advanced heart failure (AHF) referred for consideration of ventricular assist device (VAD) implantation and/or heart transplantation (HTx).

Since 2013, when possible all AHF patients referred to our centre have been assessed for frailty. Fried's five physical domains – exhaustion, grip-strength, mobility, appetite and physical inactivity (frail $\geq 3/5$), as well as cognitive impairment (MoCA ≤ 26) and depression (DMI > 9) were assessed.

We have demonstrated that frailty is associated with increased mortality in patients with AHF^{2,3} and increased morbidity and mortality after VAD implantation and after heart transplantation.⁴

Despite the increased morbidity and mortality post-intervention, physical frailty is reversible in the majority of patients undergoing bridge-to-transplant VAD implantation and HTx. Of the individual frailty domains, change in hand-grip strength is the least sensitive indicator of improved frailty status.

Future goals or challenges in frailty research in the setting of AHF include the development of a universally accepted frailty measurement, the development of measures that distinguish reversible from irreversible frailty, and the role of prehabilitation in reducing frailty-associated morbidity and mortality after VAD or HTx.

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9

TRANSITIONAL STATES IN FRAILTY: IMPLICATIONS FOR END OF LIFE SUPPORT IN HEART FAILURE

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The frailty syndrome is defined as the loss of reserve in multiple physiological systems that occur with ageing. Frailty can result in vulnerability to any minor disturbances and exposes older adults to an array of adverse health outcomes such as falls, fractures, hospitalisations, and mortality. The most common phenotype associated with frailty is sarcopenia, the age-related loss of skeletal muscle mass and function. The heart is a muscular structure, yet we do not understand whether the decline in cardiac function in old age is directly related to sarcopenia. However, there has recently been increasing interests in the correlation between heart failure and frailty status. Moreover, frailty is a reversible process. Overseas and local data have confirmed that up to a quarter of those in the pre-frail status can revert to the robust state. This presentation is focused on the evidence in reversing frailty, and examines options in improving the function of older heart failure patients.

10

WHEN IS IT TIME TO SWITCH THE ICD OFF IN A HEART FAILURE PATIENT?

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It is well documented that implantable cardioverter defibrillator (ICD) saves lives in populations at risk for sudden death. However, mortality in advanced heart failure remains high despite advances in therapy.¹ Twenty per cent of ICD patients receiving shocks in the final weeks of their lives experience pain and decreased quality of life, causing distress to patients and their families.² Ethically and legally, there are no differences between refusing ICD therapy and requesting withdrawal of ICD therapy. Carrying out a request to withdraw life-sustaining treatment is neither physician-assisted suicide nor euthanasia.³ Decisions about deactivation of ICD are complicated. Proactive communication by clinicians before implant and during device follow-up are important in order to minimise suffering as the end of life nears for patients with ICDs. Clear discussion about the benefits and burdens of the device should be made. Advance care planning addressing device deactivation should be encouraged for all patients with ICD.⁴

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11

HOSPICE AND PALLIATIVE CARE FOR ADVANCED CARDIAC DISEASES IN HONG KONG

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Advanced cardiac diseases are common non-cancer conditions that require good palliative care. Palliative Care should embrace both cancer and non-cancer conditions, and is applicable early in the course of illness, in conjunction with other therapies. There is a high prevalence of symptoms and distress in heart failure (HF) necessitating palliative care, which include not just dyspnoea and oedema but also a range of other symptoms that are all sub-optimally controlled at the end of life.¹

For patients with HF, palliative care attends to physical, psychological, social and spiritual distress, caring for both patients and families with optimisation of quality of life.² Palliative care also facilitates communication and complex decision-making with advance care planning. Palliative support should be offered once there is a need. Prognostic indicators

are also available in alerting clinicians to timing and need for palliative care, especially in older patients.³

Evidence for benefit of early palliative care is emerging for structured palliative care services for HF. The PAL-HF randomised controlled trial shows that an interdisciplinary palliative care can yield greater benefits in quality of life, anxiety, depression, and spiritual well-being compared with usual care alone.⁴ Challenges in withholding or withdrawing care options like with non-invasive ventilation, implantable defibrillators, left ventricular assistive devices will need to be further addressed. Serious illness conversation guide from Harvard University is available also in local Hong Kong Chinese setting to facilitate discussion.⁵

Good HF care necessitates an integrated care programme, with palliative team working hand in hand with cardiologists.

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12

CHALLENGES IN SHOCK MANAGEMENT IN THE EMERGENCY DEPARTMENT

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The diagnosis and emergency management of patients with shock (poor end organ perfusion with reduced tissue oxygen delivery, usually associated with systolic hypotension) is difficult even in optimum circumstances. The challenge is multiplied when patients have to be managed in overcrowded and poorly resourced emergency departments (ED).

In Hong Kong, public hospital EDs manage over two million patient attendances annually, equivalent to 30% of Hong Kong's population. Around 30% of ED patients require emergency hospital admission, with the majority being more than 80 years old. Hong Kong's ageing population, with its associated comorbidities and polypharmacy, has inevitably contributed to rising numbers of critically ill ED patients in recent years.

Shock is a major cause (and consequence) of critical illness in ED patients. Hypovolaemic shock is frequently secondary to gastrointestinal bleeding and trauma; septic shock is increasingly common due to better recognition in the ED and more patients with chronic immunosuppression. Cardiogenic shock is common, usually due to acute myocardial infarction. Optimum treatment for these patients is undoubtedly emergency revascularisation by primary percutaneous coronary intervention (PCI).

Hong Kong currently does not have a regionalised or coordinated PCI service and this may contribute to the poor outcomes seen in elderly patients with cardiogenic shock. Increasingly, patients with acute on chronic heart failure often

present with shock and require a coordinated specialist approach at the earliest opportunity to improve outcomes.

Comprehensive collaboration between emergency medicine physicians, cardiologists, cardiothoracic surgeons and critical care services and shared clinical management are vital to optimise patient outcomes.

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THE SHOCK TEAM APPROACH: THE RATIONALE AND EVIDENCE

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Cardiogenic shock (CS) is defined as a state of ineffective cardiac output caused by a cardiac disorder that results in both clinical and biochemical manifestations of inadequate tissue perfusion.¹ Among patients presenting with CS, there is a spectrum of disease whereby some patients can be stabilised with pharmacologic interventions alone, while others require escalation to mechanical circulatory support (MCS).² As patients and treatment options both become increasingly complex, comprehensive critical care may be best delivered in disease-specific service line ICUs.² The model of the cardiac ICU has transitioned over time from one focused on electrocardiographic monitoring for early identification and termination of peri-infarct arrhythmias, to units experienced with invasive haemodynamic monitoring and management of percutaneous/surgically placed MCS devices for the treatment of CS. Early recognition of shock is vital to improving outcomes, and in-hospital survival for CS has been observed to be reduced in patients who are more rapidly supported with MCS.³ Integrating dedicated intensivists into ICU teams has therefore not surprisingly been demonstrated to improve survival in critically-ill patients.⁴ Furthermore, survival for CS may be better when treated at specialised centres with greater experience compared to centres with lower annual volume of shock cases.⁵ Contemporary, comprehensive cardiac critical care includes multidisciplinary teams with expertise in MCS, pharmacotherapy, mechanical ventilation, renal replacement therapies, and palliative care. Shock teams have necessarily expanded beyond a given institution to incorporate networks of centres, such that highly specialised care is centralised at quaternary referral centres with resources and expertise to manage this complex condition.

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