Limiting Care in Cardiothoracic Surgery

End of Life Matters — SAAPM Seminar
25 October 2016

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New Technology

- Numerous procedures and technologies now available to extend life in patients with heart disease:
  - Transcatheter valve procedures (TAVI, TMVI)
  - Ventricular assist devices (VADs), transplantation
  - Extracorporeal membrane oxygenation (ECMO)
- Lung cancer and chronic lung disease amenable to various treatments:
  - Immunotherapy, chemotherapy
  - Stereotactic radiotherapy
  - Home oxygen
The majority of patients from 2012 to 2013 and 2014 are from 80 to 90 years of age. Although there were significant differences over time, these differences were not clinically significant. TAVR = transcatheter aortic valve replacement.
Where Is The Benefit?

- Expensive technologies
- Questionable benefit in terms of prolongation of life
- Probable benefit in terms of improvement of quality of life for selected therapies
All-Cause Mortality (ITT) Crossover Patients Censored at Crossover

- Standard Rx (n = 179)
- TAVR (n = 179)

HR [95% CI] = 0.50 [0.39, 0.65] p (log rank) < 0.0001

* In an age and gender matched US population without comorbidities, the mortality at 5 years is 40.5%.

Kapadia. TCT 2014
<table>
<thead>
<tr>
<th>Therapy</th>
<th>Cost per QALY (US $)</th>
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<tbody>
<tr>
<td>Enalapril for heart failure</td>
<td>115</td>
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<tr>
<td>Intensive insulin therapy for a 25 yr old</td>
<td>9,614</td>
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<tr>
<td>CRT-P</td>
<td>10,143</td>
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<tr>
<td>CRT-D</td>
<td>18,017</td>
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<tr>
<td>TAVI</td>
<td>22,586</td>
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<tr>
<td>Rosuvastatin (as in JUPITER study)</td>
<td>25,200</td>
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<tr>
<td>Herceptin for breast cancer (3 weekly for 1 year)</td>
<td>58,969</td>
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<tr>
<td>LVAD (continuous-flow)</td>
<td>198,184</td>
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<tr>
<td>ACEI for hypertension in echo-LVH</td>
<td>200,000</td>
</tr>
<tr>
<td>Cetuximab for metastatic colorectal cancer</td>
<td>201,758</td>
</tr>
<tr>
<td>Screening at 50 yrs for proteinuria, then ACEI</td>
<td>282,818</td>
</tr>
<tr>
<td>Warfarin for non-valvular AF in a 65 yr old</td>
<td>370,000</td>
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<tr>
<td>ACEI for hypertension in unselected patients</td>
<td>700,000</td>
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</tbody>
</table>
Where Do We Stop?

- Responsibility lies with medical profession to recognise “hopeless” cases
- Many studies exist predicting poor outcome regardless of therapy
- Requires education of patients and families regarding expectations of care
- Advance care directives allow patients to clearly express wishes prior to illness
- Discussion of options at bedside often limited and prone to “pressure”
- Procedure itself rarely ends in death, recovery is prolonged and often limited
TAVR Cohort C considerations

Frailty, malnutrition, cachexia-
Cardiopulmonary- e.g., LV, MR, PHTN
Lung, liver, and kidney-
Neoplasm-
Dementia/Alzheimer's-
Neurological, stroke-

Other illnesses or disabilities precluding return to semi-independent, meaningful functional existence-
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Case 1

- 55 year-old man
- Morbidly obese, hypertensive, smoker, diabetic, renal failure on haemodialysis
- Known coronary artery disease, previously documented as inoperable, for medical management
- Presented with acute MI, underwent emergency PCI and insertion of IABP, transferred to ICU
- Referred for urgent CABG due to ongoing pain
Case 2

- 82 year-old man
- Pulmonary fibrosis on home oxygen, severe COPD, pulmonary hypertension, significant RV dysfunction (cor pulmonale), previous CABG
- Presents with spontaneous pneumothorax, drain inserted with re-expansion of lung, but ongoing air leak with recurrent pneumothorax on cessation of suction
- Referred for VATS pleurodesis
Case 2

- 81 year-old man
- Known aneurysm of ascending aorta (5.0 cm), active decision taken for conservative management given age
- Presents with acute type A aortic dissection
- Referred for emergency surgery from ED