



# **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

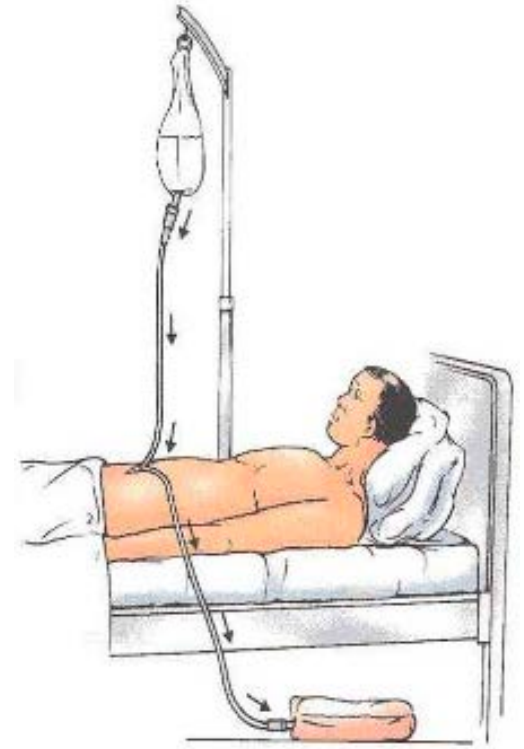
# Objectives

- 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



# 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



# 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).



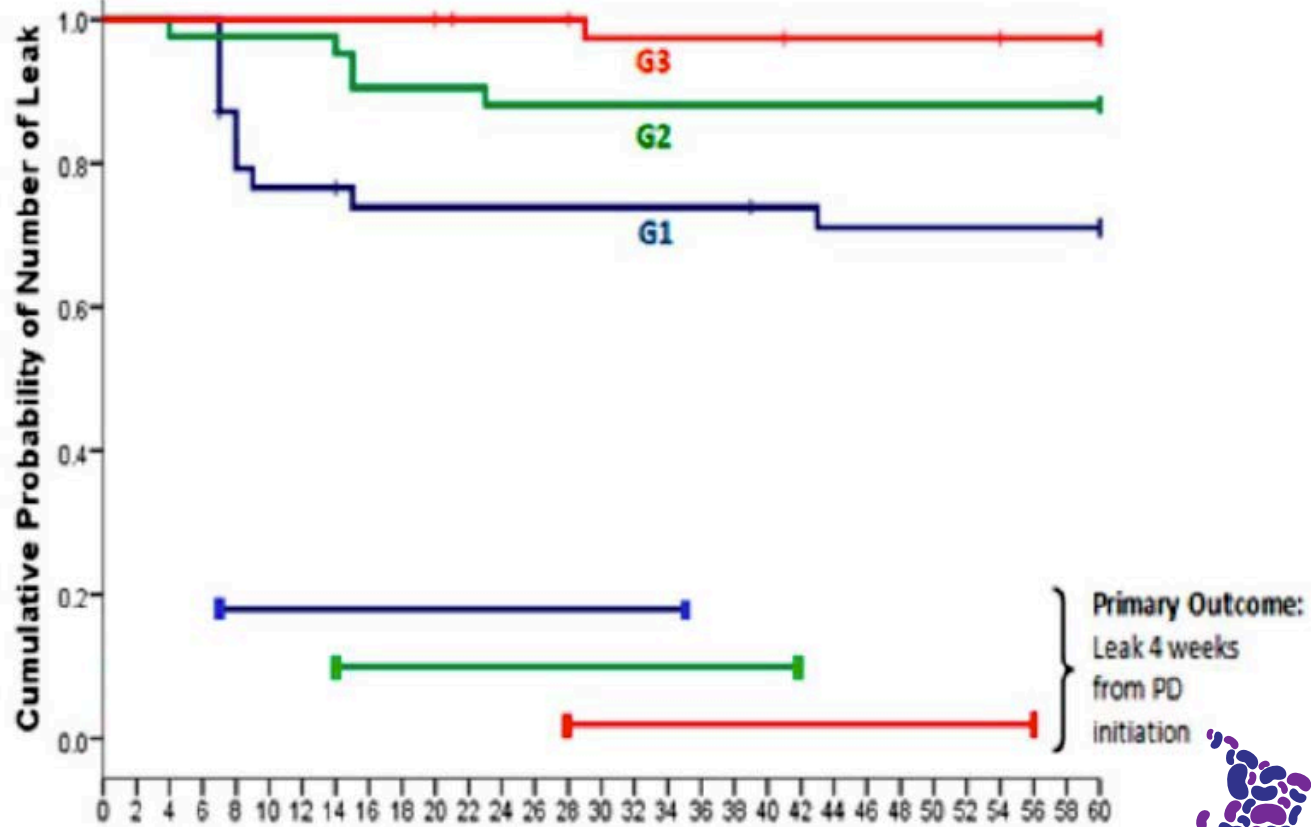
- Is there evidence that risk exists when using a PD catheter early?
- If so, is the risk sufficient to eliminate urgent PD initiation as an option?

Author	Year	Insertion technique	Intervention and number of patients	Leak <sup>a</sup>	Peritonitis <sup>b</sup>	Exit-site infection <sup>b</sup>	Dysfunction <sup>c</sup>	Survival <sup>d</sup>
Song <i>et al.</i> (12)	2000	Percutaneous	Group 1 ( <i>n</i> =21): gradual increase in exchange volume	9.5% <sup>e</sup>	23.8% <sup>e</sup>	9.5% <sup>e</sup>	4.8% <sup>e</sup>	85.7% <sup>i</sup>
			Group 2 ( <i>n</i> =38): full exchange volume (2 L) PD-initiated <24 h in both groups	10.5% <sup>e</sup>	15.8% <sup>e</sup>	5.3% <sup>e</sup>	5.3% <sup>e</sup>	84.2% <sup>i</sup>
Banli <i>et al.</i> (13)	2005	Percutaneous	Early initiation of PD ( <i>n</i> =41);	4.8%	2.4%	—	2.4%	—
Povlsen and Ivarsen (14)	2006	Surgical	Group 1 ( <i>n</i> =52): acute automated PD (started <24 h)	7.7% <sup>f</sup>	15.4% <sup>f</sup>	3.9% <sup>f</sup>	15.4% <sup>f</sup>	86.7% <sup>j</sup>
			Group 2 ( <i>n</i> =88): planned-start group	0% <sup>f</sup>	15.4% <sup>f</sup>	3.8% <sup>f</sup>	5.8% <sup>f</sup>	90% <sup>j</sup>
Jo <i>et al.</i> (15)	2007	Percutaneous	Early initiation PD ( <i>n</i> =51) (immediate)	2% <sup>e</sup>	4% <sup>e</sup>	4% <sup>e</sup>	12% <sup>e</sup>	—
Lobbedez <i>et al.</i> (9)	2008	Not specified	Group 1 ( <i>n</i> =34): unplanned patients initiated on PD Group 2 ( <i>n</i> =26): unplanned patients initiated on HD	—	—	—	—	Actuarial patient survival at 1 year: 79% on HD 83% on PD
Yang <i>et al.</i> (16)	2011	Surgical	Group 1 ( <i>n</i> =226): early start of incremental PD (2.0–2.7 days)	2.2% <sup>g</sup>	4% <sup>g</sup>	1.3% <sup>g</sup>	3.1% <sup>g</sup>	—
			Group 2 ( <i>n</i> =84): late-start (41–43 days)	2.4% <sup>g</sup>	2.4% <sup>g</sup>	0% <sup>g</sup>	2.4% <sup>g</sup>	—
Ghaffari A (18)	2012	Percutaneous	Group 1 ( <i>n</i> =18): urgent PD start (<2 weeks after catheter insertion)	33.3%	1:110 <sup>h,f</sup>	1:55 <sup>h,f</sup>	11.2%	—
			Group 2 ( <i>n</i> =9): planned-start 2–4 weeks after PD catheter insertion	11.1%	1:42 <sup>h,f</sup>	1:42 <sup>h,f</sup>	22.2% <sup>f</sup>	—

Initial catheter leak and dysfunction rates of <10% considered acceptable

**Figure 2A: Kaplan Meier Curve for Leak - 60 Days - Intention to Treat (ITT) Population**

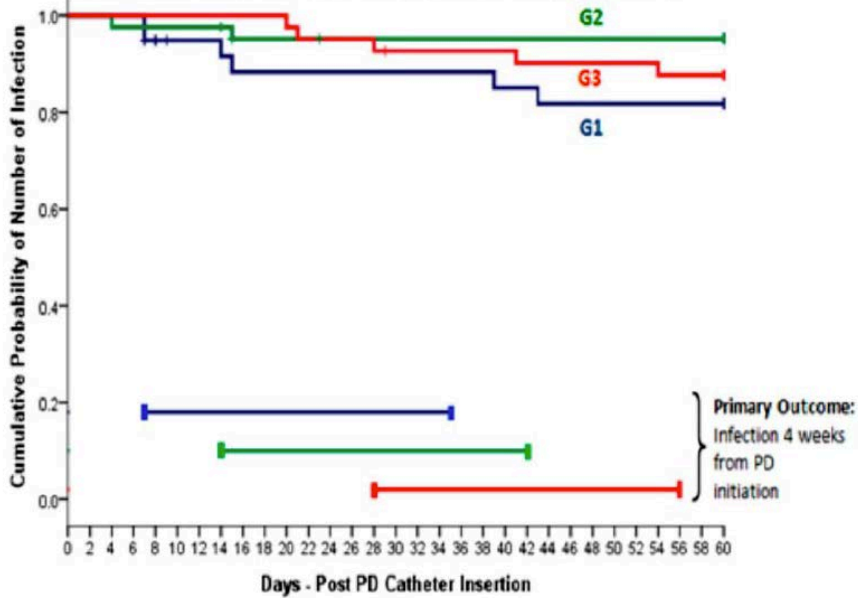
PD Initiation: Group 1 (G1): 7 Days; Group 2 (G2): 14 Days; Group 3 (G3): 28 Days



**BCKD**<sub>2017</sub>  
BC KIDNEY DAYS

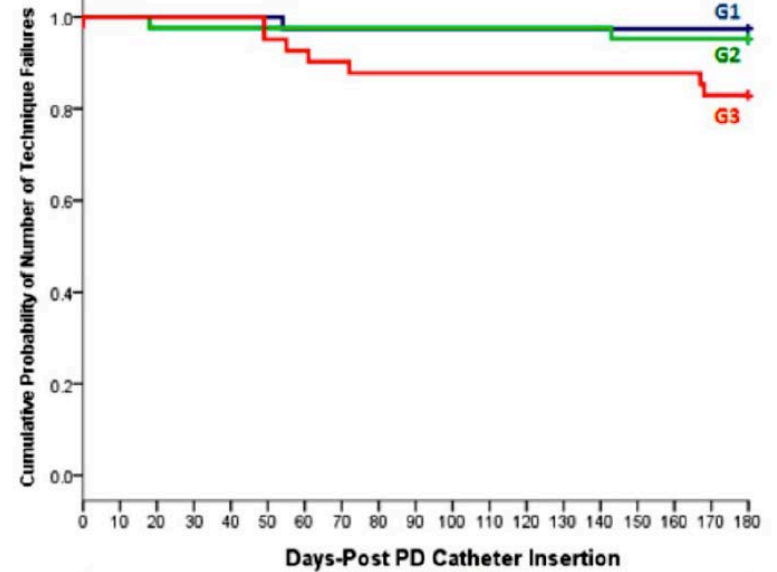
**Figure 2C: Kaplan Meier Curve for Infection - 60 Days - Intention to Treat (ITT) Population**

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



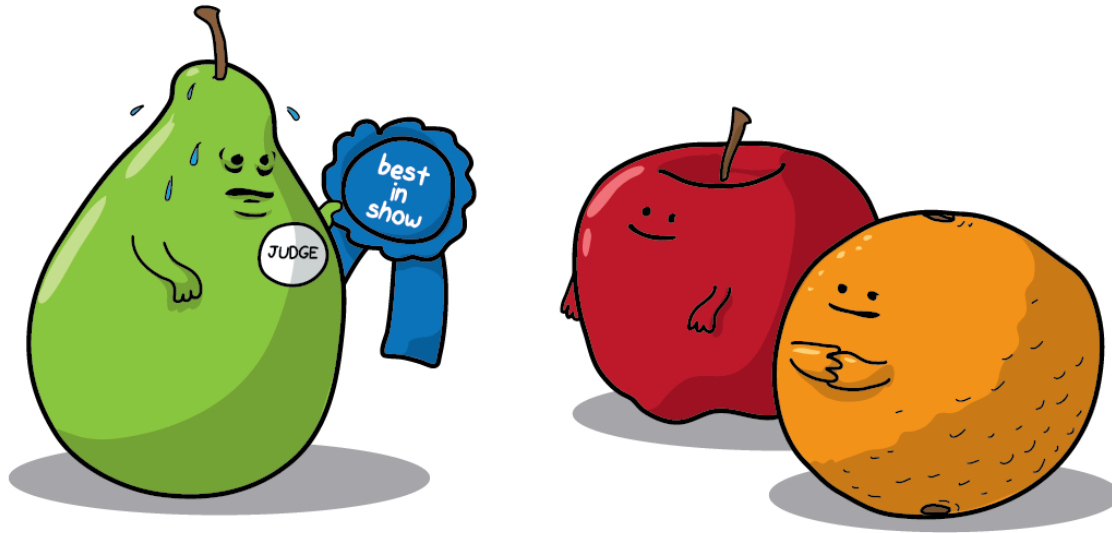
**Figure 3A: Kaplan Meier Curve for Technique Failure-180 Days-Intention to Treat (ITT) Population**

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





# Why are we comparing urgent start PD to planned PD initiation?



theAwkwardYeti.com

# 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

# Urgent HD initiation has risks

## Risk Ratios for 120d mortality

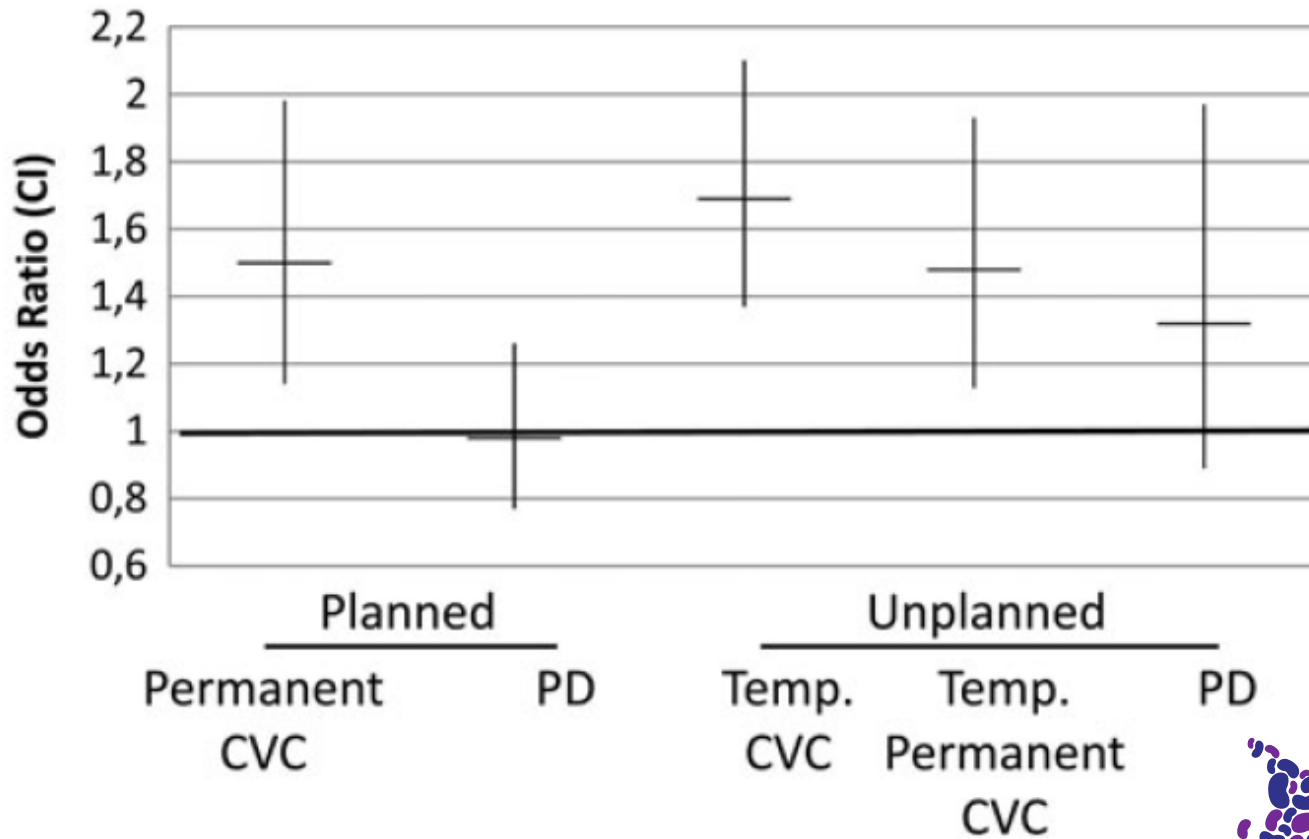
- Starting without prior nephrology care  
RR=1.4
- Starting with CVC RR=1.61
  - Worse than CAD, DM, PVD, ~ same as CHF

# 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%)

1 yr.  
mortality



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



KCC → acute PD start



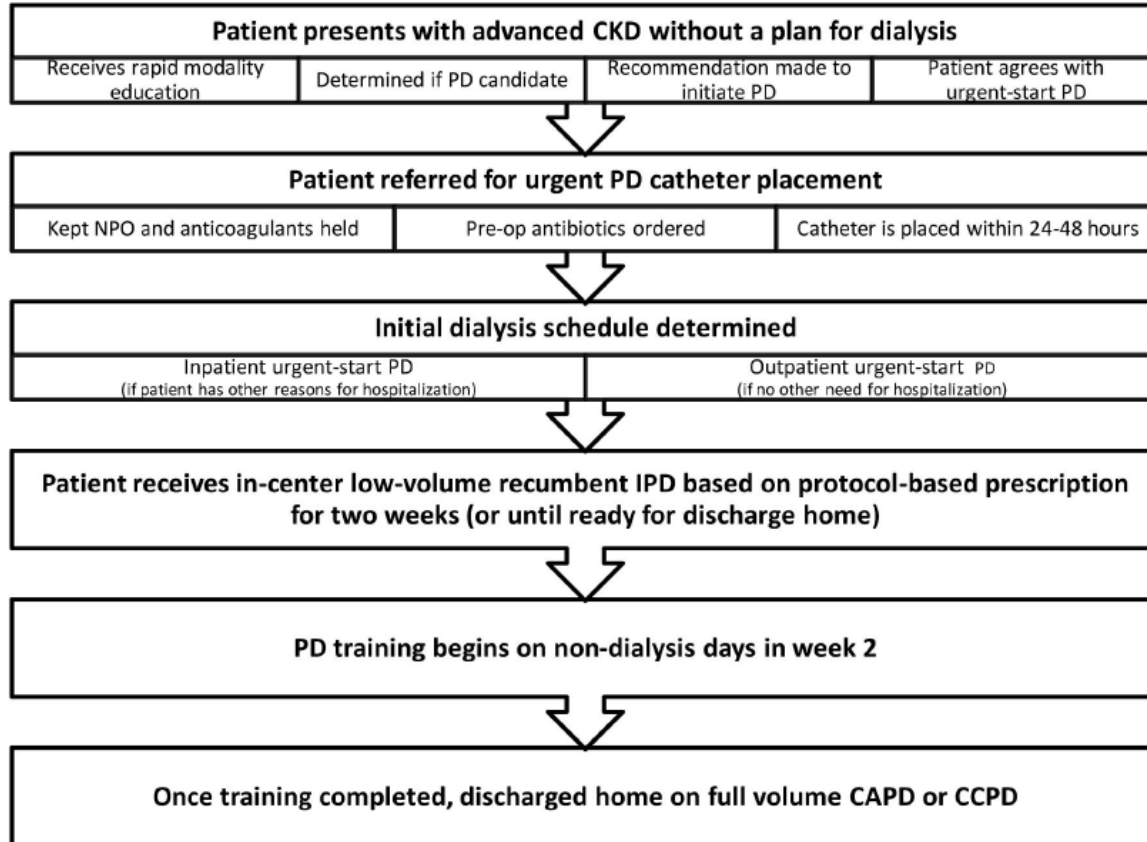
No prior KCC → planned PD start



No prior KCC → acute PD start



# A framework for urgent PD initiation



# Step 1: Patient education and orientation

Patient presents with advanced CKD without a plan for dialysis			
Receives rapid modality education	Determined if PD candidate	Recommendation made to initiate PD	Patient agrees with urgent-start PD

- 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

I like **PD**. Do you like **PD**?

Yes  No

# Step 2: Placing the PD catheter

- Abdominal assessment
- Pre-procedure preparation
  - May have to forgo some non-essential elements

Patient referred for urgent PD catheter placement		
Kept NPO and anticoagulants held	Pre-op antibiotics ordered	Catheter is placed within 24-48 hours



# Step 2: Placing the PD catheter

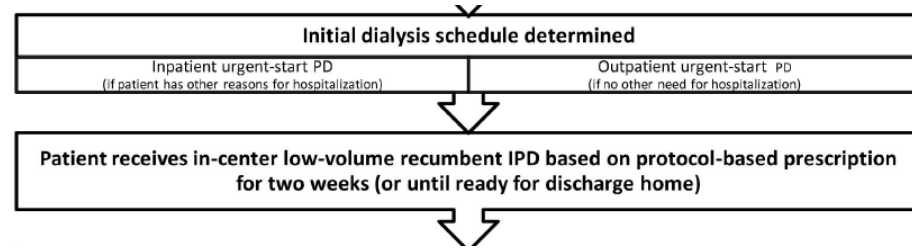
Patient referred for urgent PD catheter placement		
Kept NPO and anticoagulants held	Pre-op antibiotics ordered	Catheter is placed within 24-48 hours

- Who will place the catheter?
- Nephrologist if bedside candidate
- If surgeon, need buy in from surgical team, champion from renal team



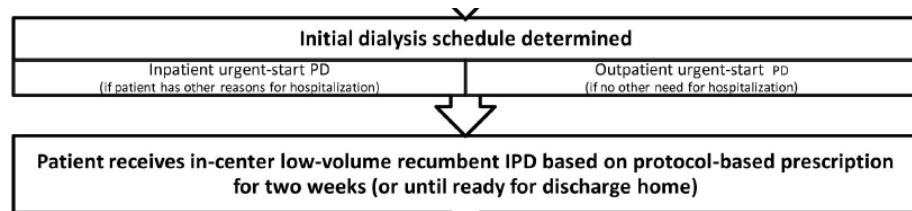
# Step 3: Initial use of the catheter

- Specialized catheter care and access only by nurses familiar with early tube use
- Specific, protocolized dialysis regimen



# Step 3: Initial use of the catheter

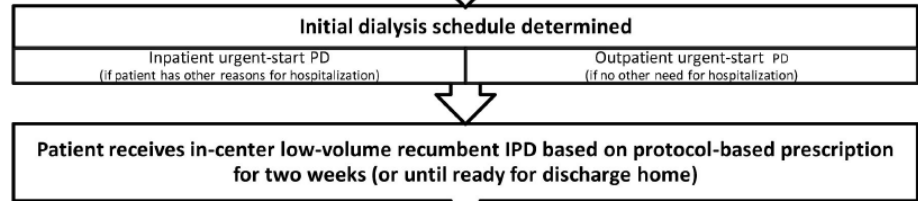
- Need to consider staffing and space requirements for ongoing IPD until PD training is complete



# Step 3½ : Identifying and managing complications of early use

## 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%)

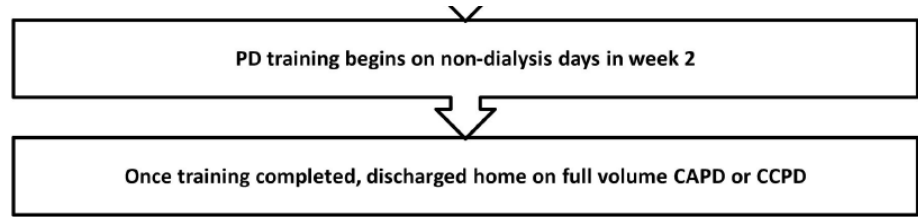


Ivarsen and Povlsen, 2014



# 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

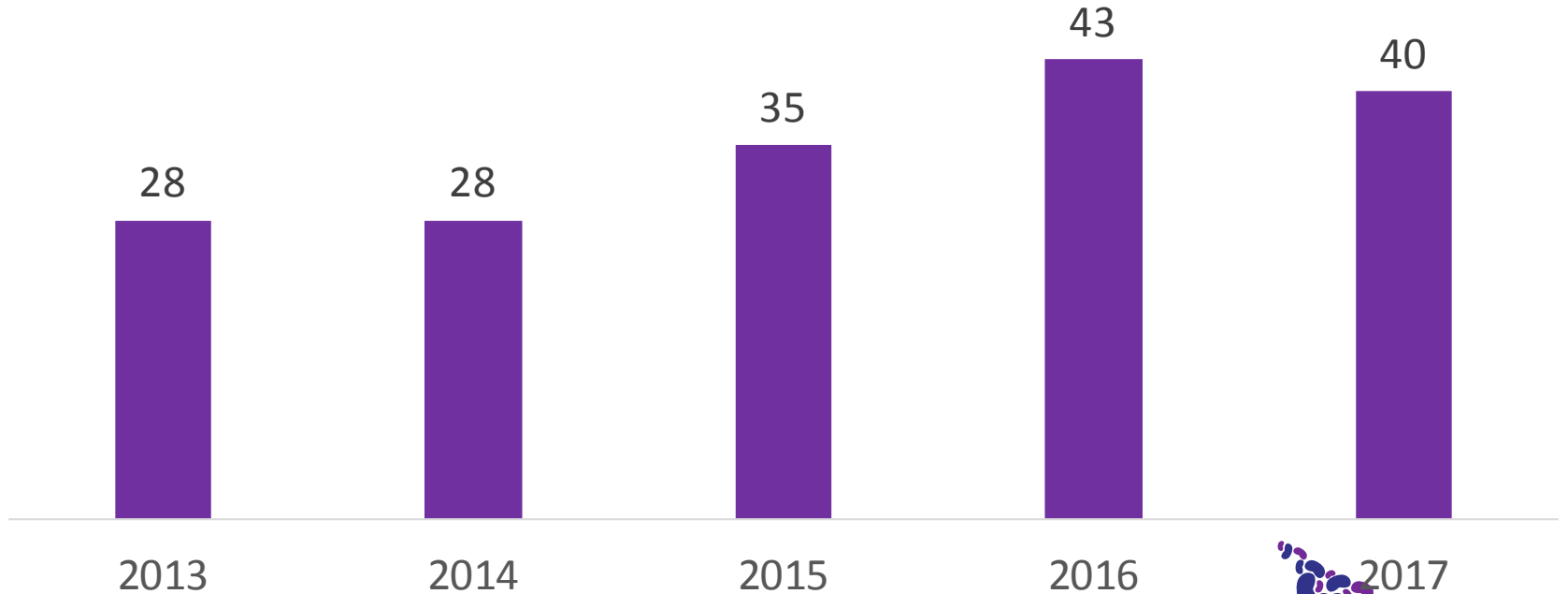


# Urgent start PD is a lot of work!

Local experience and lessons learned



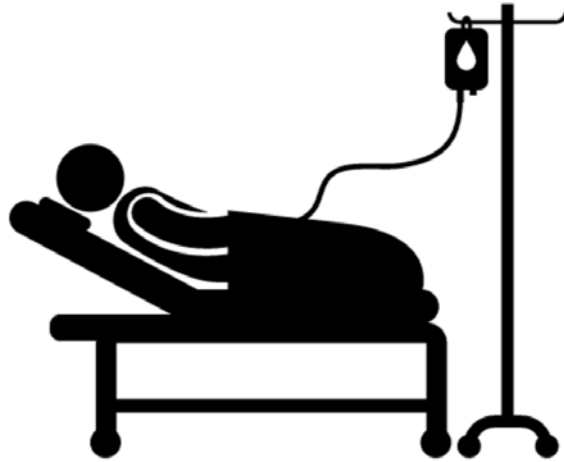
# Urgent start PD is possible: FHA experience



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

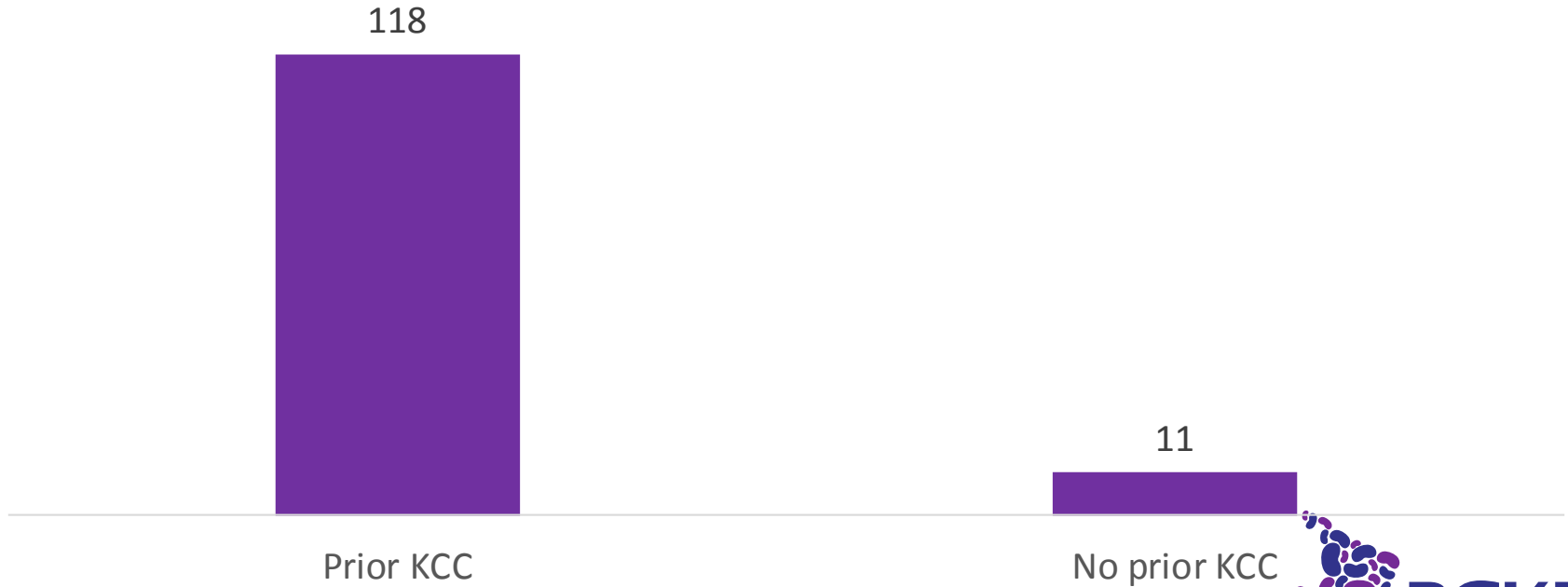
- Urgent starts are more labor intensive than the average PD start
- Staff need time to complete the tasks associated with patient orientation, preparation
- IPD and training is time and staffing intensive, and some of these patients IPD for many weeks

# 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



# 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

- Alkatheeri AMA, Blake PG, Gray D, Jain AK. Success of Urgent-Start Peritoneal Dialysis in a Large Canadian Renal Program. *Peritoneal Dialysis International*. 2016 Mar 1;36(2):171–6.
- Bradbury BD, Fissell RB, Albert JM, Anthony MS, Critchlow CW, Pisoni RL, et al. Predictors of Early Mortality among Incident US Hemodialysis Patients in the Dialysis Outcomes and Practice Patterns Study (DOPPS). *Clinical Journal of the American Society of Nephrology*. 2006 Nov 2;2(1):89–99.
  - Figueiredo A, Goh B-L, Jenkins S, Johnson DW, Mactier R, Ramalakshmi S, et al. CLINICAL PRACTICE GUIDELINES FOR PERITONEAL ACCESS. *Peritoneal Dialysis International*. 2010 Jul 1;30(4):424–9.
  - Ghaffari A, Kumar V, Guest S. Infrastructure Requirements for an Urgent-Start Peritoneal Dialysis Program. *Peritoneal Dialysis International*. 2013 Nov 1;33(6):611–7.
  - Ivarsen P, Povlsen JV. Can peritoneal dialysis be applied for unplanned initiation of chronic dialysis? *Nephrology Dialysis Transplantation*. 2014 Dec;29(12):2201–6.
  - Koch M, Kohnle M, Trapp R, Haastert B, Rump LC, Aker S. Comparable outcome of acute unplanned peritoneal dialysis and haemodialysis. *Nephrology Dialysis Transplantation*. 2012 Jan 1;27(1):375–80.
  - Liberek T, Renke M, Skonieczny B, Kotewicz K, Kowalewska J, Chmielewski M, et al. Therapy outcome in peritoneal dialysis patients transferred from haemodialysis. *Nephrology Dialysis Transplantation*. 2009 Sep 1;24(9):2889–94.
  - Lobbedez T, Verger C, Ryckelynck J-P, Fabre E, Evans D. Outcome of the sub-optimal dialysis starter on peritoneal dialysis. Report from the French Language Peritoneal Dialysis Registry (RDPLF). *Nephrol Dial Transplant*. 2013 May;28(5):1276–83.
  - Mendelssohn DC, Curtis B, Yeates K, Langlois S, MacRae JM, Semeniuk LM, et al. Suboptimal initiation of dialysis with and without early referral to a nephrologist. *Nephrol Dial Transplant*. 2011 Sep;26(9):2959–65.
  - Povlsen JV, Sorensen AB, Ivarsen P. Unplanned Start on Peritoneal Dialysis Right after PD Catheter Implantation for Dialysis in End-Stage Renal Disease. *Peritoneal Dialysis International*. 2015 Nov 1;35(6):622–4.
  - Ranganathan D, John GT, Yeoh E, Williams N, O'Loughlin B, Han T, et al. A Randomized Controlled Trial to Determine the Appropriate Time to Initiate Peritoneal Dialysis after Insertion of Catheter (Timely PD Study). *Peritoneal Dialysis International*. 2017 Jul;37(4):420–8.

# Questions/Discussion



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