BSH Heart Failure Nurse and Healthcare Professional Study Day 2017

Presentation title: What is the impact of comorbidities

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Conflicts of interest: No conflicts of interest to declare
What is the Impact of Comorbidities?

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Declarations of Interest

- 2016: 10K Research Nurse support for RELAX-EU study, Novartis
- 2014: Advisory board, Novartis

- No conflicts of interest to declare
HEART FAILURE CLINIC

WHAT'S YOUR DIET LIKE MR JONES?

MOSTLY TABLETS!!
90% TABLETS, 10% FOOD

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FRAILTY....

is the new VT
Better management of comorbid factors is the New Frontier
Introduction

• 1998, Brown and Cleland: 25,000 pts with hosp HF diagnosis – CMs overlooked but precipitate/complicate admissions

• 2003, Braunstein – 122,000 medicare HF pts – readmission risk related to no of comorbidities
Impact of CM burden on Annual Probability of Hospitalisation

0 CM: >35% admitted/y
>9 CM: >90% admitted

Braunstein JACC 2003, ACSC = ambulatory care sensitive condition
Medicare HF Beneficiaries (>65y)

86% >2 comorbidities, 25% >6 comorbidities

Braunstein JACC 2003
HFpEF vs. HFrEF
(Stratified by no. of Comorbidities)

Ather JACC 2003
Table 5. Association of Noncardiac Comorbidity With Death Among Medicare Beneficiaries With CHF

<table>
<thead>
<tr>
<th>Condition</th>
<th>Risk Ratio (95% CI)</th>
<th>(n = 122,630)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted</td>
<td>Adjusted*</td>
</tr>
<tr>
<td>Lower respiratory disease, failure or insufficiency</td>
<td>2.56 (2.48–2.63)</td>
<td>2.34 (2.27–2.41)</td>
</tr>
<tr>
<td>Acute and unspecified renal failure</td>
<td>2.06 (1.96–2.16)</td>
<td>1.46 (1.38–1.54)</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>1.92 (1.84–1.99)</td>
<td>1.65 (1.58–1.73)</td>
</tr>
<tr>
<td>Alzheimer’s disease/dementia</td>
<td>1.64 (1.58–1.70)</td>
<td>1.24 (1.20–1.29)</td>
</tr>
<tr>
<td>Cerebrovascular disease, late effects</td>
<td>1.41 (1.32–1.51)</td>
<td>1.23 (1.15–1.31)</td>
</tr>
<tr>
<td>COPD/bronchiectasis</td>
<td>1.31 (1.27–1.34)</td>
<td>1.12 (1.09–1.16)</td>
</tr>
<tr>
<td>Depression/affective disorders</td>
<td>1.12 (1.07–1.18)</td>
<td>1.07 (1.02–1.13)</td>
</tr>
<tr>
<td>Peripheral or visceral atherosclerosis</td>
<td>1.03 (0.99–1.07)</td>
<td>0.95 (0.92–0.99)</td>
</tr>
<tr>
<td>Hypertension—with complications or secondary</td>
<td>0.97 (0.93–1.02)</td>
<td>0.94 (0.90–0.98)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>0.94 (0.91–0.97)</td>
<td>1.11 (1.07–1.14)</td>
</tr>
</tbody>
</table>

Similar pattern with admissions
# National Heart Failure Audit Data

## Table 15: Medical history

<table>
<thead>
<tr>
<th>Medical History</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischaemic heart disease (IHD)</td>
<td>46</td>
</tr>
<tr>
<td>Acute myocardial infarction (AMI)</td>
<td>29</td>
</tr>
<tr>
<td>Valve disease</td>
<td>24</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>41</td>
</tr>
<tr>
<td>Hypertension</td>
<td>54</td>
</tr>
<tr>
<td>Chronic renal impairment</td>
<td>25</td>
</tr>
<tr>
<td>Diabetes</td>
<td>32</td>
</tr>
<tr>
<td>Asthma</td>
<td>9</td>
</tr>
<tr>
<td>Coronary obstructive pulmonary disease (COPD)</td>
<td>18</td>
</tr>
<tr>
<td>IHD and hypertension</td>
<td>26</td>
</tr>
</tbody>
</table>
Comorbid Factors

• Medical
• Psychological
  – Cognitive fn
  – Major psychiatric illness
  – Addiction
• Mobility/falls
• Environment
• Social
  – Isolation
  – Financial and educational
## HFU Coding Sheet

<table>
<thead>
<tr>
<th>Role</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drs</td>
<td>T1 or T2 Diabetes, Stroke (CVA), Acute Myocardial Infarct (=STEMI/NSTEMI),</td>
</tr>
<tr>
<td></td>
<td>Infection (LRTI/UTI/cellulitis/oral candidiasis/endocarditis/viral or</td>
</tr>
<tr>
<td></td>
<td>unspecified intestinal infection), Hypotension - due to drugs/orthostatic/</td>
</tr>
<tr>
<td></td>
<td>idiopathic</td>
</tr>
<tr>
<td>All</td>
<td>Disorientation/dementia/mild cognitive disorder, Organic anxiety disorder/</td>
</tr>
<tr>
<td></td>
<td>organic mood disorder</td>
</tr>
<tr>
<td>OT/Physio</td>
<td>Immobility/difficulty in walking/ataxic or paralytic gait</td>
</tr>
<tr>
<td>Dietician</td>
<td>Anorexia/abnormal weight loss/feeding difficulties/insufficient intake</td>
</tr>
<tr>
<td></td>
<td>due to neglect/other signs and symptoms concerning food/fluid intake/dysphagia</td>
</tr>
<tr>
<td>Nursing</td>
<td>Urine incontinence/faecal incontinence/retention of urine, Leg ulcer/any</td>
</tr>
<tr>
<td></td>
<td>decubitus pressure area or ulcer/superficial injury lower leg</td>
</tr>
</tbody>
</table>
Specific comorbidities: Depression

- Common – 24-42% estimated
- Affects cognitive function
- Affects adherence
- Contributes to isolation
- Routine screening is advised
- CBT with education improves D+A and HF QOL
- Effectiveness of antidepressants not proven
Cognitive Function

Affects
- Adherence
- Carer QOL
- Survival
- Management (less likely to receive conventional therapies)
- Disease presentation
Diabetic Medication

- Metformin safe (except in AKI/severe CKD)
- Thiazolidinediones (glitazones) → Na and water retention and increase risk WFH
- DPP-4 inhibitors: FDA warning
  - SAVOR: 3.5% saxagliptin patients versus 2.8% placebo HF hosp
  - EXAMINE: 3.9% alogliptin patients cf 3.3% placebo HF hosp
  - But no increased risk for saxa- in large obs study
Gliflozins

- Inhibit Na glucose co-transporter-2 (SGLT-2) → glucose excreted in urine.
- EMPA-REG: (empagliflozin) reduced MACE (via mortality HR 0.62) and HF hosp (HR 0.65)
- First DM med since insulin (1922) to demonstrate benefit for CV outcomes
- Dapagliflozin, Canagliflozin, Ertugliflozin: studies in HF patients ongoing
Gout

• Common in HF
• Can be precipitated by diuretics
• Uricaemia associated with poorer Px
• Urate lowering Rx – aim Uric acid <400micromol/l
• Acute episodes
  – Not NSAIDs
  – Colchicine can be used at lower dose
  – Or 20mg prednisolone for 5-7 days
CKD/AKI

- CKD worsens prognosis

- GFR <30 excluded from HF trials
- Worsening renal failure (WRF) = 20% ↓ GFR
- Recurrent WRF → progression of CKD
- WRF relatively common during initiation/uptitration HF meds but provided change is small, should not be stopped
AKI

1. AKI stage 1 = rise $>1.5 \times$ creat, $<48$h
2. AKI stage 2 = rise $>2 \times$ creat, $<48$h
3. AKI stage 3 = rise $>3 \times$ creat/$>1.5 \text{ to } >354 \mu\text{mol/L}$

80% occur with acute illness in
- Infection
- Hypovolaemia
- Hypotension
- Medication effects

10% outflow obstruction
SGH Data: AHF, AKI and Mortality

**AKI - frequency and mortality rate**

- **No AKI**: 85.20%
- **Stage 1**: 23.20%
- **Stage 2**: 35.50%
- **Stage 3**: 58.80%

- **Percentage**: 6.40%, 9.20%, 3.90%, 1.70%

- **Legend**:
  - % of admissions
  - % mortality
COPD

- Assess spirometry when HF stable to avoid overdiagnosis
- Worsens prognosis
- BB not contraindicated – ?beneficial 20% RR mortality, ↓adm

In asthma initiate with Resp advice
- Consider need for beta-agonist inhalers
- Refer to pulmonary rehab

Short BMJ 2001, n=6K
HF with Multiple Comorbidities

- Largely not evidence based
- Often limits implementation and tolerability of HF Rx
- Self care inversely related to no. of comorbidities
- Diuretic therapy in a frail multi-morbid patient more likely to lead to
  - progression of renal dysfunction
  - electrolyte imbalance
  - urinary incontinence
  - delirium
  - falls
- Vasodilators may lead to hypotension due to arterial sclerosis and autonomic dysfunction
Strategies

• Involve specialists – OT, physio, dieticians, SW
• GP review – rationalise medication list
• Expert help – Comprehensive Geriatric Assessment
• Work closely with other specialist colleagues
• Treat the heart failure as well as possible
  – Improves mood and depression, sleep and appetite
  – Improves mobility ---- reduces isolation
  – Improves cognitive function
  – Stabilises renal function ?reduce COPD exacerbations
Summary: Increasing recognition of impact…

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Interfere with the diagnostic process of HF (e.g. COPD as a potentially confounding cause of dyspnoea). 390, 391</td>
</tr>
<tr>
<td>2.</td>
<td>Aggravate HF symptoms and further impair quality of life. 391, 392</td>
</tr>
<tr>
<td>3.</td>
<td>Contribute to the burden of hospitalizations and mortality, 393 as the main cause of readmissions at 1 and 3 months. 394</td>
</tr>
<tr>
<td>4.</td>
<td>May affect the use of treatments for HF (e.g. renin–angiotensin system inhibitors contra-indicated in some patients with severe renal dysfunction or beta-blockers relatively contra-indicated in asthma). 395, 396</td>
</tr>
<tr>
<td>5.</td>
<td>Evidence base for HF treatment is more limited as co-morbidities were mostly an exclusion criterion in trials; efficacy and safety of interventions is therefore often lacking in the presence of co-morbidities.</td>
</tr>
<tr>
<td>6.</td>
<td>Drugs used to treat co-morbidities may cause worsening HF (e.g. NSAIDs given for arthritis, some anti-cancer drugs). 397</td>
</tr>
<tr>
<td>7.</td>
<td>Interaction between drugs used to treat HF and those used to treat co-morbidities, resulting in lower efficacy, poorer safety, and the occurrence of side effects (e.g. beta-blockers for HFrEF and beta-agonists for COPD and asthma). 391, 395, 396</td>
</tr>
</tbody>
</table>

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure
• Thank you