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# Health Care Delivery for Heart Failure Patients During The COVID-19 Pandemic; A Consensus of The Saudi Heart Failure Working Group (SAUDI-HF)

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**Abstract**

**The Coronavirus disease 2019 (COVID-19) pandemic led to global and national rapid health system changes to treat the affected patients and prevent the spread of the virus. The social distancing, redirecting resources, and nationwide lockdown led to the cancellation of non-urgent hospital visits and interruption of continuity of care for patients with chronic cardiac conditions such as heart failure (HF). This consensus document addresses the domains of health care delivery that are affected by the pandemic. It explains the current situation of health care delivery to heart failure patients and further recommendation on how to overcome this. Thus, maintaining quality and continuity of care to the HF population.**

*Keywords:* COVID-19, Heart failure, Pandemic

## 1. Introduction

Owing to its rapid global spread, the World Health Organization (WHO) declared new coronavirus disease 2019 (COVID-19) as a pandemic on March 11th, 2020(1). The global and national health authorities rapidly implemented measures for social distancing to slow the spread of the virus. These measures include the suspension of all elective hospital visits and procedures(2). The diversion of resources toward management of COVID-19 as well as the population fear to present to the hospital had an impact on the presentation and management of both acute cardiovascular events like myocardial infarction and stroke and to the chronic heart failure population(2).

Based on the reviews of cases that have been affected by COVID-19, patients with pre-existing cardiovascular disease, especially heart failure, are considered to be at higher risk of developing complications(1, 3-6). Also, the healthcare providers are at high risk of getting infected by the virus(7).

This document aims to establish a consensus on how to mitigate the risks associated with the

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pandemic and devise a pathway to manage heart failure patients.

## 2. Outpatient Heart Failure Visits

Implementation of social distancing and redirecting health care recourses to acute care facilities had led to closing the outpatient visits. The interruption of regular outpatient visits had impacted the heart failure patients negatively by the following: difficulty in accessing their HF specialists, delay in optimizing the guideline-directed therapies and delaying intracardiac defibrillator (ICD) and cardiac resynchronization therapy device (CRTD) implantation(2).

The healthcare institutes had changed rapidly into implementing virtual clinics, which had helped in access to the healthcare provider, health education, and prescribing medication(2, 8). Nevertheless, the absence of availability of laboratory investigation is limiting further optimization of medical therapy(2).

### *2.1. Recommendations*

1 The Saudi Heart Association, in collaboration with the Saudi Safety Society, provided clinical criteria to aid health care providers in risk assessment and prioritization of care delivery. The criteria are the following:
- Priority 1: Health care assessment within 24 hours
  - o Pulmonary edema
  - o Hemodynamic instability
- Priority 2: health care assessment within 1-7 days
  - o Difficulty walking a short distance
  - o Hypotension
  - o Renal impairment
- Priority 3: Health care assessment within 7-30 days
  - o Recent emergency department visit for decompensated HF
  - o Can't lie flat, needs multiple pillows to sleep.
  - o Gaining more than 2-3 KG/week
  - o Increasing in leg swelling
- Priority 4: Health care assessment >30 days
  - o New diagnosis of HF
  - o Patients who report increasing shortness of breath more than usual but still tolerating daily activity.
  - o Mild leg swelling or slowly progressive weight gain.
- Routine visits: Health care assessment >3 months
  - o Patients with stable HF, without hospital admission or emergency department visit within the last six months.
  - o Patients who do not have active symptoms.
  - o Patients who did not increase their home diuretics within the past 6-12 weeks.

2 Virtual clinic pathway: Telemedicine and E-visits are essential tools in the current situation of the COVID-19 pandemic. We encourage using virtual care tools if available, given that the health care provider is experienced to get accurate clinical information remotely and make a clinical decision. Furthermore, clinic visits can be limited, lab tests can be collected at home, and medications can be delivered to patients as well. The following are our recommendations regarding virtual care:
- Encourage self-monitoring and remote monitoring by getting the patients to check their weights and vital signs at home and report them virtually to the healthcare providers.
- Review the patient's symptoms: shortness of breath, orthopnea, syncope, presyncope, palpitation, chest pain, lower limb swelling, change in urine output, and weight gain.
- Video or visual communication when available for reassurance, general assessment, and medication review.
- Treatment should be directed to ensuring the availability of all anti-failure therapies, inclusive of renin-angiotensin-aldosterone system (RAAS) blockade agents.
- For anti-coagulation, patients on vitamin K antagonist point of care can be applied for the INR monitoring.
- For direct oral anti-coagulant phone calls for assessing any bleeding episodes.
- Unless indicated, avoid significant changes in medication prescriptions.
- If mild symptoms, increase the diuretic dose and arrange for a follow-up call in one week.
- If significant worsening of symptoms, then arrange for an urgent clinical visit or an emergency department visit.
- Ask for other respiratory symptoms (cough, productive sputum, runny nose, change in smell or taste, and fever) to ensure that there are no COVID-19 related symptoms. If an infection is suspected, follow the institution's protocol for further management.

**Abbreviation**

| | |
|---|---|
| ACEi | Angiotensin-Converting Enzyme Inhibitors |
| ARB | Angiotensin Receptor Blockers |
| ARNI | Angiotensin Receptor Neprilysin Inhibitor |
| COVID-19 | Coronavirus disease 2019 |
| CRTD | Cardiac Resynchronization Therapy Device |
| HF | Heart Failure |
| HTN | Hypertension |
| ICD | Intracardiac Defibrillator |
| ICU | Intensive Care |
| ID | Infectious Disease |
| ISHLT | The International Heart and Lung Transplant Society |
| MOH | Ministry of Health |
| N\|YHA | New York Heart Association |
| PPE | Personal Protective Equipment |
| RAAS | Renin-Angiotensin-Aldosterone System |
| WHO | World Health Organization |

## 3. Emergency Department Visit

There has been a significant decline in patients presenting to emergency departments for acute symptoms. This is due to the fear of getting in

contact with an infected patient. HF patients often require emergency department visits for progressive symptoms and need for intravenous decongestive strategies. Patients should be encouraged to recognize their signs and seek medical advice when experiencing progressive shortness of breath. However, patients who present to the emergency department should be evaluated for COVID-19 as HF patients may have atypical presentation of COVID-19 (4, 9). All patients should be managed according to the standards of care with personal protective equipment (PPE) for COVID-19 in place.

### 3.1. Recommendations

1. In hemodynamically stable patients with volume overload New York Heart Association (NYHA) class II-III symptoms can be managed with intravenous diuretic therapy and referred to the cardiology team based on their priority, as mention above.
2. The emergency department evaluation and management of HF can be modified during the COVID-19 pandemic by the following:
    a. Reduce the waiting time for patients
    b. Avoid waiting in crowded places
    c. Assess degree of symptoms: chest congestion, leg swelling
    d. Reduce blood tests
    e. Reduce chest x-rays if the clinical exam doesn't warrant further evaluation
    f. Early administration of intravenous diuretics
    g. Provide urgent referral to the specialist clinic
2. Discharge from the emergency department should be individualized per patient if the following are present(10):
    a. No deterioration in hemodynamics.
    b. No significant electrolyte derangement.
    c. No associated non-cardiac acute illness as a cause of decompensation (i.e., urosepsis, pneumonia, renal failure).
    d. Satisfactory diuretic affect >500 cc urine output in 2h or >1000 ml in 6h with improvement in patients' symptoms.
    e. Ensure a post-discharge follow-up plan, including secured medication.

## 4. Management of the Hospitalized Heart Failure Patients

Hospitalized patients remain at risk of getting the infection from asymptomatic carriers among health care workers or visitors. The atypical presentation of heart failure or lack of response to standard therapy should warrant evaluation for COVID-19 infection(9).

### 4.1. Recommendation

1. All patients should have a periodic clinical evaluation for COVID-19.
2. It is encouraged to activate early discharge planning and ensuring that patients should be discharged as soon as possible to reduce the risk of complications.
3. Patients with acute decompensation who test positive for COVID-19 should be cared for with adequate airborne precautions. Co-treatment with COVID-19 targeted therapy should be in alignment with the national ministry of health (MOH) guidelines in consultation with the infectious disease (ID) physicians.
4. Monitor for drug-drug interactions and cardio-toxicities with COVID-19 targeted therapy.

### 4.2. The Use of Renin-Angiotensin-Aldosterone System (RAAS) Antagonists

The currently available evidence shows no significant difference in in-hospital mortality among patients hospitalized with COVID-19 on angiotensin-converting enzyme inhibitors (ACEi) or angiotensin receptor blockers (ARB) compared to patients who were not on these therapies. Hence, heart failure and hypertension societies recommend the continuation of ACEi and ARBs for all patients who are already on these therapies(11).

### 4.3. Recommendations

- For HF patients who are currently treated with an ACEi, ARB, or angiotensin receptor Neprilysin inhibitor (ARNI), we recommend continuing treatment as per HF guidelines.
- Avoid withdrawal of ACEi, ARB, or ARNI in HF patients as this will lead to HF decompensation.
- In case of acute illness with COVID-19, treatment should continue with currently prescribed medication for HF and HTN unless clinically contraindicated.
- In case of adverse events such as acute kidney injury or hypotension the ACEi, ARB or ARNI should be stopped until stabilization.
- In patients with new HF we recommend initiating ACEi or ARBs as per HF management guidelines.

### 4.4. Special Populations

#### 4.4.1. Heart Transplant Patients

Patients listed for heart transplantation or post-transplantation are the most vulnerable population in this current pandemic. The International Heart and Lung Transplant Society (ISHLT) recommends managing heart transplant patients who develop COVID-19 based on the severity of their illness(12):

1. Mild symptoms: admit for observation, no change in immune suppression.
2. Moderate symptoms: admit to intensive care (ICU) for observation, and perform CT chest, consider treatment as per ID recommendation.

3. Severe symptoms: admit to ICU, mechanical ventilation, and perform CT chest, consider treatment as per ID recommendation.
4. For moderate and severe symptoms, add concomitant antibacterial coverage. Concomitant use of anti fungal if clinically indicated or critically ill with respiratory failure.
5. Immune suppression
    a. Moderate cases: the Mycophenolate Moftile should be discontinued.
    b. Severe cases: all immune suppression should be discontinued except for steroids.
6. Observe for drug interaction.

## 5. Conclusion

The COVID-19 pandemic has led to unexpected changes in health care delivery. The quality and continuity of care for HF patients are adversely affected. This document explains the current challenges and how to manage it. Further collaboration is needed to understand the long-term effect of the pandemic on the health care system.

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