PERIOPERATIVE CARE FOR DIALYSIS PATIENTS

Michael Lian
Prevalent dialysis mortality
Australian patients vs general population

Annual death rate (95% CI)

Age

Female
Male

Dialysis patients
General population

2015 ANZDATA Annual Report, Figure 3.2
Survival on Renal Replacement Therapy
Australia 2005-2014

Proportion alive

Years of RRT

Age at RRT start
- 0-24
- 25-44
- 45-64
- 65-74
- 75-84
- 85+

2015 ANZDATA Annual Report, Figure 3.1
Cause of death
Deaths occurring during 2014

Australia

HD
PD
Tx

Percent

New Zealand

HD
PD
Tx

Cardiovascular
Withdrawal
Infection
Cancer
Other

2015 ANZDATA Annual Report, Figure 3.5
Prevalent RRT Patients - Australia
31 December 2014

Patients per million population

0-4  5-14  15-24  25-34  35-44  45-54  55-64  65-74  75-84  85+

2015 ANZDATA Annual Report, Figure 2.1
RRT Modality by Country 2014

Australia
- PD: 46%
- Facility HD: 38%
- Home HD: 5%
- Transplant: 11%

New Zealand
- PD: 38%
- Facility HD: 32%
- Home HD: 19%
- Transplant: 11%

2015 ANZDATA Annual Report, Figure 2.3
Strategies to reduce surgical risk

- Electrolyte and fluid state
- Bleeding
- Anaemia
- Vascular access
- Cardiovascular dysfunction
- Pharmacological issues & drug choices
- Intravenous fluid
- Postoperative care
Surgery & dialysis

- Dialysis
- Dialysis modality
- Dialysis facility
- Trained staff
- Timing of dialysis & surgery
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
<th>Median (Interquartile Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of dialysis session — min</td>
<td>217.2±33.5</td>
<td>213.0 (195.0–240.0)</td>
</tr>
<tr>
<td>Weight — kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predialysis</td>
<td>81.0±22.9</td>
<td>77.3 (65.3–92.5)</td>
</tr>
<tr>
<td>Postdialysis</td>
<td>78.1±22.4</td>
<td>74.5 (62.7–74.5)</td>
</tr>
<tr>
<td>Interdialytic weight gain — %</td>
<td>3.8±3.0</td>
<td>3.6 (2.5–4.9)</td>
</tr>
<tr>
<td>Urea reduction ratio</td>
<td>0.72±0.08</td>
<td>0.73 (0.69–0.77)</td>
</tr>
<tr>
<td>Reported Kt/V†</td>
<td>1.69±12.62</td>
<td>1.60 (1.41–1.80)</td>
</tr>
<tr>
<td>Residual urine function used in the estimation of Kt/V — % of patients†</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Body-mass index‡</td>
<td>27.8±7.6</td>
<td>26.3 (22.7–31.2)</td>
</tr>
<tr>
<td>Serum albumin — g/dl</td>
<td>3.8±0.5</td>
<td>3.8 (3.5–4.1)</td>
</tr>
<tr>
<td>Hemoglobin — g/dl</td>
<td>12.0±1.5</td>
<td>12.0 (11.2–12.9)</td>
</tr>
<tr>
<td>Wait-listed for kidney transplant — % of patients</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>Diabetes — % of patients</td>
<td>49.5</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular hospitalization in preceding 90 days — % of patients‡</td>
<td>11.9</td>
<td></td>
</tr>
</tbody>
</table>
B  Annualized CVD-Admission Rate

- Any CVD
- CHF
- MI
- Dysrhythmia
- Stroke

Rate per 100 Person-Yr

Day of Week: HD₁, HD₁+1, HD₂, HD₂+1, HD₃, HD₃+1, HD₃+2

Cause of death in prevalent dialysis patients in the United States, 2005 to 2007. 1 AMI indicates acute myocardial infarction; CHF, congestive heart failure; CVA, cerebrovascular accident.

Palaniappan Saravanan, and Neil C. Davidson Circ Arrhythm Electrophysiol. 2010;3:553-559
Electrolyte & fluid state

- Potassium
- Acid base disorder
- Dry weight
Bleeding

- Platelet dysfunction
- Bleeding time?
- Optimising situation?
- Timing of haemodialysis (pre- & post-surgery)
Anaemia

• Anaemia of chronic kidney disease
• Iron supplementation
• Erythropoietic stimulating agent
• Transfusion?
• Transplantation
Vascular access

- AV fistula/graft
- Haemodialysis catheter
- IV cannula
- Central or long lines
Peritoneal dialysis

- CAPD v APD
- Empty or full
- Staff ability to do peritoneal dialysis
- Patient ability to do peritoneal dialysis
Analgesia

- Opiates
  - Fentanyl
  - Morphine
    - Metabolites prolonged in renal failure
- Tramadol
- Acetaminophen
Intravenous fluid

- Fluid overload
- Pulmonary oedema
- Diastolic dysfunction
- Normal saline (Na loading; hyperchloremic acidosis)
- Hartmann’s solutions (hyperK)