


KIR Xtorials – Automated PD as a modality for Urgent start dialysis


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Hello, #NephTwitter!

Excited to share a  #Tweeetorial on Automated Peritoneal Dialysis (APD) as a modality for *Urgent Start Dialysis*!

Brought to you by the fantastic team at @KIRReports. Let's dive in! #xtorial

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Meet our author, Vamsidhar @VamsidharV17, an adult nephrologist, diving into an exciting RCT! 

Topic: Comparing Automated Peritoneal Dialysis (APD) vs. Hemodialysis for Urgent-Start Dialysis in ESRD.

Join the conversation!

#MedTwitter #NephTwitter @ISNkidneycare #XTwitter

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Let's kick off with your thoughts on urgent-start dialysis! 
In this setting, what's your preferred modality?

- A** PD isn't suited for urgent start
- B** PD helps prevent HD complications
- C** Both PD & HD are equally safe & effective

Vote below! 

#NephTwitter #MedTwitter

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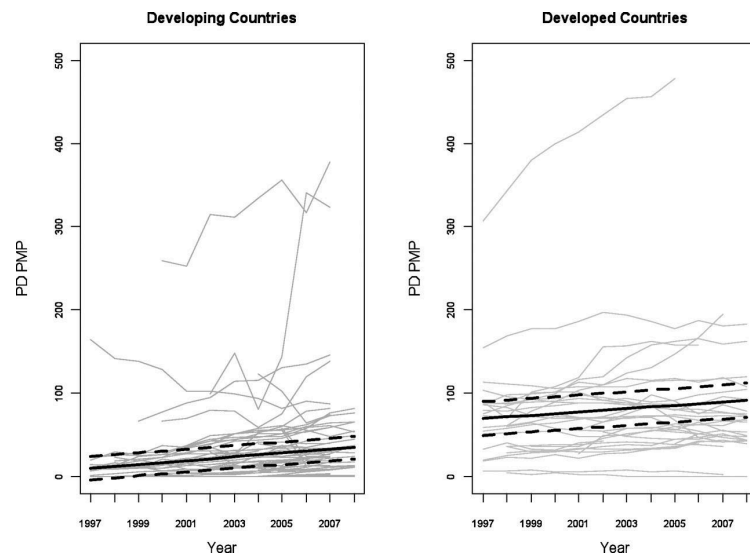
Let's explore on how Automated Peritoneal Dialysis (APD) could be a potential option for urgent-start dialysis compared to conventional PD.  
#Dialysis #Nephrology

5/  Introduction

Choosing a dialysis modality in ESRD is vital. It is necessary to balance patient preference, logistics, and outcomes.

🌐 Despite its benefits, PD is used in only ~10% of cases globally!

https://journals.lww.com/jasn/fulltext/2012/03000/global_trends_in_rates_of_peritoneal_dialysis.22.aspx

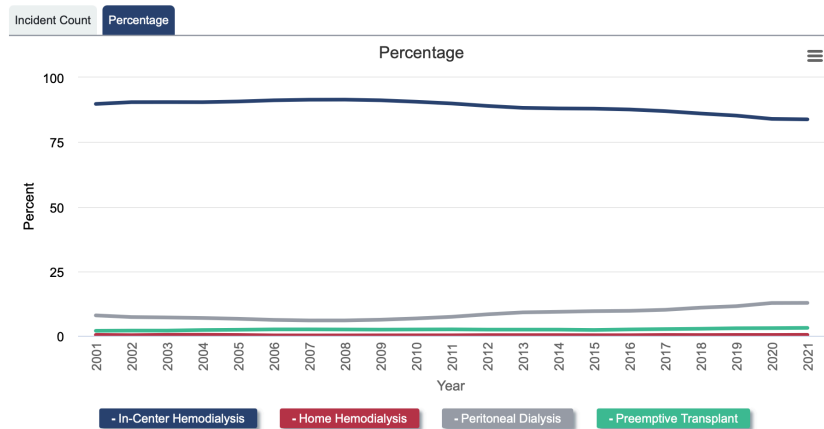


6/ 📈 PD adoption has inched up over the last decade, reaching 12.7% by 2021—but the growth curve is still looking a bit flat. #USRDS2021

◆ For an urgent start, HD with a central venous catheter (CVC) remains the standard at most centers. 🏥

<https://usrds-adr.niddk.nih.gov/2023/end-stage-renal-disease/1-incidence-prevalence-patient-characteristics-and-treatment-modalities>

Figure 1.2 Incident ESRD by modality, 2001-2021



Data Source: USRDS ESRD Database, U.S. and U.S. territories ESRD patients. Persons with "Uncertain Dialysis" type were excluded.

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While urgent dialysis via CVC is common, it comes with infection & clotting risks. 🚨🩸

Urgent-start PD (USPD) steps in as a potentially safer alternative:

- ◆ Avoids CVC complications
- ◆ Smoothly transitions pts to long-term PD
- ◆ Boosts PD adoption & outcomes! 💪💧

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This excellent study by Jin et al explores APD for urgent-start dialysis, hypothesizing

- It reduces complications and aligns with PD's benefits, like lower cost and better preservation of residual kidney function.

Here is the full text of the article.

[https://www.kireports.org/article/S2468-0249\(24\)01809-6/fulltext](https://www.kireports.org/article/S2468-0249(24)01809-6/fulltext)

9/ Don't miss this insightful commentary on the article by McGrath et al—definitely worth a read! 📖✨ [https://www.kireports.org/article/S2468-0249\(24\)01852-7/fulltext](https://www.kireports.org/article/S2468-0249(24)01852-7/fulltext)

Also Check out the blog summarizing this article by @VamsidharV17, @brian_rifkin, @sophia_kidney, @MChanMD














<https://www.kireportscommunity.org/post/is-automated-peritoneal-dialysis-better-for-urgent-start-dialysis-compared-to-hemodialysis>

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APD is promising, & may be the best suit for the setting of urgent start PD.

1. ↓ intra-abdominal pressure
2. ↑ patient comfort
3. Fewer hemodynamic fluctuations vs. manual PD

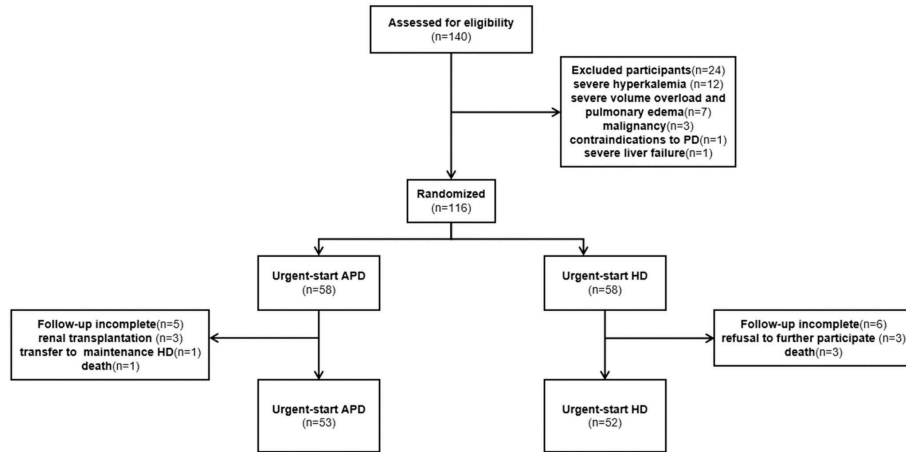
But can it work as well as HD in urgent-start situations? Let's see what the study finds!

| Automated peritoneal dialysis vs hemodialysis as a modality for urgent start dialysis? | | |
|--|--|---|
| Urgent start Dialysis  Crash landing in dialysis: 45% of patients begin dialysis without a structured plan  Conventional approach: Starting hemodialysis (HD) via a central venous catheter (CVC)  Urgent start PD: Can improve patient outcomes and reduce health care costs  Definition of USPD: Initiation of PD within 2 weeks of catheter insertion <small>USRDS 2021</small> | Advantages of PD over HD  Better preservation of residual kidney function  Benefits of home-based therapy  Less water and power utilization → More greener  Avoids complications associated with CVC - infections, bleeding, and central venous stenosis <small>Yau et al., AJKD, 2021</small> | APD for Urgent start dialysis  Fewer hemodynamic fluctuations  Continuous solute clearance  Greater patient comfort  Less rise in intra-abdominal pressure  Lesser peri-catheter leaks/wound-related complications <small>Luo et al, PDI 2019</small> |
| USPD may be a window of opportunity that could improve patient outcomes and reduce healthcare costs while boosting overall PD adoption. | | <small>Jin H, Fang W, Wang L, et al. A Randomized Controlled Trial Comparing APD and HD for Urgent-Start Dialysis in ESRD. Kidney Int Rep. 2024;9(9):2627-2634. VA by Vamsidhar ✉ @VamsidharV17</small> |

11/Methodology

 Prospective, multicenter RCT with 116 ESRD patients needing urgent dialysis across 11 hospitals (March 2019-Dec 2020); final follow-up in Dec 2021.

Patients randomized 1:1 into APD (58) & HD (58) groups. Block randomization ensured balance across sites.



12/ Major inclusion criteria:

- Patients aged 18-80,
- With urgent dialysis needs due to ESRD progression, and
- No prior dialysis access

Major Exclusions included

- severe liver failure,
- psychiatric issues, and
- pregnancy

13/ For APD, dialysis started within 3 days of catheter insertion; HD began with CVC access.

The protocol minimized delay and standardized treatments for consistent results.

Here is the summarised version of protocol across the two groups.

Check out the blog for more details

<https://www.kireportscommunity.org/post/is-automated-peritoneal-dialysis-better-for-urgent-start-dialysis-compared-to-hemodialysis>

| APD group | HD group |
|---|---|
| <ul style="list-style-type: none"> • PD catheter insertion • Initiation by Tidal PD • Dwell volume: 1.0 to 1.5 litres. • Treatment time: 8 to 12 hours per day. • Total dialysis dose: 5-10L per day increased over time. • Transition to maintenance PD after 2 weeks. • Follow up for 12 months | <ul style="list-style-type: none"> • Temporary CVC insertion □ HD initiation. • 2 to 3 HD sessions per week, employing intermittent HD, HDF, or CRRT. • PD catheter insertion after stabilization. • Switched to maintenance PD after 2 weeks of catheter insertion. • Follow up for 12 months |

#PeritonealDialysis

14/ Outcome measures:

1. Primary—dialysis-related complications
2. Secondary—
 - a. PD catheter survival
 - b. Patient survival
 - c. Peritonitis-free survival
 - d. Direct medical cost

15/ Results

Primary outcome:

At 1 year, APD had fewer dialysis-related complications than HD (25.9% vs. 56.9%, $P=0.001$), with most advantages from non-infectious complications reduction.

This points to APD's safety profile in urgent settings.

Table 2. One-year dialysis-related complications distribution (APD and HD Groups)

| Complications distribution | APD (<i>n</i> = 58) | HD (<i>n</i> = 58) | <i>P</i> -value |
|-------------------------------|----------------------|---------------------|-----------------|
| Total | 15 (25.9) | 33 (56.9) | 0.001 |
| Noninfectious complications | 9 (15.5) | 20 (34.5) | 0.032 |
| PD-catheter malposition | 2 (3.4) | 3 (5.2) | 1.000 |
| PD-catheter obstruction | 4 (6.9) | 2 (3.4) | 0.675 |
| Leakage | 2 (3.4) | 2 (3.4) | 1.000 |
| Hernia | 1 (1.7) | 2 (3.4) | 1.000 |
| Bleeding around the catheter | 0 (0.0) | 9 (15.5) | 0.006 |
| Thrombosis | 0 (0.0) | 2 (3.4) | 0.476 |
| Infectious complications | 6 (10.3) | 13 (22.4) | 0.132 |
| PD-catheter-related infection | 3 (5.2) | 3 (5.2) | 1.000 |
| Peritonitis | 3 (5.2) | 7 (12.1) | 0.321 |
| CVC-related infection | 0 (0.0) | 3 (5.2) | 0.242 |

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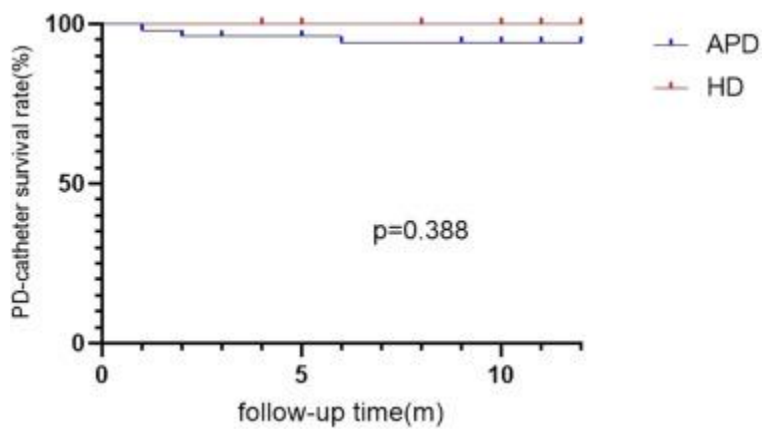
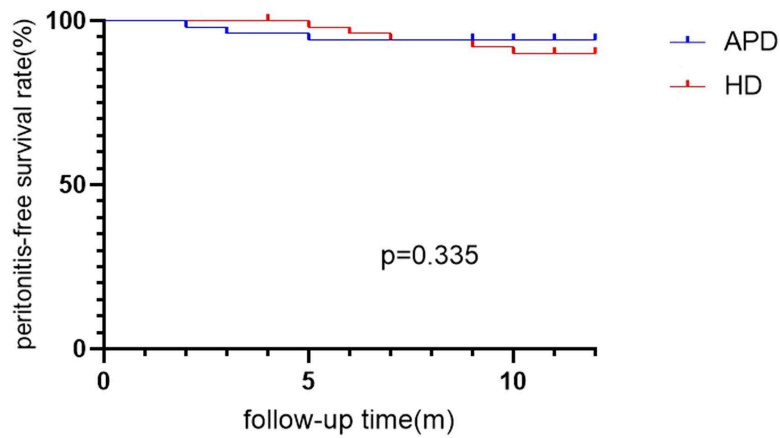
- Non-infectious complications in APD were specifically lower (15.5% vs. 34.5%, $P=0.032$).
- Hence reducing risks like catheter malposition, leakage, and bleeding seen in HD. #PatientSafety

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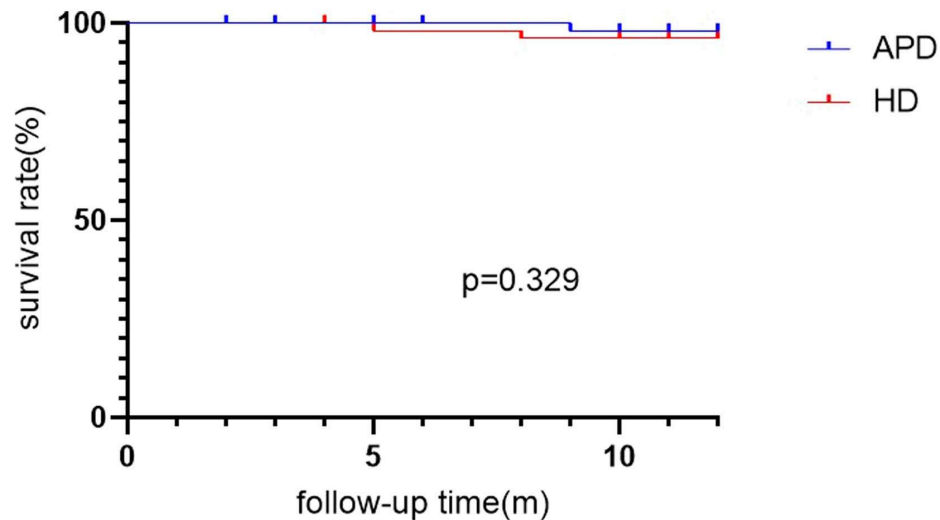
- Infections were less common in APD but not statistically significant (10.3% vs. 22.4%, $P=0.132$).
- HD patients were more prone to CVC infections (5.2%) and thrombosis (3.4%) early on.
- Avoiding CVC in APD minimized infection risks linked with HD. #InfectionControl

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No significant difference in PD catheter survival or peritonitis-free survival at 1 year between APD and HD.

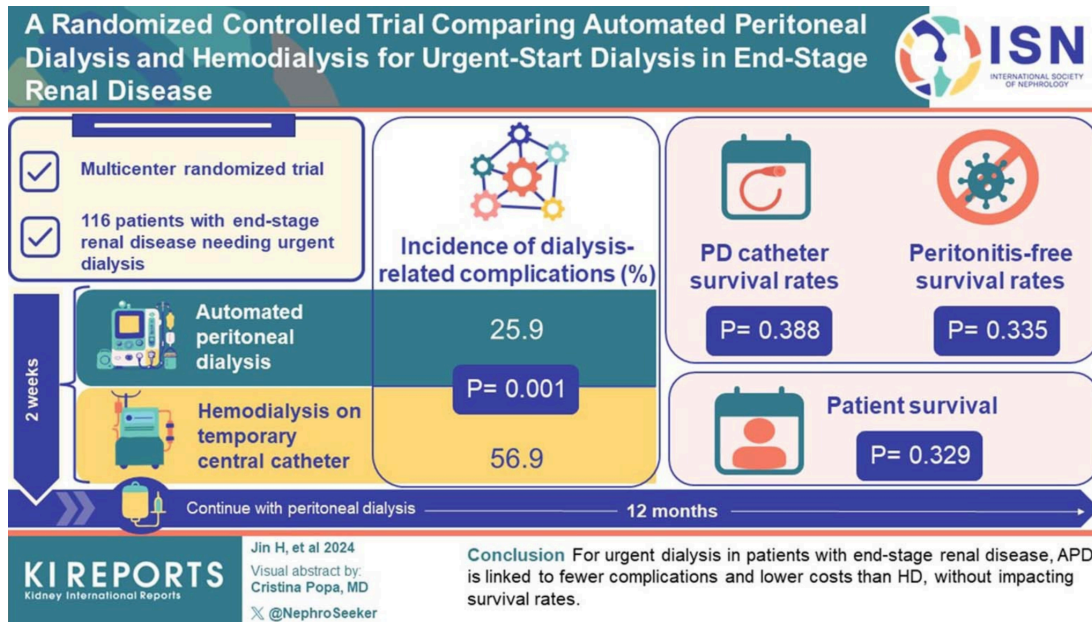


19/ Patient survival was equal between APD and HD groups at 1 year, supporting APD's effectiveness without compromising patient safety or long-term outcomes.



20/ APD led to a shorter initial hospitalization cost, adding economic appeal to the clinical advantages of APD for urgent-start dialysis.

Check out the brilliant VA summarising the key findings of study by @NephroSeeker



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Discussion

- This study advances our understanding of APD in urgent dialysis, reinforcing it as a safer, cost-effective alternative to HD with fewer complications and similar survival rates.
- Using APD for urgent starts CVC-related risks like infection, thrombosis, and central venous stenosis often associated with urgent HD.

22/ Health economics:

- ✓ APD's lower direct costs for urgent-start dialysis could be a game changer.
- ✓ Fewer surgical needs & a smoother shift to long-term PD make it a strong option for ESKD patients lacking prior access plans.

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The study used standardized APD protocols and extended follow-up Potentially paving way for stronger APD guidelines in unplanned dialysis.

With similar PD catheter & peritonitis-free survival to HD, APD proves durable & reliable for urgent cases.

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Limitations:

- The open-label design and lack of blinding could have led to detection bias.

- BMI data may limit generalizability → More research needed in diverse populations.
 - Missing patient-reported outcomes is a gap here.
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25/ Conclusion 🏁

- APD in urgent-start dialysis is safe, cost-effective, and
- Aligns well with clinical and economic goals,
- Promising a viable alternative to HD in acute ESKD care.
- Could shape future urgent-start dialysis approaches helping increase PD adoption.

26/ Based on recent findings, how will these APD results impact your practice for urgent-start dialysis?

1. Strongly consider APD
2. Need further evidence
3. Continue current practice

🗳️ Vote & share your thoughts!

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Thanks for joining this #Tweertorial! 🎉

Thanks to @VamsidharV17 for leading the way and to @MChanMD @Nephroseeker @Brian_Rifkin @sophia_kidney for their valuable feedback. 🙌

Don't forget to share and keep the #FOAMed spirit alive!

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