Dialysis results from the Australian PINOT study

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Guidelines for ‘Acceptance onto dialysis’
- Refer to a nephrologist eGFR < 30ml/min/1.73m²
- Allow 3-6 months for pre-dialysis education, access, planned dialysis start or conservative care

Professional consensus UK National framework
- 12 months optimal
30% of patients were not presented with any treatment options\textsuperscript{1,2}.
- 48% received information < 1 month before starting.

Systematic review of 18 studies\textsuperscript{3}.
- Too sick, or occupied with other health problems / procedures.

Evaluation of information provision not previously been reported.

Aims

 › Determine the effect of patient and unit characteristics on the type and timing of information presented

 › Examine the associations between patient and unit characteristics on initial treatment modality
   - Dialysis access
Methods

› Prospective observational study of new patients over a 3 month period
› All public and private Australian units
› Web-based questionnaire to clinicians (www.limesurvey.com)
› Source data: pre-dialysis databases, letters, patient’s notes
› Quality assurance
  - source data verification
  - 2nd rater
› Ethical approval #11261
› Clinicaltrials.gov identifier: NCT01298115
Statistical considerations

› Logistic regression - to estimate the effects of patient and unit characteristics
  - the likelihood of provision of information prior to treatment
  - initial treatment commenced
  - type of dialysis access

› One sample binomial test - to assess proportion of patients not receiving information prior to treatment from a previously reported value of 30%

› Results presented as odds ratios (OR) with 95% CI
  - SAS v 9.2

Morton RL et al. Nephrology 2010. 15(6) 649-652
Results: Initial modality

66 of 73 units participated ~95% of all RRT patients

New stage 5 CKD patients in Australian renal units commencing renal replacement therapy or conservative care between 1st July - 30th September 2009
(n=721)

- Pre-emptive transplant: 25 (3%)
- PD: 134 (18%)
- Home HD: 12 (2%)
- Satellite HD: 31 (4%)
- In-centre HD: 412 (57%)
- Conserv care: 102 (14%)
- Died before starting treatment: 5 (1%)

66 of 73 units participated ~95% of all RRT patients
### Results: Patient characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Median (IQR)</td>
<td>67</td>
<td>(53-77)</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>423</td>
<td>(59)</td>
</tr>
<tr>
<td>Health insurance</td>
<td>Public only</td>
<td>479</td>
<td>(66)</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>145</td>
<td>(21)</td>
</tr>
<tr>
<td></td>
<td>DVA</td>
<td>24</td>
<td>(3)</td>
</tr>
<tr>
<td>English spoken at home</td>
<td></td>
<td>573</td>
<td>(79)</td>
</tr>
<tr>
<td>Interpreter required</td>
<td></td>
<td>70</td>
<td>(10)</td>
</tr>
<tr>
<td>Time known to a nephrologist</td>
<td>&lt; 3 months</td>
<td>157</td>
<td>(22)</td>
</tr>
<tr>
<td></td>
<td>3 - 12 months</td>
<td>126</td>
<td>(17)</td>
</tr>
<tr>
<td></td>
<td>1 - 2 years</td>
<td>132</td>
<td>(18)</td>
</tr>
<tr>
<td></td>
<td>&gt; 2 years</td>
<td>306</td>
<td>(42)</td>
</tr>
</tbody>
</table>
Results: New patients receiving information about any treatment option prior to starting

- Known to a nephrologist for more than 3 months (OR 7.29, 95%CI 3.86-13.79, p <0.001)
- Treated in small units (OR 2.40, 95%CI 1.26-4.60, p <0.003)

Significantly less than 30% reported by others. (Kappa 89%)
Results: Timing of information

- Mean eGFR was 13.3ml/min/1.73m² (95%CI 12.7-13.8)
- Mean serum creatinine was 449umol/L (95%CI 431-467)

p=0.023
How information was provided

Who
- nephrologist
- nurse
- allied health
- other patients
- printed materials
- CD/DVD
- internet links
- KHA info service
- tour
- renal unit
- private rooms only
- home
- community centre

What
- nephrologist
- nurse
- allied health
- other patients
- printed materials
- CD/DVD
- internet links
- KHA info service
- tour
- renal unit
- private rooms only
- home
- community centre

Where
- nephrologist
- nurse
- allied health
- other patients
- printed materials
- CD/DVD
- internet links
- KHA info service
- tour
- renal unit
- private rooms only
- home
- community centre
Results:
Proportion presented with home dialysis option

- Pre-emptive transplantation: 230 (72%)
- Peritoneal dialysis: 521 (72%)
- Home haemodialysis: 380 (53%)
- Centre haemodialysis: 586
- Conservative management: 470

(n=721)
Primary reason given for patients not receiving information about PD and Home HD

<table>
<thead>
<tr>
<th>Treatment Option</th>
<th>Acute</th>
<th>Med/Surg Contra-indication</th>
<th>Housing*</th>
<th>Low literacy</th>
<th>No support†</th>
<th>Psychosocial‡</th>
<th>Refusal</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>1</td>
<td>30</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Home HD</td>
<td>-</td>
<td>16</td>
<td>18</td>
<td>2</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

* Insufficient water or power supply, extremely remote location, poor hygiene, multiple pets, renting accommodation, no fixed address, and residential aged care facility
† No support person / caregiver
‡ Psychiatric illness e.g. bipolar disorder, schizophrenia
∞ No peritoneal dialysis home training service
Factors associated with commencing home dialysis (PD or HD)

- Age
- Sex
- Insurance
- Interpreter
- Time known (p< 0.001)
- Timing of information presentation
- Size of unit
- Carer present (p< 0.001)
Planned modality switch to home dialysis

Current treatment and planned treatment in 6 months time

<table>
<thead>
<tr>
<th>Treatment modality</th>
<th>Initial modality at time of study</th>
<th>Projected modality in 6 months</th>
<th>Direction and magnitude of projected change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Transplant</td>
<td>25 (3)</td>
<td>40 (5)</td>
<td>+2%</td>
</tr>
<tr>
<td>Peritoneal dialysis</td>
<td>134 (18)</td>
<td>210 (28)</td>
<td>+10%</td>
</tr>
<tr>
<td>Home haemodialysis</td>
<td>12 (2)</td>
<td>56 (8)</td>
<td>+6%</td>
</tr>
<tr>
<td>Centre haemodialysis</td>
<td>443 (62)</td>
<td>332 (44)</td>
<td>-18%</td>
</tr>
<tr>
<td>Conservative care</td>
<td>102 (14)</td>
<td>111 (15)</td>
<td>+1%</td>
</tr>
</tbody>
</table>
Dialysis Access

Dialysis access and late referral

<table>
<thead>
<tr>
<th>Type of access</th>
<th>&lt;3 months</th>
<th>≥3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fistula/graft</td>
<td></td>
<td>177</td>
</tr>
<tr>
<td>PD catheter</td>
<td>7</td>
<td>133</td>
</tr>
<tr>
<td>Tunnelled HD catheter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary catheter</td>
<td>272</td>
<td></td>
</tr>
</tbody>
</table>

n=589

Number of dialysis patients
Limitations & strengths of the PINOT study

› Incident patients measured over a 3 month period
› No evaluation of the effectiveness of information

› Multi-centre study with 66 of 73 Australian renal units participating
› No patient recall bias
› Excellent inter-observer agreement
The majority of incident dialysis patients in Australia are presented with information about their treatment options prior to starting treatment.

- 75% receive information about home dialysis options.

- Information is first presented on average rather ‘late’
  - Except in the Northern Territory.
Discussion

› There is a lot of planned ‘switching’ of modalities

› Rates of temporary dialysis access are high, even in patients known for > 3 months
Questions
and
Discussion

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Prevalent dialysis patients at 31\textsuperscript{st} December 2009

<table>
<thead>
<tr>
<th>Dialysis modality</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peritoneal dialysis</td>
<td>2177</td>
<td>(21)</td>
</tr>
<tr>
<td>Home haemodialysis</td>
<td>963</td>
<td>(9)</td>
</tr>
<tr>
<td>Satellite haemodialysis</td>
<td>4850</td>
<td>(47)</td>
</tr>
<tr>
<td>Hospital haemodialysis</td>
<td>2351</td>
<td>(23)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>10,341</strong></td>
<td>(100)</td>
</tr>
</tbody>
</table>
Results: Characteristics associated with receiving information prior to starting

› Known to a nephrologist for more than 3 months
  (OR 7.29, 95%CI 3.86-13.79, p <0.001)

› Treated in small units
  (OR 2.40, 95%CI 1.26-4.60, p <0.003)

› Of those who were known for > 3 months
  - 7 refused
  - 6 not referred
  - 4 not for dialysis
  - 3 transferred
  - 2 remote, 2 dementia

![Time known to a nephrologist for patients not receiving prior information](image-url)
Number of patients receiving information prior to commencing treatment by initial treatment type

<table>
<thead>
<tr>
<th>Info prior</th>
<th>Pre-emptive transplant</th>
<th>Peritoneal dialysis</th>
<th>Home haemodialysis</th>
<th>Centre-based haemodialysis</th>
<th>Conservative care</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Yes</td>
<td>25 (100)</td>
<td>133 (99)</td>
<td>12 (100)</td>
<td>341 (77)</td>
<td>87 (85)</td>
<td>598 (84)</td>
</tr>
<tr>
<td>No</td>
<td>0 (0)</td>
<td>1 (1)</td>
<td>0 (0)</td>
<td>102 (23)</td>
<td>15 (15)</td>
<td>118 (16)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25 (100)</td>
<td>134 (100)</td>
<td>12 (100)</td>
<td>443 (100)</td>
<td>102 (100)</td>
<td>716* (100)</td>
</tr>
</tbody>
</table>

* The 5 patients who died before starting planned treatment were excluded