

# Congestive Heart Failure: Diagnosis and Management in Primary Health Care

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## Abstract

Heart failure disease has been one of the major chronic cardiovascular diseases that cause morbidity, mortality, and hospitalization of all cardiac patients. Heart failure has a significantly increased lifetime risk of development is about 20%. Symptomatic predictions are usually non-specific and hardly can discriminate the occurrence of heart failure from other diseases. It represents a challenging problem because of its economical and medical burden on the health care system. However, the management and presentation of a patient with heart failure remain in the fields of doubt. This review will highlight the importance of diagnosing and managing Congestive heart failure patients for primary health care physicians. This review was collected and classified from eligible published English written documents, articles, clinical trials. This electronic research engine was included: PubMed. This review discussed the diagnosis and management of Congestive heart failure and the details regarding this topic including definitions classifications, were included in this review. The primary care physician approach is often concerned with traditional palliative therapies before worsening the condition and plans to assess different reports regarding heart failure patients throughout their follow-up schedules.

**Keywords:** Congestive heart failure, Diagnosis, Management, Prognosis, Primary health care

## INTRODUCTION

Heart failure disease has been one of the major chronic cardiovascular diseases that cause morbidity, mortality, and hospitalization of all cardiac patients. Heart failure has a significantly increased lifetime risk of development is about 20% [1, 2]. Other studies estimated the overall lifetime risk percent according to gender, where men 33% are higher in developing heart failure than women 28% [3, 4]. Although, congestive heart failure prevalence differs according to the specific studied population. However, the estimated prevalence of heart failure is roughly 1-2% and might increase to >10% among people over 70 of age [4, 5]. Furthermore, there has been a remarkable escalation in the incidence of chronic cardiovascular diseases in recent decades [6, 7].

The final stage of various cardiac issues is usually congestive heart failure. It is represented as a challenging problem because of its economical and medical burden on the health care system. Understanding the pathological and physiological condition of congestive heart failure has improved over the past 20 -30 years, where new modalities for identifying therapies are developed [4, 8].

However, the management and presentation of a patient with heart failure remain in the fields of doubt. In this review, we

will highlight the importance of diagnosing and managing Congestive heart failure patients for primary health care physicians.

Low-frequency neuromuscular stimulation is a safe and effective rehabilitation protocol that could partially reverse the abnormal response to exercise in advanced heart failure patients helping in their symptoms and improved activities [9].

In a study, Rano K. sinuraya *et al.* revealed that the Cost related to CVD in all primary health care centers in Bandung

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is higher after the implementation of national health insurance [10].

## MATERIALS AND METHODS

This review was collected and classified from eligible published English written documents, articles, clinical trials. This electronic research engine was included: PubMed. The keywords “Congestive” ‘Heart’ and ‘Failure’ including words used in Mesh (((‘Diagnosis’ [Mesh])), ((‘Prognosis’ [Mesh])), ((‘Management’ [Mesh])), ((‘Primary’ [Mesh])) were used in combinations. This review discussed the diagnosis and management of Congestive heart failure and the details regarding this topic including definitions classifications, were included in this review.

### Review

### Diagnosis

#### Symptoms and Signs in Clinical Presentation

The progression and prognostic assessment of congestive heart failure depend on the European Society of Cardiology (ESC) 2016 guidelines for diagnosing and treating acute and chronic heart failure and the American college of cardiology\ American heart association (ACC\AHA) [11]. Symptomatic predictions are usually non-specific and hardly can discriminate the occurrence of heart failure from other diseases. However, detection of the early signs of heart failure can be more specific, such as apical impulse displacement and jugular venous pressure elevation (**Table 1**) [11-13].

**Table 1.** Symptoms and Signs in Heart failure presentation: [11-13]

Symptoms	Signs
Conventional symptoms	More specific
Breathlessness	Jugular venous pressure elevation
Orthopnea	Hepatojugular reflux
Reduced exercise tolerance	Gallop heart rhythm
Paroxysmal nocturnal dyspnea	Lateral apical impulse displacement
Tiredness, fatigability, more time for exercise recovery	
Swelling on the ankles	
Less conventional	Less specific
Wheezing	Weight gain
Bloated feeling	Sudden weight loss
Nocturnal coughing	Tissue wasting
Loss of appetite	Cardiac murmur
Confusion	Peripheral oedema (Ankle, sacral, scrotal)
Depression	Pulmonary crepitations
Palpitations	Dullness to percussion and reduced air entry
Dizziness	Tachycardia
Syncope	Cheyne Stokes respiration
Bendopnea	Hepatomegaly

Tachypnoea and Irregular pulse  
Ascites  
Cold extremities  
Oliguria  
Narrow pulse pressure

### Risk Factors and Prognosis

In general, heart failure outcome is associated with many significant dependents and independent risk factors. Ethnicity is one of the major risk factors that affect the outcome of the diseases. The predictions of increased risk of deaths in Asian patients with heart failure differ from the European ones [14-16]. Gender differences have often a greater impact impairing the quality of life in patients. In several studies, the overall lifetime risk percent according to gender were men 33% are higher in developing heart failure than women 28% [3, 4]. However, other studies introduced women to have a stronger probability to be affected by congestive heart failure than most men. Moreover, women have a greater probability of developing typical heart failure with preserved ejection fraction than men [17, 18]. Compared to men women have different physiological features that are considered a strong risk factor for heart failure development (**Table 2**) [19].

**Table 2.** Women Characteristic physiological and anatomical features in comparison to men: [19]

Physiological and Anatomical features	Women compared to men
Mass at the left ventricle	Lower
Apoptosis and cell turnovers	Lower
Blood pressure	Lower
Resting heart rate	Higher
Contractility	Greater
Catecholamine-mediated vasoconstriction	Less
Coronary vessel caliber	Smaller

Unplanned hospitalization of patients with heart failure, nominates marks of mortality, and recurrent hospitalization [16, 20, 21]. Cardiovascular and non-cardiovascular comorbid diseases play a sensitive role in maintaining the prognostic statements of congestive heart failure progression. These comorbidities highly impact the diagnosis and management of heart failure. Diabetes, anemia, and metabolic iron deficiency (**Table 3**) are often observed in congestive heart failure patients and are acknowledged to complication the prognostic assessment of heart failure.

**Table 3.** Heart failure impact on Anemia and iron deficiency [22]

Anemia	Iron deficiency
Renal impairment	Iron absorption impairment.
Chronic inflammatory disorder	Malnutrition and iron intake reduction.

Dysfunction of the Bone Marrow	Blood loss from the Gastrointestinal area.	Monitoring blood pressure, blood sugar, and other comorbidities
Hemodilution	Sequestration due to impaired iron transition leading to Chronic inflammation.	Intensive heart rate control and sinus rhythm maintenance
Iron deficiency anemia		Treat myocardial ischemia
		Sleep assessment for patients with suspected breathing disorders during the night or daytime excessive sleepiness
		Follow up moderate regular physical activity

Diabetes mellitus risk of presence might not worsen the survival rate after all, but it does interplay a significant role with the etiology that increases the risk of deaths in patients with heart failure. This depends on the duration, other comorbidities, and damaged organs (**Table 4**) [22, 23]. Diabetes type 2 is found to have strong mortality risks in heart failure patients compared with cardiac patients without diabetes [22, 24].

**Table 4.** Classes of cardiovascular risk in diabetic patients [22, 23]

Cardiovascular risk degree	Condition
Very high	<ul style="list-style-type: none"> <li>Existing cardiovascular disease and diabetes accompanied by end-organ damage.</li> <li>Cardiovascular risk for more than 3 years                             <ul style="list-style-type: none"> <li>Diabetes for more than 20 years</li> </ul> </li> </ul>
High	<ul style="list-style-type: none"> <li>Diabetes for more than 10 years not associated with organ damage, but with cardiovascular risks.</li> <li>Type 1 diabetes in patients more than 35 years of age of a 10 years duration with no cardiovascular risks.</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>Type 2 diabetes in patients more than 50 years of age of a 10years duration with no cardiovascular risks.</li> </ul>

### Practical Management of Congestive Heart Failure in Primary Healthcare

In the practical management of congestive heart failure, patients might experience various levels of intense symptoms and signs underlying this condition. The primary care physician approach is often concerned with traditional palliative therapies before worsening the condition and plans to assess different reports regarding heart failure patients throughout their follow-up schedules. If the role of palliative care is ineffectual then a referral should be noted [25]. The (**Table 5**) below presents a brief idea about the practical management of heart failure with preserved ejection fraction [26].

**Table 5.** Palliative management in heart failure with preserved ejection fraction [26]

Lowest effective dose of diuretics to monitor volume overload
Moderate restriction of Sodium diet
Patient education on weight changes and how to maintain a perfect weight
Comprehensive counseling about follow up and management especially for newly hospitalized patients

### CONCLUSION

Heart failure has a significantly increased lifetime risk of development is about 20%. The final stage of various cardiac issues is usually congestive heart failure. It is represented as a challenging problem because of its economical and medical burden on the health care system. Ethnicity and gender differences had often a greater impact impairing the quality of life in patients. However, the progression and prognostic assessment of congestive heart failure depend on the European Society of Cardiology (ESC) 2016 guidelines for diagnosing and treating acute and chronic heart failure and the American college of cardiology\ American heart association (ACC\AHA. In the practical management of congestive heart failure, patients might experience various levels of intense symptoms and signs underlying this condition. The primary care physician approach is often concerned with traditional palliative therapies before worsening the condition and plans to assess different reports regarding heart failure patients throughout their follow-up schedules. If the role of palliative care is ineffectual then a referral should be noted.

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### REFERENCES

1. Metra M, Teerlink JR. Heart failure. *Lancet*. 2017;390(10106):1981-95.
2. Rachamin Y, Meier R, Rosemann T, Flammer AJ, Chmiel C. Heart failure epidemiology and treatment in primary care: a retrospective cross-sectional study. *ESC Heart Fail*. 2021;8(1):489-97.
3. Bleumink GS, Knetsch AM, Sturkenboom MC, Straus SM, Hofman A, Deckers JW, et al. Quantifying the heart failure epidemic: prevalence, incidence rate, lifetime risk and prognosis of heart failure The Rotterdam Study. *Eur Heart J*. 2004;25(18):1614-9.
4. Kurmani S, Squire I. Acute Heart Failure: Definition, Classification and Epidemiology. *Curr Heart Fail Rep*. 2017;14(5):385-92.
5. Mosterd A, Hoes AW. Clinical epidemiology of heart failure. *Heart*. 2007;93(9):1137-46.
6. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, et al. Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies from 90 Countries. *Circulation*. 2016;134(6):441-50.
7. Kjeldsen SE, Naditch-Brule L, Perlini S, Zidek W, Farsang C. Increased prevalence of metabolic syndrome in uncontrolled hypertension across Europe: the Global Cardiometabolic Risk Profile in Patients with hypertension disease survey. *J Hypertens*. 2008;26(10):2064-70.
8. Skrzypek A, Mostowik M, Szeliga M, Wilczyńska-Golonka M, Dębicka-Dąbrowska D, Nessler J. Chronic heart failure in the elderly: still a current medical problem. *Folia Med Cracov*. 2018;58(4):47-56.

9. Elmasry DM, Elnahas NG, Khorshid H, Rahmy AF. The effect of low frequency neuromuscular stimulation on sympathetic activity in advanced heart failure. *J Adv Pharm Educ Res.* 2019;9(4):29-35
10. Sinuraya RK, Rianti A, Suwanti AA. Cost minimization of cardiovascular disease (CVD) drugs in primary healthcare centers in Bandung, Indonesia. *J Adv Pharm Educ Res.* 2021;10(1):63-9.
11. Ponikowski P, Voors AA, Anker SD, Bueno H, Cleland JG, Coats AJ, et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC). Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. *Eur J Heart Fail.* 2016;18(8):891-975.
12. Kelder JC, Cramer MJ, van Wijngaarden J, van Tooren R, Mosterd A, Moons KG, et al. The diagnostic value of physical examination and additional testing in primary care patients with suspected heart failure. *Circulation.* 2011;124(25):2865-73.
13. Boonman-de Winter LJ, Rutten FH, Cramer MJ, Landman MJ, Zuihthoff NP, Liem AH, et al. Efficiently screening heart failure in patients with type 2 diabetes. *Eur J Heart Fail.* 2015;17(2):187-95.
14. Nagai T, Sundaram V, Shoaib A, Shiraishi Y, Kohsaka S, Rothnie KJ, et al. Validation of U.S. mortality prediction models for hospitalized heart failure in the United Kingdom and Japan. *Eur J Heart Fail.* 2018;20(8):1179-90.
15. Cooper LB, Yap J, Tay WT, Teng TK, MacDonald M, Anand IS, et al. Multi-ethnic comparisons of diabetes in heart failure with reduced ejection fraction: insights from the HF-ACTION trial and the ASIAN-HF registry. *Eur J Heart Fail.* 2018;20(9):1281-9.
16. Tomasoni D, Adamo M, Lombardi CM, Metra M. Highlights in heart failure. *ESC Heart Fail.* 2019;6(6):1105-27.
17. Scardovi AB, Petruzzi M, Rosano A, Lucia AR, De Maria R. Heart failure phenotype in women. *G Ital Cardiol (Rome).* 2012;13(5 Suppl 1):6s-11s.
18. Sciomer S, Moscucci F, Salvioni E, Marchese G, Bussotti M, Corrà U, et al. Role of gender, age and BMI in prognosis of heart failure. *Eur J Prev Cardiol.* 2020;27(2\_suppl):46-51.
19. Bozkurt B, Khalaf S. Heart Failure in Women. *Methodist Debaque Cardiovasc J.* 2017;13(4):216-23.
20. Solomon SD, Dobson J, Pocock S, Skali H, McMurray JJ, Granger CB, et al. Influence of nonfatal hospitalization for heart failure on subsequent mortality in patients with chronic heart failure. *Circulation.* 2007;116(13):1482-7.
21. Chioncel O, Mebazaa A, Harjola VP, Coats AJ, Piepoli MF, Crespo-Leiro MG, et al. Clinical phenotypes and outcome of patients hospitalized for acute heart failure: the ESC Heart Failure Long-Term Registry. *Eur J Heart Fail.* 2017;19(10):1242-54.
22. Paolillo S, Scardovi AB, Campodonico J. Role of comorbidities in heart failure prognosis Part I: Anaemia, iron deficiency, diabetes, atrial fibrillation. *Eur J Prev Cardiol.* 2020;27(2\_suppl):27-34.
23. Cosentino F, Grant PJ, Aboyans V, Bailey CJ, Ceriello A, Delgado V, et al. 2019 ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD. *Eur Heart J.* 2020;41(2):255-323.
24. Rørth R, Jhund PS, Kristensen SL, Desai AS, Køber L, Rouleau JL, et al. The prognostic value of troponin T and N-terminal pro B-type natriuretic peptide, alone and in combination, in heart failure patients with and without diabetes. *Eur J Heart Fail.* 2019;21(1):40-9.
25. Kavalieratos D, Gelfman LP, Tycon LE, Riegel B, Bekelman DB, Ikejiani DZ, et al. Palliative Care in Heart Failure: Rationale, Evidence, and Future Priorities. *J Am Coll Cardiol.* 2017;70(15):1919-30.
26. Upadhya B, Kitzman DW. Heart failure with preserved ejection fraction: new approaches to diagnosis and management. *Clin Cardiol.* 2020;43(2):145-55.