End Stage Heart Failure

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Heart Failure

• Chronic, progressive disease – major contributor to morbidity and mortality world-wide.
• Most common cause of admissions in those >65 years.
• QOL often worse than those with other chronic disease.
• Cluster of symptoms and debilitation which worsens with each hospitalisation.
• 38% die within 1 year of diagnosis and 60% die within 5 years.

1. Stewart et al. 2010 Population impact of heart failure and the most common forms of cancer. Circ Cardiovasc Qual Outcomes
4. NHS Information Centre. National Heart Failure Audit 2010
Symptomatic severity of heart failure

New York Heart Association functional classification based on severity of symptoms and physical activity

<table>
<thead>
<tr>
<th>Class</th>
<th>Definition</th>
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<tbody>
<tr>
<td>I</td>
<td>No limitation of physical activity. Ordinary physical activity does not cause undue breathlessness, fatigue, or palpitations.</td>
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<tr>
<td>II</td>
<td>Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in undue breathlessness, fatigue, or palpitations.</td>
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<tr>
<td>III</td>
<td>Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity results in undue breathlessness, fatigue, or palpitations.</td>
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<tr>
<td>IV</td>
<td>Unable to carry on any physical activity without discomfort. Symptoms at rest can be present. If any physical activity is undertaken, discomfort is increased.</td>
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- Clear relationship between severity of symptoms and survival
- Poor relationship between severity of symptoms and ventricular function
- Patients with mild symptoms may still have a relatively high absolute risk of hospitalization and death

McMurray et al. Eur Heart J 2012;33:1787–847
NYHA class is related to prognosis in chronic HF

Among 411 outpatients with NYHA class II, III or IV HF, total mortality was 7.1%, 15.0% and 28.0%, respectively during a mean follow-up period of 1.4 years.

A progressive condition with high mortality

- Increasing frequency of acute events with disease progression leads to high rates of hospitalization and increased risk of mortality
- With each acute event, myocardial injury may contribute to progressive LV dysfunction

LV: left ventricular

Heart failure, a worldwide burden

26 million
Number of heart failure patients worldwide.¹

1-2%
Health care expenditure attributed to heart failure in Europe and North America.²

74%
Heart failure patients suffering from at least 1 comorbidity: more likely to worsen the patient’s overall health status.³

Prevalence of HF

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Economic burden of chronic HF

Hospitalization accounts for most CHF-associated costs

Hospitalized HF patients have a 2.5x increased risk of mortality compared to HF patients who are not hospitalized
Recurrent hospitalization: strong predictor for increased mortality


HF Treatment

- Designed to counteract the Maladaptive Compensatory Mechanisms
- Irrefutable prognostic evidence of the benefit of HF medical therapy
- ACE I, B-Blockers, MRA(Spironolactone)
- These drugs also alleviate symptoms, reduce hospitalisations and improve QOL
- Diuretics important throughout trajectory by alleviating peripheral oedema and preventing pulmonary oedema
- ICD (Defibrillator) and CRTD (pacemaker/defibrillator) reduce mortality and improve symptoms (CRTD)
- Co-morbid conditions adequately treated
- Reversible causes of HF identified and treated

Gadoud et al 2013 Palliative Medicine 27(9)822-829
HF Treatment

Effect of Adding Medications/Devices

Survival

+ ICD
+ Aldo Blocker
+ β Blocker
+ ACEI
Baseline

Years

Cardiovascular Death and Heart Failure Admissions

Patients with primary composite endpoint (%)

Placebo (937 events)
Ibodraline (793 events)
HR 0.82 (95% CI 0.75-0.90), p=0.0001

Months
Angiotensin Neprilysin Inhibition With LCZ696 Doubles Effect on Cardiovascular Death of Current Inhibitors of the Renin-Angiotensin System

Effect of ARB vs placebo derived from CHARM-Alternative trial
Effect of ACE inhibitor vs placebo derived from SOLVD-Treatment trial
Effect of LCZ696 vs ACE inhibitor derived from PARADIGM-HF trial

Trajectory of heart failure

- Characterised by periods of stability with episodes of decompensation
- 79.5% patients have a gradual progression
- Sudden death can occur at any stage
- Patients co-morbidities affect the trajectory.
- Unique to each individual.

What do we know???

- There is a significant Burden from HF to individuals and the community
- Current treatments work but.......  
- People *eventually* Die from HF  
- Significant symptom burden toward end of life  
- Difficult to determine when people will die

Prognostication and HF

- Extremely Difficult
- Most prognostic indicator tools have not been found to be useful
- BNP measurement has greatest prognostic potential
- NYHA Classification major gauge of disease severity – 1 year mortality estimates  
  - Class II 5-10%
  - Class III 10-15%
  - Class IV 30-40%

1. Gadoud et al 2013 Palliative Medicine 27(9)822-829  
2. Marks et al 2015 Palliative Care Network Wisconsin
Variables associated with mortality

- Worsening LV dysfunction despite therapy
- Cardiac Hospitalisation - *triples 1 year mortality*
- Frequent re-admissions
- Failure to respond to / Intolerant of therapies (B-blockers ACE I) - 

*Increased 4 month mortality:*
- Cachexia
- End organ failure
- Frequent life threatening arrhythmias resistant to Rx
- Elevated creatinine & urea
- Hyponatraemia
- Anaemia – 16% *increase in mortality*
- Systolic BP < 100 and Pulse >100 - *Doubles 1 year mortality*
- Orthopnoea
- Multiple co-morbidities
- Terminal cancer

Marks et al 2015 Palliative Care Network Wisconsin

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**ESHF Non-Acute Care Management Patient Identifiers**

1. Patient with NYHA class IV Heart Failure consistently – (Unable to carry on any physical activity without discomfort. Symptoms of CHF present at rest, “severe (CHF)”)
2. Not suitable for any further procedural interventions (eg. revascularisation with coronary bypass surgery, coronary angioplasty, valve surgery, BIV pacing or cardiac transplantation)
3. Plus, meets at least one of the criteria below
   - Increasing heart failure symptoms despite maximum tolerated heart failure therapy including diuretics, ACE inhibitors and beta-blockers, as indicated.
   - Worsening or irreversible end organ damage (including cardiac cachexia).
   - Repeated hospital readmissions with deteriorating heart failure, ventricular arrhythmias or cardiac arrest.

The Surprise Question: "Would you be surprised if this patient died within the next 12 months?"

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1. The *Identifiers of Advanced Heart Failure* were developed by the Brisbane North Heart Failure Palliative Care Working Group and endorsed by the Metro South Advanced Heart Failure and Palliative Care Project Steering Committee in September 2008.
Palliation

Palliative care:

• Approach that improves quality of life of patients and their families facing the problem associated with life-threatening illness
• Through the prevention and relief of suffering
• By means of early identification and impeccable
• Assessment and treatment of pain and other problems,
• Physical, psychosocial and spiritual

Model for Palliative Care

Not Quite!

- WHO recommends PC early in the course of the illness
- Difficulties with “Too Early or Too Late” referrals
- Average time from PC referral to death - 21 days
- Less than 10% of patients with HF receive palliative care
- Less than 12% of US hospice admissions for HF patients

Barriers to Palliative care for HF

Clinicians:
- Unsure of how to discuss prognosis and unpredictable course
- Fear of destroying hope
- “Prognostic Paralysis” - conversations don’t happen
- Medical Model focused on prevention of death
- Don’t want to seem to have “failed” “lost the patient”
- Lack of understanding of palliative approach
- Belief this is just for “end of life”
- How to effectively collaborate
- Lack of clear responsibility

1. Gelfman et al 2014 Engaging Heart Failure Clinicians to increase palliative referrals: Overcoming Barriers, Improving techniques. Journal of Palliative Medicine
2. NHPCO Facts and Figures 2012 Hospice Care in America. National Hospice and Palliative Care Organization

Zehm et al 2016 Palliative Care for patients with heart failure: facilitators and barriers – a cross sectional survey of German health care professionals BMC Health Services Research 16:361
Lindual et al 2014 Overcoming Barriers to Palliative Care Referral for Patients with Advanced Heart Failure. Journal of the American Heart Association
Barriers to Palliative Care for HF

Patient / Family
• Belief HF Benign condition
• Patients and their families are insufficiently informed of the terminal nature of their condition
• Wish to focus on active ongoing treatment
• Rollercoaster like trajectory where there are numerous “Saves”
• No other alternative than to access hospital care for poorly controlled symptoms
• Do not wish to discuss end of life issues

Barriers to Palliative Care for HF

System

• Funding Model

• Lack of specialist palliative care resources
Potential of PC and HF

• Evidence base still in development for PC and HF But......
• Likely to improve clinical outcomes
• Improve pain
• Improve symptom control
• Clarity of goals of care
• Guiding Rx decisions to meet the goals

Gelfman et al 2014 Engaging Heart Failure Clinicians to increase palliative referrals: Overcoming Barriers, Improving techniques. Journal of Palliative Medicine

Hope for the best, plan for the worst

Proposed Model

• Collaborative management of the patient by HF and PC specialist teams
• PC team treats symptoms, offers emotional support
• HF team continues evidence based therapies and treats exacerbations
• Jointly engage in “Goals of Care” and “End of Life” discussions

Gelfman et al 2014 Engaging Heart Failure Clinicians to increase palliative referrals: Overcoming Barriers, Improving techniques. Journal of Palliative Medicine
Issues

• Assessment

• Symptom Management

• Clarifying EOL choices - where? how? what to expect?

• Supporting Family

Same approach to symptom management as for all PC patients

Davidson et al 2010 CHF in general practice Australian Family Physician
Assess history of presenting condition

- Not a physical assessment but helps to target what you are looking for
- Breathing
- NYHA (functional)
- Orthopnoea / PND
- Pain
- Chest pain
- Appetite
- Dizziness light headedness
- When does it occur
- Fluid intake
- Salt intake
- Medication compliance
- Daily Weight
- Loss / gain

Treatment - Dyspnoea

- Continue HF specific meds unless not tolerated
- Treat congestion with diuretics - IV / SC may be considered
- Alleviate symptoms, reduce admissions, improve QOL
- ACE I, ARNi, B-Blocker, MRA, Diuretic, Digoxin
- Current evidence-based approaches to dyspnoea
- Oral, transdermal or parenteral opioids
- Palliative oxygen (readily available for heart failure)
- Anxiolytics
- Non-medical management
- Calm reassurance, Explanation, Fresh cool air (fan or window)
Oedema Treatment

- Correct assessment
- Diuretics
- Oral, IV, SC
- Metolazone
- Continue HF medications

Assessment - Pain

- The pain can be cardiac or non-cardiac
- Often reported as pain all over the body
- Causes of cardiac pain as angina and oedema,
- Causes of non-cardiac pain: related to comorbidities and medical interventions
Treatment - Pain

Cardiac Pain:
• Long acting nitrates – patches / tablets
• Opioids

Non-cardiac pain:
• Simple Analgesia trialled first
• **NO NSAIDS**
• Opioids
• Non-pharmacologic approaches
• Repositioning, relaxation, distraction, and
• Alternative approaches, including music therapy, and aromatherapy.

Fatigue

• Emotional and cognitive dimensions influence fatigue
• Comorbidities contribute such as anaemia, infection, cachexia, and/or medications
• Psychological and situational factors.
• Management of fatigue is challenging and requires multidimensional strategies.
• Alleviate other symptoms to allow for rest
• Energy conservation techniques
• Exercise both active and passive
• Minimises oedema, breathlessness, decreases risk of other complications related to immobility.
Depression

• Medications to help treat depression include SSRIs

• Tricyclic antidepressants are avoided, potential for hypotension and arrhythmias

• Non-pharmacologic interventions such as psychosocial and spiritual support

Gastrointestinal Disturbances

• Gastrointestinal symptoms common nausea / vomiting, constipation, incontinence

• Antiemetics to relieve nausea

• Aperients may be required particularly if opioids are prescribed.

• Anorexia common

• Cachexia managed with increased calorie intake, dietary supplements, small frequent meals
Caregiver Burden

- Carer fatigue
- Depressive symptoms
- Decreased QOL
- HF and PC clinicians can collaboratively offer solutions

Gelfman et al 2014 Engaging Heart Failure Clinicians to increase palliative referrals: Overcoming Barriers, Improving techniques. Journal of Palliative Medicine

Realistic hope

- Be honest without being blunt or giving too much detail
- Do not give misleading information to positively influence hope
- Reassure that support with symptoms is available
- Explore day to day ways of coping and realistic goals and wishes
Withdrawal of treatment

• Withdrawing and withholding treatments is a challenging decision

• Generally, the aim should be to maintain core CHF drugs for as long as possible as they assist in decreasing symptoms

• Avoid diagnostic tests unless there is clear intent to act upon the results

Medication Withdrawal

• The decision to withdraw or withhold medication should be based on a comprehensive clinical assessment

• If a treatment goal is to reduce the number of tablets – consider withdrawing drugs such as digoxin and statins

• Determine the risk / benefit ratio for Anticoagulation
Conclusion

• Endstage heart failure is not a disease itself but the final pathway for those with heart failure.
• “To cure sometimes, relieve often, and comfort always” said a 16th century anonymous physician
• Aggressive symptom management, psychosocial and spiritual support help to:
  • Prevent suffering
  • Lead to a peaceful, dignified death

Thank You