Improving PD Outcomes in ANZ through Guideline Implementation

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These Are a Few of My Favourite Things

Quality Improvement and Peritoneal Dialysis (in that order...)

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Outline

- What are the problems with PD in ANZ?
  - *Infection prophylaxis and treatment a problem*

- How can implementing a guideline help?
  - *Guidelines are only helpful if put into practice*

- How do we actually go about this?
  - *How to do an implementation trial*
  - *What are the barriers likely to be and how can we change practice*
Current Status of PD in ANZ

- PD technique survival rates in ANZ are lower than elsewhere in the world.
- ‘Social reasons’ and infections major contributors
- Peritonitis rates worse than many countries
  - Australia: 1 episode per 19.4 patient-months, 1/3 of Australian PD units don’t meet ISPD standard
  - NZ: 1 episode per 15 patient-months
- Peritonitis outcomes inferior, overall cure rate of only 68%*
- PD peritonitis leads to relapse (14%), hospitalisation (70%), catheter removal (22%) and permanent HD transfer (18%).
- Poor PD outcomes may be related to significant deviations from ISPD or units’ own guidelines*

* Australian Peritonitis Registry
### How Much Worse Are We?

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Technique Survival</th>
<th>Peritonitis Rate* (patient months/episode)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1 yr</td>
<td>2 yr</td>
</tr>
<tr>
<td>Aust</td>
<td>69</td>
<td>45</td>
</tr>
<tr>
<td>NZ</td>
<td>74</td>
<td>55</td>
</tr>
<tr>
<td>Korea</td>
<td></td>
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<tr>
<td>China</td>
<td>97</td>
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<td>Mexico</td>
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<td>74</td>
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<tr>
<td>Canada</td>
<td>82</td>
<td>69</td>
</tr>
<tr>
<td>Holland</td>
<td>84</td>
<td>75</td>
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<tr>
<td>Europe</td>
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*ISPD minimum recommended rate is 1 episode/18 patient months*
So How Can We Improve?

Peritoneal dialysis practice in Australia and New Zealand: A call to action
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KEY WORDS:
continuous ambulatory peritoneal dialysis, outcome, peritoneal dialysis, peritonitis, quality indicator.

ABSTRACT:
Peritoneal dialysis technique survival in Australia and New Zealand is lower than in other parts of the world. More than two-thirds of technique failures are related to infective complications (predominantly peritonitis) and social reasons. Practice patterns vary widely and more than one-third of peritoneal dialysis units do not meet the International Society of Peritoneal Dialysis minimum accepted peritonitis rate. In many cases, poor peritonitis outcomes reflect significant deviations from international guidelines. In this paper we propose a series of practical recommendations to improve outcomes in peritoneal dialysis patients through appropriate patient selection, prophylaxis and treatment of infectious complications, investigation of social causes of technique failure and a greater focus on patient education and clinical governance.
5 Key Areas Identified

1. Patient selection
2. Prophylaxis and timely treatment of infectious complications
3. Investigation of “social causes” of technique failure
4. Patient education and continuous support
5. Clinical governance and professional standards
## Prophylaxis and Treatment of Infections: the Evidence – Practice Gap

<table>
<thead>
<tr>
<th>ISPD Guideline</th>
<th>Australian Practice Deviation</th>
<th>Outcome of Practice Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancomycin for MRSA (Evidence)</td>
<td>16% of MRSA peritonitis <em>not</em> treated with a glycopeptide</td>
<td>Higher rate of relapse, hospitalisation, catheter removal (50% vs 28%), perm HD transfer (36% vs 22%) and death (7% vs 4%)</td>
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<tr>
<td>Dual antibiotic therapy for <em>Pseudomonas</em> peritonitis (Evidence)</td>
<td>79% of <em>Pseudo</em> peritonitis <em>only</em> treated with one antibiotic</td>
<td>High rate of perm HD transfer (38% vs 10%)</td>
</tr>
<tr>
<td>Prophylactic antibiotics at time of catheter insertion decreases infection risk (Evidence)</td>
<td>47% of Australian PD units had no standard policy for AB prophylaxis for PD catheter insertion</td>
<td>Australian peritonitis rates 1 episode per 19.5 patient-months, NZ 1 per 15 pt-months</td>
</tr>
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</table>

Australian Peritonitis Registry 2003-2006
Other Examples

- Minimum duration of therapy for peritonitis 2 weeks, severe infections 3 weeks (Opinion)
  - In Australia: median treatment courses only 13 days for Strep and Enterococci, 14 days for S. aureus and Gram-negs, 15 days for fungal and polymicrobial
  - Cure rate only 68% overall, relapse 14%, hospitalisation 70%, catheter loss 22%, perm HD transfer 18%

- Avoid vancomycin for routine Gram-pos infections (Opinion)
  - 59% of documented methicillin-sensitive peritonitis episodes continue to be treated with vancomycin
  - Concern over rise of vancomycin-resistant organisms
Implementing the Guideline

- Having already established significant practice variation, next step is to choose a guideline to try to implement
  
1. Prophylactic antibiotics for insertion of PD catheters

2. Prophylaxis of exit–site and tunnel infections using mupirocin

Both guidelines in finals stages of update process (peer review) and will be published this year
How To Implement PD Guidelines

PD Care is multi-disciplinary but nephrologists must take a leadership role

Clinical governance and maintenance of professional standards important
Guideline Implementation Process

- Gather a group of experts!
- Utilise the quality improvement cycle
Plan for PD Implementation Project

1. CARI guideline for prophylactic antibiotics
2. Local adaptation of protocol
3. Patient to initiate PD
4. Infection rates recorded
5. Procedure booked
6. Antibiotics administered at insertion
7. Patient monitored for signs of infection
Guideline Implementation – Trial Design

- Simple 3 phase Study
  - Baseline data collection, implementation phase, post-implementation data collection
  - Comparison of pre- and post-implementation practices and outcomes
  - Small numbers of patients/units so need a moderate effect to show significant difference
- Probably most achievable, but need to be careful about unit selection
Larger-Scale Trials

- Cluster randomised trial
  - Use different centres (clusters) as groups to be randomised to implementation or not
  - Can compare centres to each other or implement different guidelines in different centres simultaneously using others as controls
  - Statistical power requires much larger numbers than randomising individuals (as in a conventional RCT) and dependent on cluster size

- Down-side is funding
Progress to date

- Early 2010 – Funding applications begin (Baxter extramural grant program)
- Late 2010 – Steering Committee formed from ANZ PD Units
- Denise Campbell secured NHMRC scholarship to undertake PhD
- Units Selected
- 2011 Baxter CEC Grant application
Implementation: Steps at Local Level

- 8 units selected for Implementation Project
  - Mixture of small and large, urban and rural, different states of Australia and 1 NZ site
- Will meet with representatives of each site to discuss local practice, local clinical governance and protocol usage and identify what some of the barriers to implementation might be
- Steering committee will provide advice and guidance on how implementation might be achieved at each individual site
Possible Implementation Strategies

Cause & Effect Diagram
(what/where is the problem?)

Nephrologist
- Doesn’t appreciate the problem
- Isn’t aware of the guideline
- Doesn’t agree with the guideline
- Doesn’t have unit protocols in place

Surgeon/
Interventional
Nephrologist
process
- Isn’t aware of the guideline
- Doesn’t ensure antibiotics given

Patients

Policies and
Processes

Inadequate/
inappropriate
antibiotic
prophylaxis
used at time
of PD catheter
insertion
Time-Line for Implementation Project

- Phase 1: baseline data collection and analysis (6 months)
- Phase 2: guideline implementation phase (12 months)
- Phase 3: post-implementation data collection and analysis (6 months)

⇒ total duration 2.5 years
Conclusion

- Infections are a key contributor to PD technique failure in ANZ
- Good guidelines for prophylaxis and treatment exist (CARI, ISPD)
- Wide variations in infection treatment and prophylaxis are occurring in ANZ PD units
- *Implementing* the guidelines offers a real chance to significantly improve outcomes
Acknowledgements

- **CARI Office** (Rowan Walker, Jonathan Craig, Denise Campbell, Martin Gallagher)

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- **Baxter Healthcare Australia** (Michelle Duddington, Anders Tranaeus)

“May I be excused? My brain is full.”