## 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)
   1. General Cardiologist
   2. Heart failure physician
   3. Arrhythmia physician
   4. Interventional cardiologist (PCI and/or valvular interventions)
   5. Imaging cardiologist
   6. Cardiac surgeon in a long-term LVAD implantation centre
   7. Cardiac surgeon in a centre without long-term LVAD implantation
   8. Acute cardiac care physician
   9. Other
3. What is your professional status? (1 answer)
   1. Intern/resident
   2. Fellow
   3. Junior physician/surgeon (<5 years after fellowship)
   4. Senior physician/surgeon (>5 years after fellowship)
4. What is the level of heart failure management in your centre? (1 answer)
   1. Primary care
   2. Secondary level of HF unit (Interventional cardiology & Cardiac surgery & Short-term mechanical circulatory support)
   3. 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

1. 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)
   1. Yes, I specifically refer to an advanced HF cardiologist.
   2. Yes, I specifically refer to a surgeon.
   3. Yes, I refer to a heart team with advanced HF cardiologists & surgeons
   4. No, I go through an intermediate provider (i.e. referent not practicing in tertiary centre)
   5. I have no referent for the discussion of assistance and transplantation
   6. I am myself a referent.
2. 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:

1. 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)
   1. <10%
   2. 10-20%
   3. 20-30%
   4. 30-40%
   5. **> 40%**
   6. Don't know.
2. What is the probability of one-year mortality (according to the MAGGIC or BCN Bio-HF score)? (1 answer)
   1. <10%
   2. 10-15%
   3. 15-20%
   4. 20-25%
   5. **>25%**
   6. Don't know.
3. At this point, how would you describe the patient's situation? (1 answer)
   1. Decompensated chronic heart failure.
   2. Stable heart failure
   3. **Advanced heart failure**
   4. Worsening heart failure
   5. Acute heart failure
   6. Don't know.
4. At this stage, which strategy do you think is the most appropriate? (1 answer)
   1. Initiate inotropic treatment.
   2. Increase beta-blockers.
   3. **Refer him to an advanced heart failure team.**
   4. Organise hospitalisation at home to increase intravenous diuretics.
   5. Getting closer to a palliative team, this patient is too old for a transplant
   6. Don't know.
5. Would you consider a short-term mechanical assistance device? (1 answer)
   1. **Not indicated in this patient**
   2. Indicated with a preference for VA-ECMO
   3. Indicated with a preference for an Impella®
   4. Indicated with a preference for an intra-aortic balloon counterpulsation.
   5. This is a solution to be discussed in this patient, regardless of the type of assistance
   6. Don't know
6. What is your perception of long-term left ventricular assist device (LVAD) in "destination therapy" for this patient? (1 answer)
   1. Too early because the patient is ambulatory.
   2. Too early because the patient is not on inotrope
   3. Not indicated due to age (patient too old)
   4. Not indicated in the face of no expected benefit
   5. **It is a solution to discuss.**
   6. 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?
   1. Is recommended (I)
   2. **Should be considered (IIa)**
   3. May be considered (IIb)
   4. Is not recommended (III)
   5. 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)
   1. Is recommended (I)
   2. **Should be considered (IIa)**
   3. May be considered (IIb)
   4. Is not recommended (III)
   5. 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)
   1. **Is recommended (I)**
   2. Should be considered (IIa)
   3. May be considered (IIb)
   4. Is not recommended (III)
   5. 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)
   1. 38%
   2. 48%
   3. **58%**
   4. 68%
   5. 78%
   6. Don't know.
5. What is the stroke rate? (One answer)
   1. **0.05 Events/patient-years**
   2. 0.20 Events/patient-years
   3. 0.30 Events/patient-years
   4. 0.40 Events/patient-years
   5. 0.50 Events/patient-years
   6. Don't know.
6. What is the rate of digestive bleeding? (One answer)
   1. **0.25 Events/patient-years**
   2. 0.35 Events/patient-years
   3. 0.45 Events/patient-years
   4. 0.55 Events/patient-years
   5. 0.65 Events/patient-years
   6. 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:

1. Severe and persistent symptoms of heart failure [NYHA III (advanced) or IV classes].
2. Severe cardiac dysfunction defined by:

* A reduced left ventricular ejection fraction ≤ 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.

1. 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.

1. Severe impairment of exercise capacity

* Inability to make efforts.
* Low 6 min walk test distance (<300 m)
* pVO2 (<12–14 mL/kg/min), estimated to be of cardiac origin.

1. Do you have access to measuring pVO2 for HF patients?
   1. Yes, easy access for most HF patients
   2. Yes, access limited to selected HF patients
   3. Yes, access restricted to pre-transplant/LVAD patients
   4. No access
2. Do you use these criteria to identify advanced heart failure? (One answer)
   1. Never
   2. Rarely
   3. Occasionally
   4. Regularly
   5. Always
3. What percentage of your patients have the four criteria of the above definition regardless of age or general condition? (One answer)
   1. None
   2. 1-2%
   3. 3-5%
   4. 5-10%
   5. 10-15%
   6. >15%
4. For patients with these criteria, what proportion did you refer to an advanced heart failure team? (One answer)
   1. 100%
   2. 75-99%
   3. 50-74%
   4. 25-49%
   5. 1-24%
   6. 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.

* 1. Age > 70
  2. Age >75
  3. Burden of comorbidities
  4. Poor quality of life of patients assisted with LVAD
  5. Procedure still too heavy surgically
  6. Unclear benefits for the patient
  7. None, all patients are discussed in "Heart Team."

1. 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.

* 1. Patients remaining dyspnoeic NYHA III or IV despite intravenous diuretics.
  2. Patients hospitalised for iterative cardiogenic shock.
  3. Inotropes dependent patients (dobutamine, milrinone or treated repeatedly with levosimendan) or with short-term mechanical assistance
  4. Patients with transplantation or assistance projects
  5. Patients under 70 years of age
  6. All patients

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