

Part 1 - General questions, level of knowledge and network

- 1) What is your country of practice? (1 answer)

- 2) Which best describes your profession? (1 answer)
 - a) General Cardiologist
 - b) Heart failure physician
 - c) Arrhythmia physician
 - d) Interventional cardiologist (PCI and/or valvular interventions)
 - e) Imaging cardiologist
 - f) Cardiac surgeon in a long-term LVAD implantation centre
 - g) Cardiac surgeon in a centre without long-term LVAD implantation
 - h) Acute cardiac care physician
 - i) Other

- 3) What is your professional status? (1 answer)
 - a) Intern/resident
 - b) Fellow
 - c) Junior physician/surgeon (<5 years after fellowship)
 - d) Senior physician/surgeon (>5 years after fellowship)

- 4) What is the level of heart failure management in your centre? (1 answer)
 - a) Primary care
 - b) Secondary level of HF unit (Interventional cardiology & Cardiac surgery & Short-term mechanical circulatory support)
 - c) Tertiary level HF unit (Interventional cardiology & Cardiac surgery & Short-term mechanical circulatory support, long-term **mechanical circulatory support/VAD and/or transplant**)

- 5) On a scale from 1=Not at all knowledgeable to 5=Very knowledgeable. How would you rate your knowledge of the advanced heart failure section of the European Society of Cardiology's 2021 heart failure guidelines? (1 answer)
1 2 3 4 5

- 6) Do you have direct access to a referent (or dedicated team) in a tertiary centre, to discuss the implementation of ventricular assistance or transplantation? (1 answer)
 - a) Yes, I specifically refer to an advanced HF cardiologist.
 - b) Yes, I specifically refer to a surgeon.
 - c) Yes, I refer to a heart team with advanced HF cardiologists & surgeons

- d) No, I go through an intermediate provider (i.e. referent not practicing in tertiary centre)
- e) I have no referent for the discussion of assistance and transplantation
- f) I am myself a referent.

7) On a scale from 1=Very difficult to 5=Very easy. How would you rate the difficulty of discussing a severe HF patient with a specialized team (0=very simple; 10=very difficult)? (1 answer)
1 2 3 4 5

Please explain any difficulties you may be experiencing:

8) On a scale from 1=Very difficult to 5=Very easy. How would you rate the difficulty of referring a severe HF patient to a tertiary structure (0=Easy; 10=very difficult)? (1 answer)
1 2 3 4 5

Please explain any difficulties you may be experiencing:

Part 2 Clinical case:

During your outpatient consultation, you have a 67-year-old diabetic patient with a history of previous large myocardial infarction 8 years ago, without residual ischemia. History of prostate cancer with a life expectancy >8 years according to his urologist. BMI = 19.

On bisoprolol 7.5 mg, sacubitril/valsartan stopped for symptomatic hypotension, eplerenone 25 mg, dapagliflozin 10 mg and Furosemide 250mg per day. Maximum tolerated treatment dose, stable since his last hospitalization.

Last hospitalisations for cardiac decompensation 9 months and 3 months ago.

ICD for primary prevention. Blood pressure 92/56mmHg, sinus rhythm, 65/min, incomplete left bundle branch block (97ms). He currently has a NYHA stage 3 dyspnoea.

Transthoracic ultrasound found an impaired LVEF of 17%, a left ventricular end-diastolic diameter of 72mm with extensive anterior sequelae. NTproBNP 4800ng/ml; creatinine 157 µmol/l; eGFR 38 mL/min/1.73m²; haemoglobin = 10g/dl. The 6-minute walk test was 285 meters.

1) What is the probability of one-year hospitalisation? (1 answer)

- a) <10%
- b) 10-20%
- c) 20-30%
- d) 30-40%
- e) > 40%**
- f) Don't know.

2) What is the probability of one-year mortality (according to the MAGGIC or BCN Bio-HF score)? (1 answer)

- a) <10%
- b) 10-15%
- c) 15-20%
- d) 20-25%
- e) >25%**
- f) Don't know.

3) At this point, how would you describe the patient's situation? (1 answer)

- a) Decompensated chronic heart failure.
- b) Stable heart failure
- c) Advanced heart failure**
- d) Worsening heart failure
- e) Acute heart failure
- f) Don't know.

4) At this stage, which strategy do you think is the most appropriate? (1 answer)

- a) Initiate inotropic treatment.
- b) Increase beta-blockers.
- c) Refer him to an advanced heart failure team.**
- d) Organise hospitalisation at home to increase intravenous diuretics.
- e) Getting closer to a palliative team, this patient is too old for a transplant
- f) Don't know.

5) Would you consider a short-term mechanical assistance device? (1 answer)

- a) Not indicated in this patient**
- b) Indicated with a preference for VA-ECMO
- c) Indicated with a preference for an Impella®
- d) Indicated with a preference for an intra-aortic balloon counterpulsation.
- e) This is a solution to be discussed in this patient, regardless of the type of assistance
- f) Don't know

- 6) What is your perception of long-term left ventricular assist device (LVAD) in "destination therapy" for this patient? (1 answer)
- a) Too early because the patient is ambulatory.
 - b) Too early because the patient is not on inotrope
 - c) Not indicated due to age (patient too old)
 - d) Not indicated in the face of no expected benefit
 - e) It is a solution to discuss.**
 - f) Don't know.

Part 3: Regarding survival and complications associated with centrifugal pumps:

- 1) What is the class of recommendation for long-term mechanical circulatory support in patients with advanced HFrEF refractory to optimal medical and device therapy **as a bridge to cardiac transplantation** in order to improve symptoms, reduce the risk of HF hospitalisation and the risk of premature death?
- a) Is recommended (I)
 - b) Should be considered (IIa)**
 - c) May be considered (IIb)
 - d) Is not recommended (III)
 - e) Don't know.
- 2) What is the class of recommendation for long-term mechanical circulatory support in patients with advanced HFrEF despite optimal medical and device therapy, **not eligible for heart transplantation** or other surgical options, and without severe right ventricular dysfunction, to reduce the risk of death and improve symptoms? (One answer)
- a) Is recommended (I)
 - b) Should be considered (IIa)**
 - c) May be considered (IIb)
 - d) Is not recommended (III)
 - e) Don't know.

- 3) What is the class of recommendation for heart transplantation in patients with advanced HF, refractory to medical/device therapy and who do not have absolute contraindications? (One answer)
- a) **Is recommended (I)**
 - b) Should be considered (IIa)
 - c) May be considered (IIb)
 - d) Is not recommended (III)
 - e) Don't know.
- 4) What is the average 5-year survival of patients implanted with latest generation of LVAD (centrifugal pump from momentum 3 trial)? (One answer)
- a) 38%
 - b) 48%
 - c) **58%**
 - d) 68%
 - e) 78%
 - f) Don't know.
- 5) What is the stroke rate? (One answer)
- a) **0.05 Events/patient-years**
 - b) 0.20 Events/patient-years
 - c) 0.30 Events/patient-years
 - d) 0.40 Events/patient-years
 - e) 0.50 Events/patient-years
 - f) Don't know.
- 6) What is the rate of digestive bleeding? (One answer)
- a) **0.25 Events/patient-years**
 - b) 0.35 Events/patient-years
 - c) 0.45 Events/patient-years
 - d) 0.55 Events/patient-years
 - e) 0.65 Events/patient-years
 - f) Don't know.

Part 4: Addressing physician belief in long term mechanical support and adherence to guidelines.

Reminder of advanced heart failure definition according the 2021 ESC/HFA guidelines:

- A. Severe and persistent symptoms of heart failure [NYHA III (advanced) or IV classes].
- B. Severe cardiac dysfunction defined by:
 - A reduced left ventricular ejection fraction $\leq 30\%$
 - Isolated right ventricular dysfunction
 - Severe valve abnormalities
 - Congenital anomalies
 - High (or growing) values of BNP or NT-proBNP
 - Severe diastolic dysfunction or structural abnormalities of the left ventricle.
- C. Acute decompensations
 - Episodes of pulmonary or systemic congestion requiring high-dose intravenous diuretics (or combinations of diuretics)
 - Low-flow episodes requiring inotropes or vasoactive drugs.
 - Malignant arrhythmias causing > 1 visit.
 - Unplanned hospitalisation in the past 12 months.
- D. Severe impairment of exercise capacity
 - Inability to make efforts.
 - Low 6 min walk test distance (<300 m)
 - pVO_2 ($<12-14$ mL/kg/min), estimated to be of cardiac origin.

1) Do you have access to measuring pVO_2 for HF patients?

- a) Yes, easy access for most HF patients
- b) Yes, access limited to selected HF patients
- c) Yes, access restricted to pre-transplant/LVAD patients
- d) No access

2) Do you use these criteria to identify advanced heart failure? (One answer)

- a) Never
- b) Rarely
- c) Occasionally
- d) Regularly
- e) Always

3) What percentage of your patients have the four criteria of the above definition regardless of age or general condition? (One answer)

- a) None
- b) 1-2%

- c) 3-5%
- d) 5-10%
- e) 10-15%
- f) >15%

4) For patients with these criteria, what proportion did you refer to an advanced heart failure team? (One answer)

- a) 100%
- b) 75-99%
- c) 50-74%
- d) 25-49%
- e) 1-24%
- f) 0%

5) What factor(s) might limit your referral to a tertiary centre of an advanced HF patient to discuss the implantation of a long-term mechanical support? (Several answers possible)

For tertiary centre physicians, please skip this question.

- a) Age > 70
- b) Age >75
- c) Burden of comorbidities
- d) Poor quality of life of patients assisted with LVAD
- e) Procedure still too heavy surgically
- f) Unclear benefits for the patient
- g) None, all patients are discussed in "Heart Team."

6) For patients who have had several cardiac decompensations despite optimal medical treatment. Which ones do you address to a tertiary team? (Several answers possible)

For tertiary centre physicians, please skip this question.

- a) Patients remaining dyspnoeic NYHA III or IV despite intravenous diuretics.
- b) Patients hospitalised for iterative cardiogenic shock.
- c) Inotropes dependent patients (dobutamine, milrinone or treated repeatedly with levosimendan) or with short-term mechanical assistance
- d) Patients with transplantation or assistance projects
- e) Patients under 70 years of age
- f) All patients

- 7) To what extent do you agree / disagree with the following statements describing the benefit-risk balance with long term mechanical support ? (Several answers possible)
- a) It improves quality of life
 - b) It deteriorates quality of life
 - c) Survival at 2 years is much lower than transplantation
 - d) Survival at 2 years is comparable to transplantation
 - e) Survival at 5 years is much lower than transplantation
 - f) Survival at 5 years is comparable to transplantation
 - g) Benefits are limited due to complications
- 8) In which case would you accept a long-term mechanical support (multiple answers possible) for yourself (or your family)? (Several answers possible)
- a) Life expectancy related to heart failure < 1 year.
 - b) Life expectancy related to heart failure < 2 years.
 - c) Dyspnoea NYHA class 4
 - d) Two hospitalisations in the year for heart failure
 - e) Contraindications to heart transplant
 - f) Creatine clearance <45ml/min/1.73m² related to cardiorenal syndrome.
 - g) Creatine clearance <30ml/min/1.73m² related to cardiorenal syndrome.
 - h) Categorical refusal regardless of my situation
 - i) Already on anticoagulant for atrial fibrillation
- 9) How do you perceive the quality of life with LVAD? (One answer)
- a) Excellent
 - b) Good
 - c) Average
 - d) Poor
 - e) Very poor
 - f) Worse than death