Urgent start PD: What is it, does it work, and how can we support it?

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Disclosures

• I have no conflicts to disclose relevant to the content of this talk

• I really like PD
Objectives

• Review the evidence surrounding urgent start PD
• Discuss program factors that enable and support urgent PD initiation
• Learn from the experiences of local PD programs by sharing successes and challenges related to urgent start PD
Outline

• What is urgent start PD?
• Review evidence surrounding urgent PD initiation
  – Outcomes compared to alternatives
• Processes required to support urgent start PD
• Review of local data and lessons learned
• Discussion time
What is urgent start PD?
Common definitions of urgent start PD

Urgent need for RRT, not emergent

• Not known to nephrology previously, require dialysis start <2 weeks

• Require dialysis start within 2 weeks of catheter placement

Different definitions are more than semantics – implies different patient groups (more later)
Why is initial RRT modality so important?

• Given the choice, ~50% of patients will choose home dialysis

• At the best of times not all end up on PD
  – BC target is 85%, truth often in 50-75% range across all jurisdictions

• Both of these numbers are lower if no pre-RRT education

Liberek, 2009
Why is initial RRT modality so important?

- Fewer patients transfer from HD to PD than the other way around
- The longer they are on HD the less they transfer

There is some evidence PD outcomes are worse after transfer from HD instead of initial PD

Liberek, 2009
Why is there controversy?

- We don’t argue about acute start HD, even though we know outcomes worse than planned HD
Guidelines even seem to suggest against acute start PD

Guideline 2.1 We suggest that, whenever possible, catheter insertion should be performed at least 2 weeks before starting PD. Small dialysate volumes in the supine position can be used if dialysis is required earlier (2B).

ISPD Access Guidelines, 2010
• Is there evidence that risk exists when using a PD catheter early?

• If so, is the risk sufficient to eliminate urgent PD initiation as an option?
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Insertion technique</th>
<th>Intervention and number of patients</th>
<th>Leak&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Peritonitis&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Exit-site infection&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Dysfunction&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Survival&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Song et al.</td>
<td>2000</td>
<td>Percutaneous</td>
<td>Group 1 (n=21): gradual increase in exchange volume</td>
<td>9.5%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>23.8%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>9.5%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>4.8%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>85.7%&lt;sup&gt;i&lt;/sup&gt;</td>
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<td></td>
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<td>Group 2 (n=38): full exchange volume (2 l) PD-initiated &lt;24 h in both groups</td>
<td>10.5%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>15.8%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>5.3%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>5.3%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>84.2%&lt;sup&gt;i&lt;/sup&gt;</td>
</tr>
<tr>
<td>Banli et al.</td>
<td>2005</td>
<td>Percutaneous</td>
<td>Early initiation of PD (n=41)</td>
<td>4.8%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>2.4%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>2.4%&lt;sup&gt;e&lt;/sup&gt;</td>
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<tr>
<td>Povlsen and Iversen</td>
<td>2006</td>
<td>Surgical</td>
<td>Group 1 (n=52): acute automated PD (started &lt;24 h)</td>
<td>7.7%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>15.4%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>3.9%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>15.4%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>86.7%&lt;sup&gt;i&lt;/sup&gt;</td>
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<td></td>
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<td>Group 2 (n=88): planned-start group</td>
<td>0%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>15.4%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>3.8%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>5.8%&lt;sup&gt;f&lt;/sup&gt;</td>
<td>90%&lt;sup&gt;i&lt;/sup&gt;</td>
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<tr>
<td>Jo et al.</td>
<td>2007</td>
<td>Percutaneous</td>
<td>Early initiation PD (n=51) (immediate)</td>
<td>2%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>4%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>4%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>12%&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
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<tr>
<td>Lobbedez et al.</td>
<td>2008</td>
<td>Not specified</td>
<td>Group 1 (n=34): unplanned patients initiated on PD</td>
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<td>Group 2 (n=26): unplanned patients initiated on HD</td>
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<tr>
<td>Yang et al.</td>
<td>2011</td>
<td>Surgical</td>
<td>Group 1 (n=226): early start of incremental PD (2.0–2.7 days)</td>
<td>2.2%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>4%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>1.3%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>3.1%&lt;sup&gt;g&lt;/sup&gt;</td>
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<tr>
<td></td>
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<td>Group 2 (n=84): late-start (41–43 days)</td>
<td>2.4%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>2.4%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>0%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>2.4%&lt;sup&gt;g&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td>Ghaffari A</td>
<td>2012</td>
<td>Percutaneous</td>
<td>Group 1 (n=18): urgent PD start (&lt;2 weeks after catheter insertion)</td>
<td>33.3%&lt;sup&gt;h&lt;/sup&gt;</td>
<td>1:10&lt;sup&gt;h&lt;/sup&gt;</td>
<td>1:55&lt;sup&gt;h&lt;/sup&gt;</td>
<td>11.2%&lt;sup&gt;h&lt;/sup&gt;</td>
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<tr>
<td></td>
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<td></td>
<td>Group 2 (n=9): planned-start 2–4 weeks after PD catheter insertion</td>
<td>11.1%&lt;sup&gt;h&lt;/sup&gt;</td>
<td>1:42&lt;sup&gt;h&lt;/sup&gt;</td>
<td>1:42&lt;sup&gt;h&lt;/sup&gt;</td>
<td>22.2%&lt;sup&gt;h&lt;/sup&gt;</td>
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Initial catheter leak and dysfunction rates of <10% considered acceptable.
Figure 2A: Kaplan-Meier Curve for Leak - 60 Days - Intention to Treat (ITT) Population

PD Initiation:
- Group 1 (G1): 7 Days
- Group 2 (G2): 14 Days
- Group 3 (G3): 28 Days

Cumulative Probability of Number of Leak

Primary Outcome:
Leak 4 weeks from PD initiation

Ranganathan, 2017
Why are we comparing urgent start PD to planned PD initiation?
Suboptimal dialysis initiation

• Not just an issue with PD, examined in HD as well
  – Starting before education
  – Not starting modality of choice
  – Starting with a less than ideal access

Mendelssohn et al, 2011
Urgent HD initiation has risks

Risk Ratios for 120d mortality

• Starting without prior nephrology care
  RR=1.4

• Starting with CVC RR=1.61
  – Worse than CAD, DM, PVD, ~ same as CHF

Bradbury et al, 2007
Urgent HD vs Urgent PD

• Several small observational studies show no difference in 6-12 month outcomes
• 2 larger studies (183 patients total)
  – No difference in 6 month mortality
  – More infection bacteremia (21% vs 3%)

Koch 2012, Lobbedez 2013
Ivarsen and Povlsen, 2014
Urgent start PD compared to the alternative: Urgent start HD

- Slightly higher risk of mechanical complications than usual PD
- Less severe infections than urgent start HD

Urgent start PD is at least as safe as urgent start HD if not safer
How do we support urgent start PD?
Reminder: who are we talking about?

• Urgent need for RRT, not emergent
• Not known to nephrology previously, require dialysis start <2 weeks
• Require dialysis start within 2 weeks of catheter placement
How do patients come to PD as an initial RRT modality?

KCC → planned PD start

No prior KCC → planned PD start

KCC → acute PD start

No prior KCC → acute PD start
A framework for urgent PD initiation

Ghaffari, 2013
Step 1: Patient education and orientation

- Requires team flexibility to provide rapid orientation
- Patient and family engagement
  - Remember these are not well patients!
- Rapid **team based**, objective assessment of PD candidacy
  - Patient, support and home factors

<table>
<thead>
<tr>
<th>Patient presents with advanced CKD without a plan for dialysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receives rapid modality education</td>
</tr>
<tr>
<td>Determined if PD candidate</td>
</tr>
<tr>
<td>Recommendation made to initiate PD</td>
</tr>
<tr>
<td>Patient agrees with urgent-start PD</td>
</tr>
</tbody>
</table>

I like you. Do you like me?

- Yes
- No
Step 2: Placing the PD catheter

- Abdominal assessment
- Pre-procedure preparation
  - May have to forgo some non-essential elements
Step 2: Placing the PD catheter

- Who will place the catheter?
- Nephrologist if bedside candidate
- If surgeon, need buy in from surgical team, champion from renal team
Step 3: Initial use of the catheter

- Specialized catheter care and access only by nurses familiar with early tube use
- Specific, protocolized dialysis regimen
Step 3: Initial use of the catheter

- Need to consider staffing and space requirements for ongoing IPD until PD training is complete.
Reports of Urgent Start PD

• The most common complications are leak and tube malfunction
  ~10% will experience this

• Most of these resolve with temporary cessation, few require tube replacement or HD

• If you persist, technique survival remains very high (>80%)

Ivarsen and Povlsen, 2014
Step 4: Training and going home

- Training can begin once:
  - Tube is healed
  - Pt is well enough

- This may require flexibility in training schedule, triage within program
Urgent start PD is a lot of work!

Local experience and lessons learned
Urgent start PD is possible: FHA experience

Patients treated immediately with IPD, no prior HD
You need a dedicated and coordinated team
You need to build capacity into your PD program for urgent starts

Staffing

• Urgent starts are more labor intensive than the average PD start
• Staff need time to complete the tasks associated with patient orientation, preparation
• IPD and training is time and staffing intensive, and some of these patients IPD for many weeks
You need to build capacity into your PD program for urgent starts

**Scheduling**

- Appropriate triaging is a must
  - This includes a good understanding of what is coming down the pipeline
  - Communication with KCC and other renal programs
- Improving workflow in other PD areas is essential
Crash landings vs Parachuters

Prior KCC: 118
No prior KCC: 11
Crash landings vs Parachuters

- Parachuters are a huge amount of work
- Streamlining and promoting optimal PD starts in known patients enables capacity for parachuters
  - Can we turn more crash landings into smooth landings?

KCC → acute PD start
No prior KCC → acute PD start
Challenges to address

• We need to strive for better data in urgent PD initiation to inform further QI initiatives
  – The unpredictable nature of this task makes it difficult to study

• More work on predicting patient trajectories will be immensely helpful
  – The best way to help urgent start patients is to make their starts less urgent
Summary

• Urgent start PD is possible and as safe or safer than alternatives
  – Risk of mechanical complications needs to be weighed against risks of acute HD

• A structured approach and dedicated multidisciplinary team is needed for these challenging cases

• Urgent start PD is lots of work!
  – Streamlining other tasks in the PD program allows room for this workload
Acknowledgements

• All PD patients and PD care providers in the province

• The dedicated PD teams at the 3 FHA sites I have the privilege of working with
References


Questions/Discussion

CAN GET PATIENTS STARTED ON PD WHEN THEY NEED IT MOST!