help improve infection control. With the WAM, there are no cables from the cart to the patient, providing flexibility for a clinician to keep the device separated up to 10 feet from the patient—therefore, there is less opportunity for pathogens to transfer from the device to the patient and vice versa. Additionally, the glass touchscreen surface allows for much easier cleaning for disinfection.

Patients with prolonged QT interval, myopericarditis and other cardiac injuries are at increased risk of critical arrhythmias. For these patients, the Welch Allyn Connex® Vital Signs Monitor can be used to continuously monitor patients for critical arrhythmias using a 3- or 5-lead set up in addition to patient vital signs.

In addition to arrhythmia monitoring, routine 12-lead ECG may help to identify cardiac injury in COVID-19 patients. For patients on arrhythmogenic drugs (including those that prolong the QT-interval), routine baseline and post-administration 12-lead ECGs are recommended.<sup>9</sup> Furthermore, if signs of acute cardiac disease are identified while monitoring using a 3- or 5-lead ECG, a resting 12-lead ECG can be acquired to provide a more detailed view to guide diagnosis and treatment.

The Critical Test Result feature on the ELI 380 ECG alerts the user when the VERITAS® algorithm identifies a critical ECG, and can trigger that result directly to a physician to provide immediate intervention. A recent study showed cardiologists agreed with critical test result statements from VERITAS more often than any other program.<sup>10</sup>

## CONCLUSION

COVID-19 poses an increased risk of cardiac complications. In addition to routine resting ECGs for patients with a history of cardiac disease and/or on medications increasing arrhythmia risk, continuous arrhythmia monitoring should be considered.

## Hillrom Cardiology Solutions Can Help You Manage COVID-19 Patients



Welch Allyn  
Wireless Acquisition  
Module (WAM)

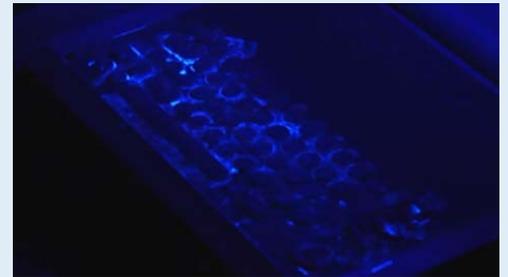


Welch Allyn  
ELI 280 ECG



Welch Allyn  
ELI 380 ECG

## Touchscreen Surfaces Can Help Improve Infection Control



Typical ECG keyboard after cleaning



ELI 380 ECG keyboard after cleaning



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For more information, contact your local Hillrom representative or visit [hillrom.com](https://hillrom.com).

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#### References

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