

AREP Home Dialysis Workshop



Home Webinar Series:
Urgent Start Peritoneal Dialysis

2/23/21

Who is the ESRD Network of Texas

Network 14 is a non-profit organization incorporated in Texas and provides services on behalf of the Centers for Medicare & Medicaid Services (CMS) to kidney patients and their providers since 1977.

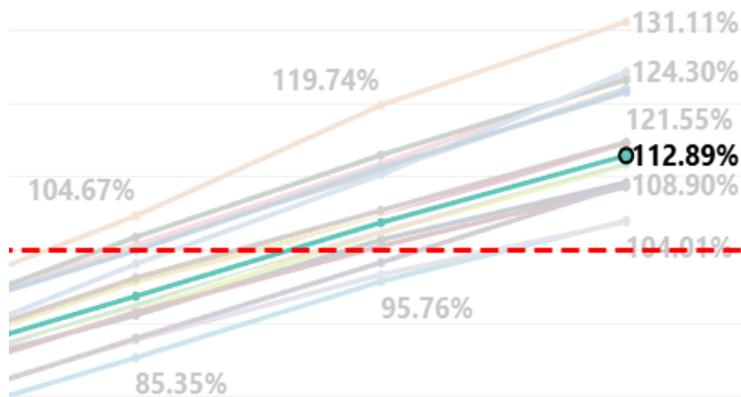
Our Mission

To support equitable patient- and family-centered quality dialysis and kidney transplant health care through the provision of patient services, education, quality improvement, and information management.

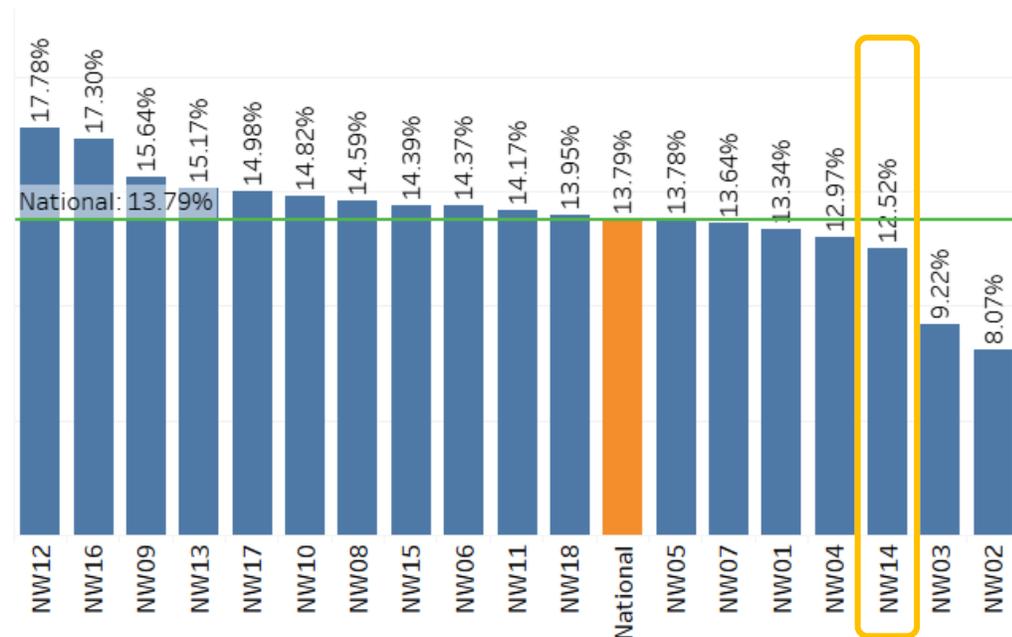
Network's Home Dialysis Rate

2020 Modalities QIA:

- Jan – October 2020
- Included 156 facilities
- Added **3,277** home patients



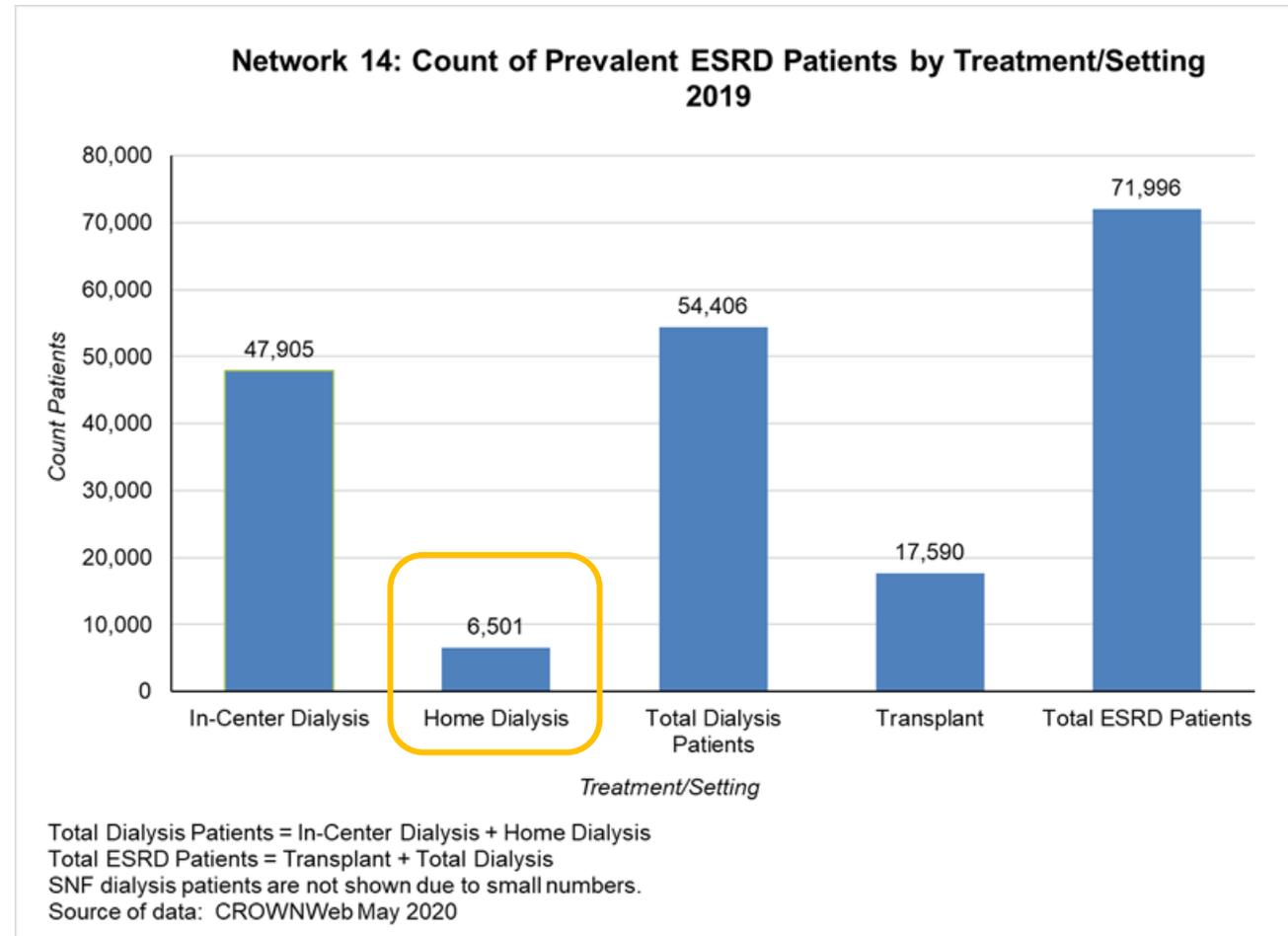
PERCENT IN HOME THERAPY



Prevalent Patients by ESRD Setting

Only **12%** of dialysis patients in 2019 were in a **home modality**.

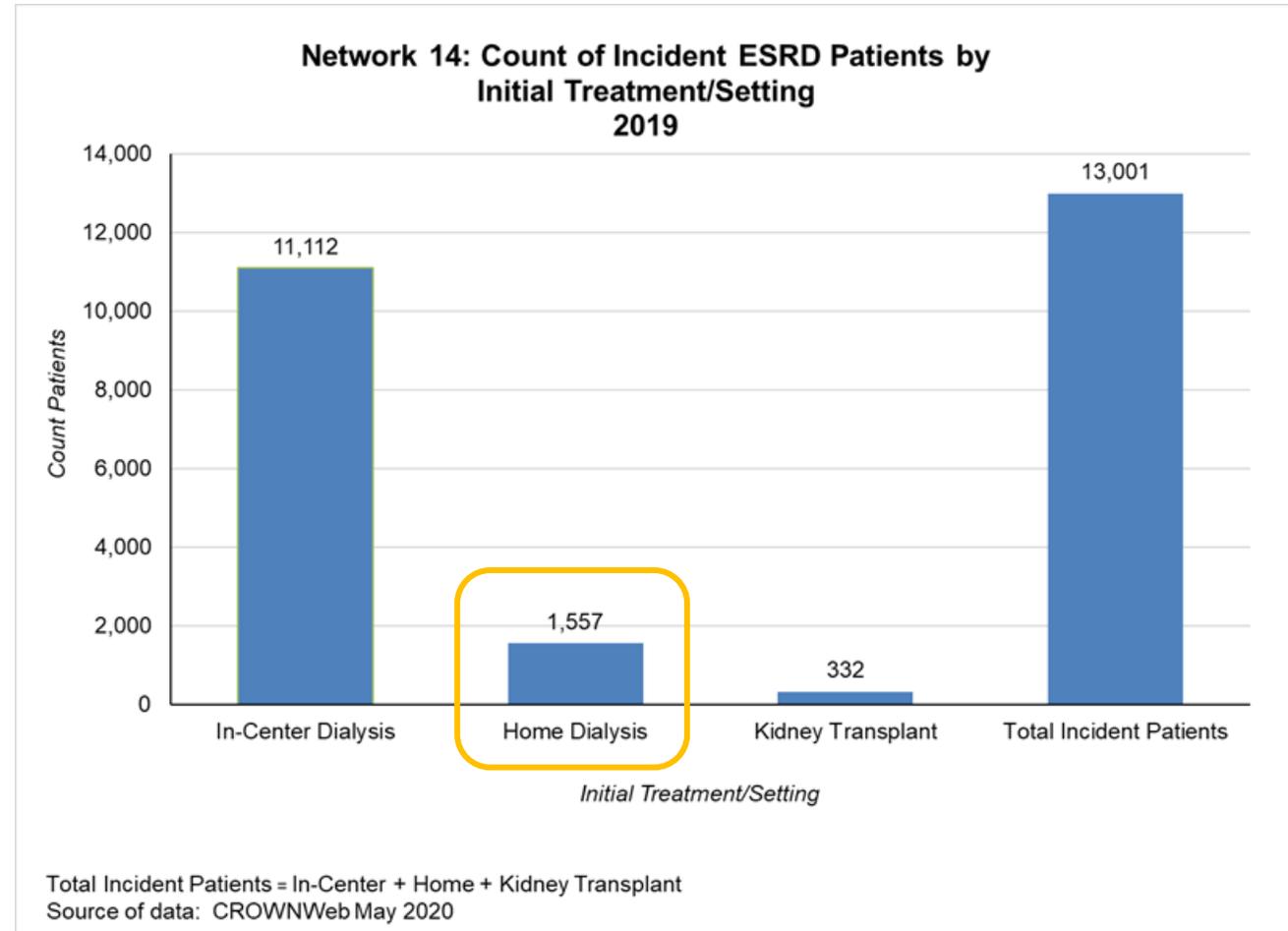
While **88%** of dialysis patients were **in-center**.



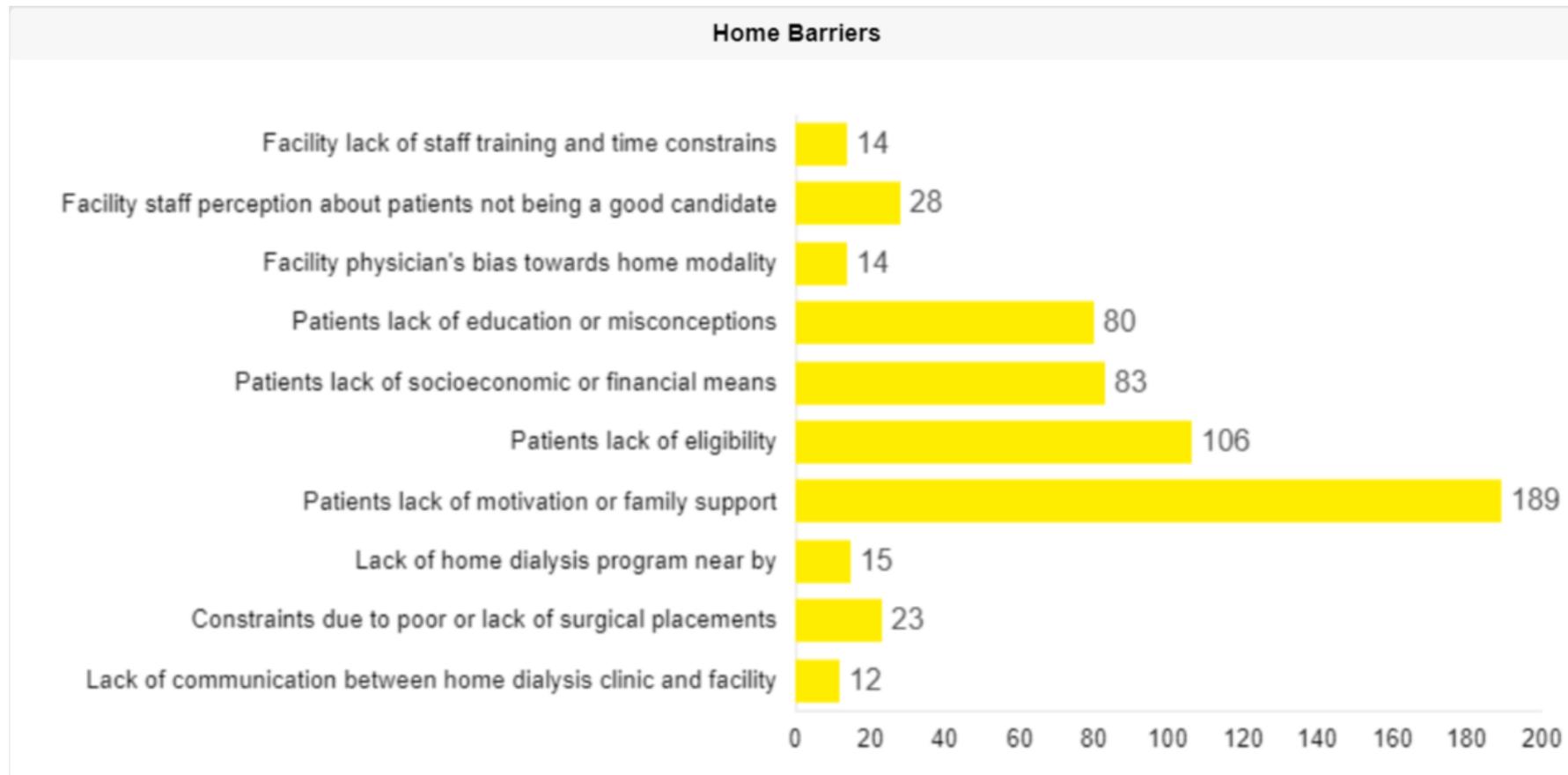
Incident Patients by ESRD Setting

Only **11.97%** of incident patients in 2019 were initiated in a **home modality**.

While **85.47%** of patients were initiated **in-center**.

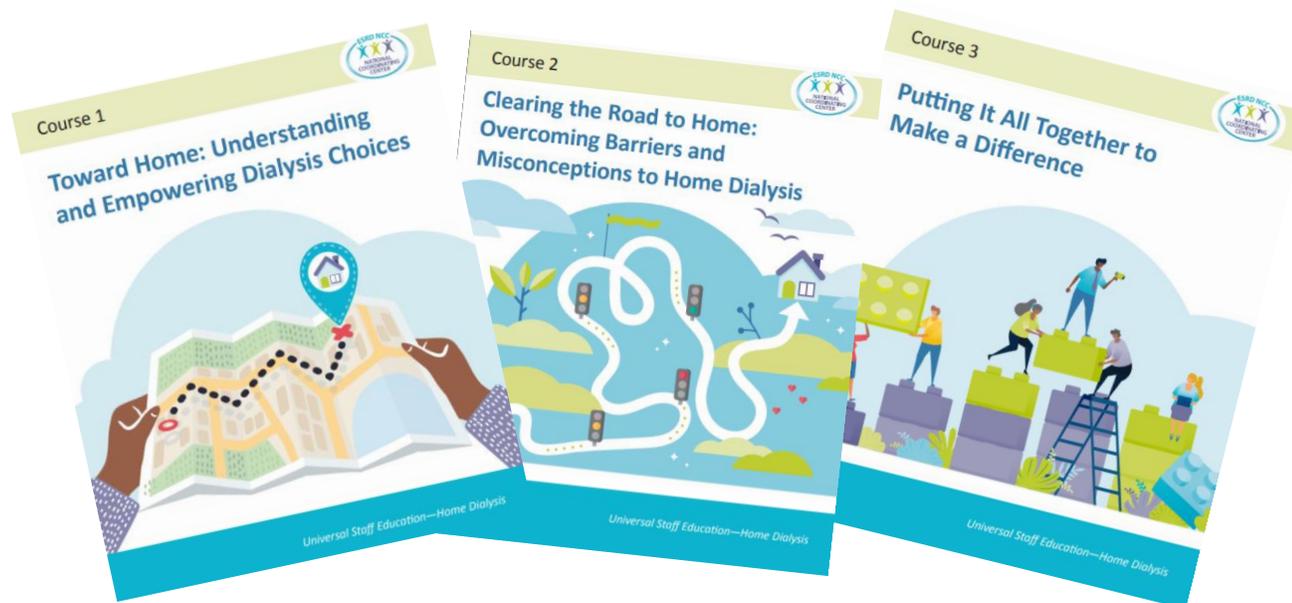


What is the Main Barrier?



Home Change Package

- NCC's Universal Staff Education
- Network's Home Dialysis Coalition
- Home Hero Interactive Events






A Home Dialysis Hero is a home dialysis patient who performs dialysis treatments at home and can offer guidance & emotional support to others.

Join the Home Dialysis Hero Interactive Event with the **ESRD Network of Texas** & the **Patient Advisory Committee (PAC)** as the PAC members and Dr. Christie Gooden, a transplant surgeon discuss Home & Peritoneal Dialysis, and answer questions you might have. We want to hear from you. See you then!

Home Dialysis Hero Interactive Event

Learning More About Home & Peritoneal Dialysis

February 11, 2021

3:00 PM CST



[Click HERE to Register](#)

Scan the QR Code with your smart phone to register



SCAN ME

Created under CMS contract number: HHSM-500-2016-0014C
To file a grievance please contact ESRD Network of Texas (Network 14) at 1-877-866-4435 or
ESRD Network of Texas, Inc. 4099 McEwen Rd, Ste. 820 Dallas, TX 75244. Office: 872-5003-3215, fax: 972-503-3219,
email: nw14info@allianthealth.org, website: www.esrdnetwork.org/



**Contact Us:
Maryam Alabood 469-916-3803**

Visit: www.esrdnetwork.org

 **ALLIANT
QUALITY**

KIDNEY COLLABORATIVE



WELCOME

Home Dialysis Workshop Webinar Series

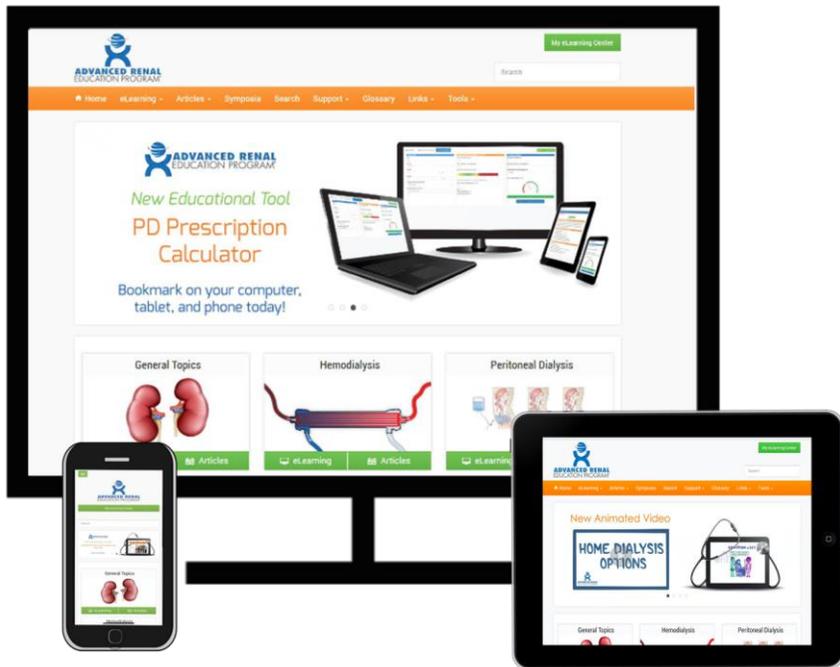
Urgent Start PD

Tuesday, February 23, 2021

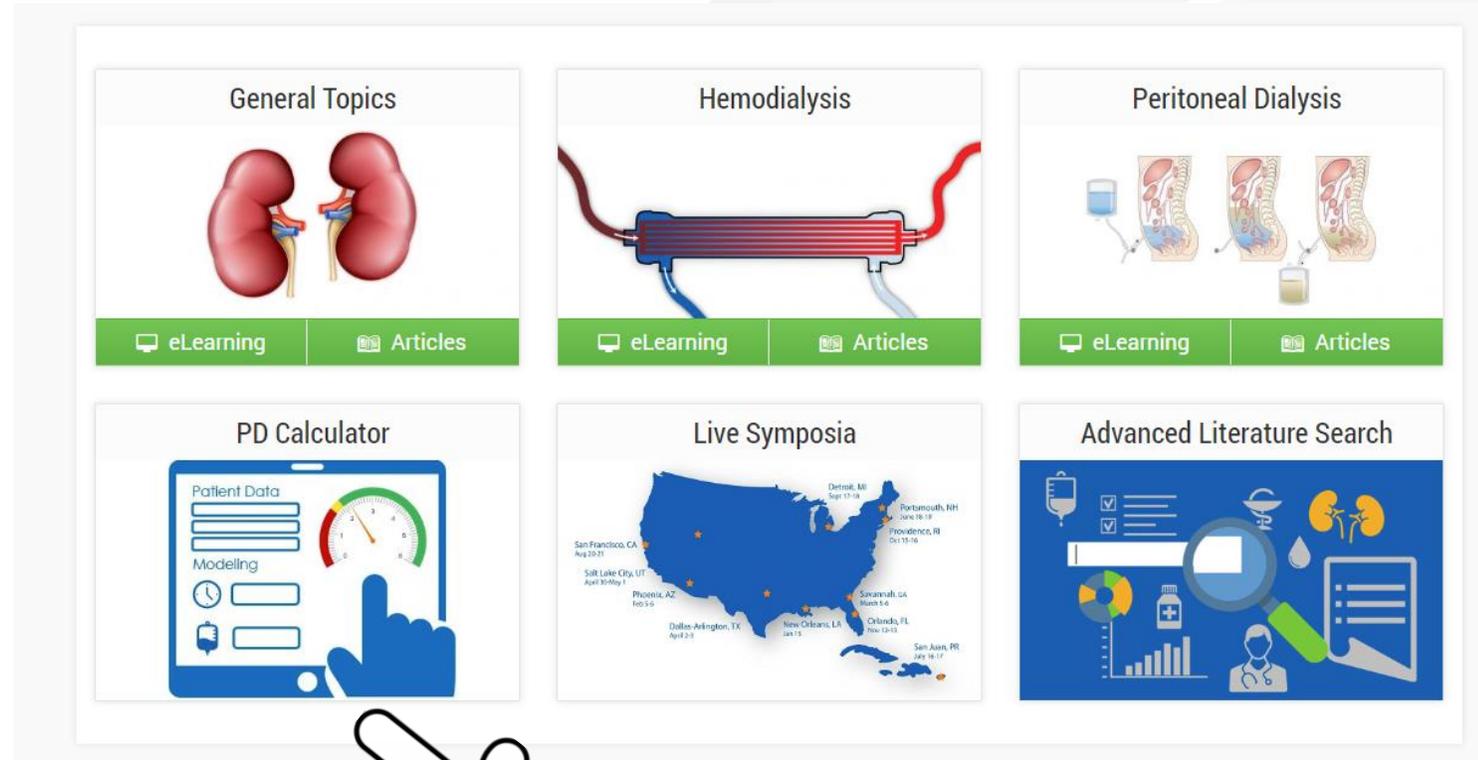


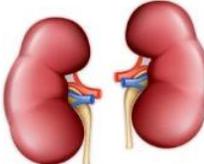
ADVANCED RENAL
EDUCATION PROGRAM®

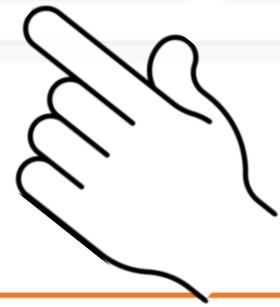




www.advancedrenaleducation.com



<h3>General Topics</h3>  <p>eLearning Articles</p>	<h3>Hemodialysis</h3>  <p>eLearning Articles</p>	<h3>Peritoneal Dialysis</h3>  <p>eLearning Articles</p>																						
<h3>PD Calculator</h3>  <p>Patient Data Modeling</p>	<h3>Live Symposia</h3>  <table border="1"><tr><td>San Francisco, CA</td><td>Aug 20-21</td></tr><tr><td>Salt Lake City, UT</td><td>April 30-May 1</td></tr><tr><td>Phoenix, AZ</td><td>Feb 5-6</td></tr><tr><td>Dallas-Arlington, TX</td><td>April 2-3</td></tr><tr><td>Denver, MI</td><td>Sept 17-18</td></tr><tr><td>New Orleans, LA</td><td>Jan 15</td></tr><tr><td>San Juan, PR</td><td>July 16-17</td></tr><tr><td>Portsmouth, NH</td><td>June 18-19</td></tr><tr><td>Providence, RI</td><td>Oct 15-16</td></tr><tr><td>Savannah, GA</td><td>March 5-6</td></tr><tr><td>Columbo, FL</td><td>Nov 12-13</td></tr></table>	San Francisco, CA	Aug 20-21	Salt Lake City, UT	April 30-May 1	Phoenix, AZ	Feb 5-6	Dallas-Arlington, TX	April 2-3	Denver, MI	Sept 17-18	New Orleans, LA	Jan 15	San Juan, PR	July 16-17	Portsmouth, NH	June 18-19	Providence, RI	Oct 15-16	Savannah, GA	March 5-6	Columbo, FL	Nov 12-13	<h3>Advanced Literature Search</h3> 
San Francisco, CA	Aug 20-21																							
Salt Lake City, UT	April 30-May 1																							
Phoenix, AZ	Feb 5-6																							
Dallas-Arlington, TX	April 2-3																							
Denver, MI	Sept 17-18																							
New Orleans, LA	Jan 15																							
San Juan, PR	July 16-17																							
Portsmouth, NH	June 18-19																							
Providence, RI	Oct 15-16																							
Savannah, GA	March 5-6																							
Columbo, FL	Nov 12-13																							



1. Patient Data

Age

Gender

Height

cm
 in

Weight

kg
 lb

Transport Status ⓘ

Residual Renal Function ⓘ

K_{renat}/V
 mL/min

2. Estimated Prescription Data

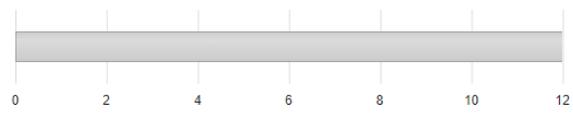
Max. Fill Volume (L) ⓘ

--

Min. Number Of Exchanges (per day) ⓘ

--

Peak Time UF with 1.5% Glucose (hrs) ⓘ



Peak time shown in green. Time to negative UF shown in red.

Min. Total Daily Volume (L) ⓘ

--

BSA: --

Urea Distribution Volume: --

Renal Weekly Kt/V: --

3. Physician Modeling

Desired Fill Volume (L)

Desired Number Of Exchanges (per day)

Desired Time Per Exchange

--
total volume

--
total time

Est. Total Weekly Kt/V ⓘ



Modality Input ⓘ

Simple Day/Night

1 Welcome

2 HHD Calculator

← Prev

Clear Values ↻

1. Patient Parameters

Age

Gender

Please Select ▼

Height

cm in

Weight

kg lb

Residual Renal Function (ml/min) ⓘ

Body Water Volume Calculator ⓘ

Watson-based ▼

Body Water Volume (L)

2. Prescription

Treatment Frequency (per week) ⓘ



Treatment Duration (hrs) ⓘ



Dialysate Volume (L) ⓘ

25 ▼

This tool calculates expected clearances for dialysate flow rates up to 300 ml/min. [More ...](#)
Dialysate Flow Rate (ml/min) 277

Blood Flow Rate (ml/min)

Ultrafiltration Volume per Treatment (L) ⓘ

0

3. Result

spKt/V ⓘ

Weekly stdKt/V ⓘ



Patient Normalized UFR (ml/kg/hr) ⓘ

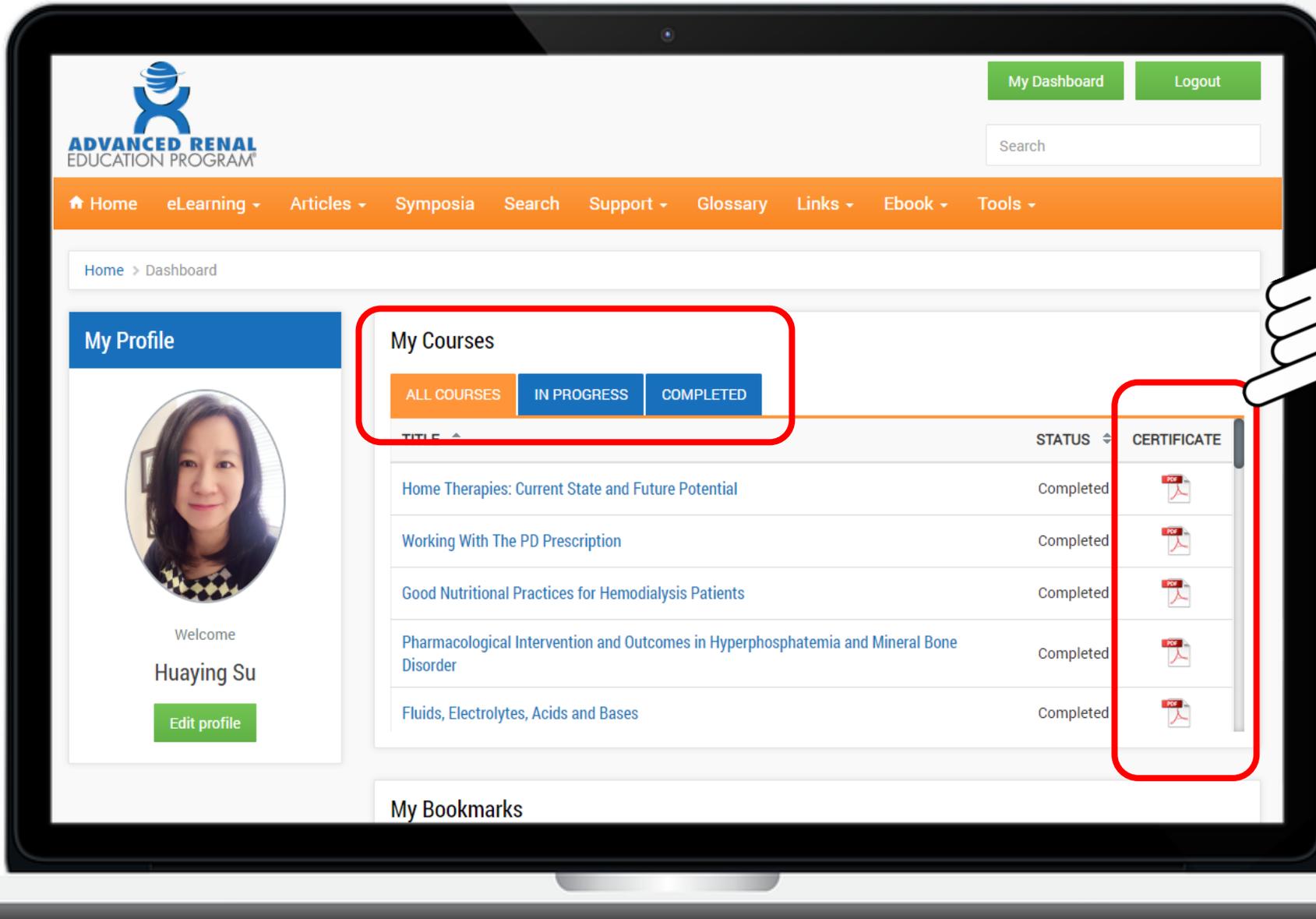


Weekly Treatment Duration (hrs) ⓘ

Dialysate Flow Rate (L/hr)

Ultrafiltration Rate (L/hr) ⓘ

Fluid Efficiency ⓘ



ADVANCED RENAL
EDUCATION PROGRAM

My Dashboard Logout

Search

Home eLearning Articles Symposia Search Support Glossary Links Ebook Tools

Home > Dashboard

My Profile



Welcome
Huaying Su
[Edit profile](#)

My Courses

ALL COURSES IN PROGRESS COMPLETED

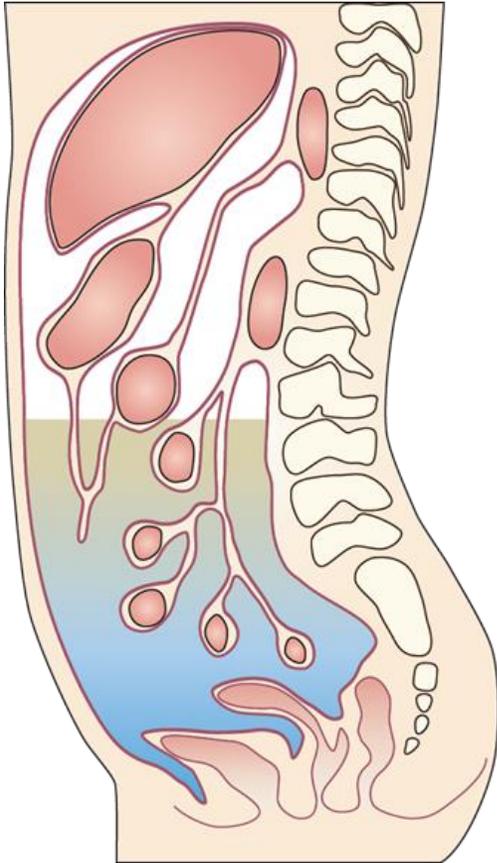
TITLE	STATUS	CERTIFICATE
Home Therapies: Current State and Future Potential	Completed	
Working With The PD Prescription	Completed	
Good Nutritional Practices for Hemodialysis Patients	Completed	
Pharmacological Intervention and Outcomes in Hyperphosphatemia and Mineral Bone Disorder	Completed	
Fluids, Electrolytes, Acids and Bases	Completed	

My Bookmarks



Dr. Anjali Saxena

Director of Peritoneal Dialysis,
Santa Clara Valley Medical Center, San Jose, CA
Clinical Associate Professor of Medicine,
Stanford University, Stanford, CA



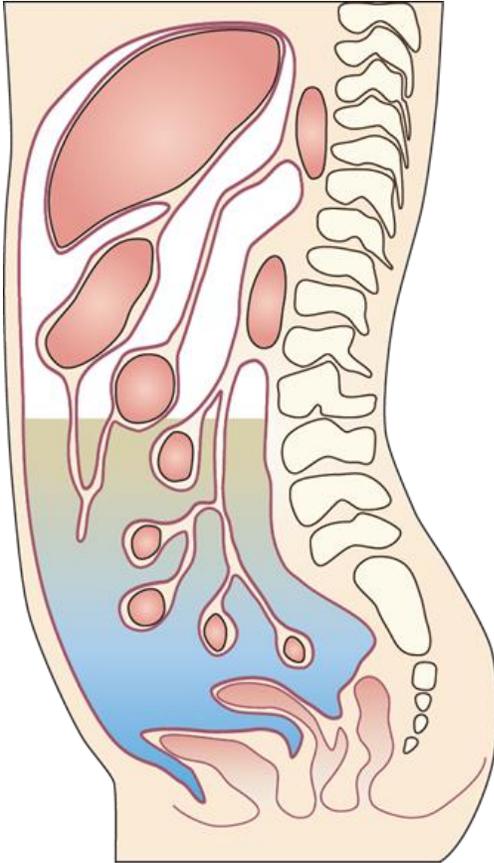
Urgent Start Peritoneal Dialysis

Course Disclosure



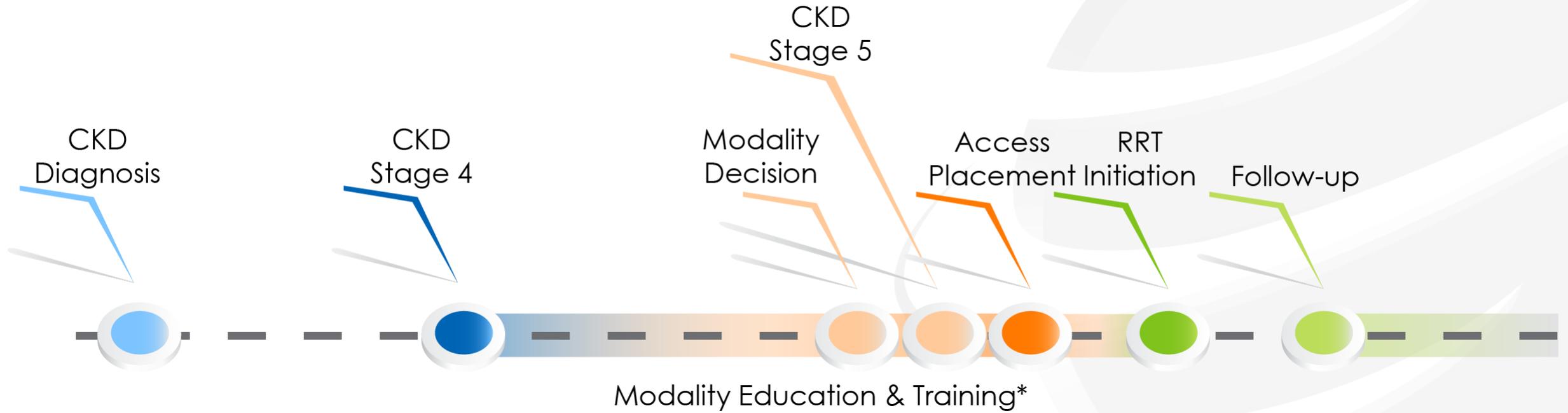
- This educational program has been developed by the Medical Information and Communication Office of the Fresenius Medical Care Renal Therapies Group.
- It is intended to provide pertinent data to assist health care professionals in forming their own conclusions and making decisions.
- It is not intended to replace the judgment or experience of the attending physician or other medical professional.
- The treatment prescription is the sole responsibility of the attending physician.
- The presenter is AREP faculty under contract with the Fresenius Medical Care Renal Therapies Group.

Course Objectives



- ✓ Describe history of dialysis initiation and define urgent start PD
- ✓ Understand the outcomes, potential benefits, and risks associated with urgent start PD
- ✓ Review logistic and prescriptions considerations of urgent start PD
- ✓ Examine the use of PD for acute kidney injury

Ideal Dialysis Initiation



* Training if home modality is chosen

Unplanned Dialysis Initiation

40 – 60% of patients have a “suboptimal” dialysis start

Acute illness
Late referral
Rapid eGFR decline
No permanent access

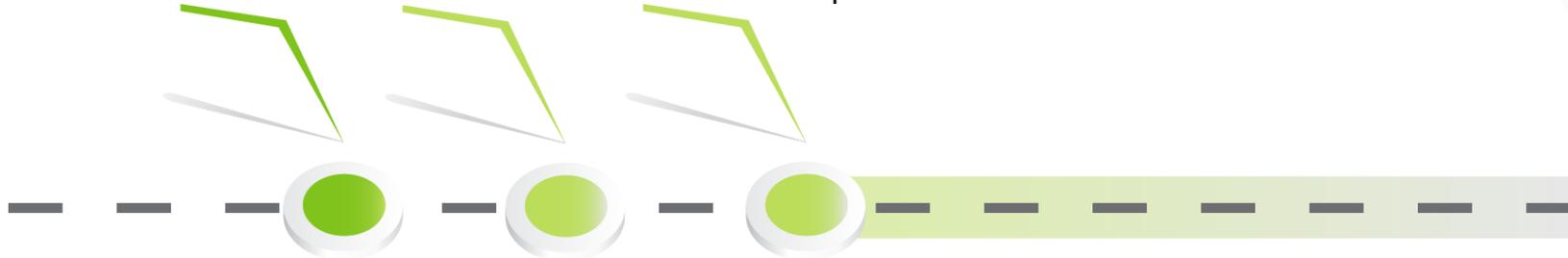
Suboptimal initiation:

- In-hospital dialysis initiation
- Initiation with a CVC
- Not initiating with chosen modality

Urgent-Start
HD

Transfer to
In-Center

Follow-up



Pre-ESRD Care Does Not Prevent Suboptimal Initiation

Study 1: Nephrology Care

>12 months

56% Suboptimal Initiation¹

- Patient-related delays
- Acute-onset CKD
- Surgical delays
- Late decision making by nephrologist

Study 2: Nephrology Care

> 4 months

45% Suboptimal Initiation²

- Lack of referral or time waiting for access creation
- Rapid decline of RRF
- Missed or cancelled appointments

¹Hughes SA, et al. Nephrol Dial Transplant. 2013;28(2):392-397

²Buck J, et al. Nephrol Dial Transplant. 2007;22(11):3240-3245

Another Option for Dialysis Initiation

Peritoneal dialysis is possible in both planned or unplanned, and urgent or non-urgent start situations

Need for RRT Modality Decision PD Catheter Placement

PD Initiation

PD Training

Home PD Initiation

Follow-up

In-Hospital
Modality Education

Urgent Start vs. Early Start vs. Acute

Urgent Start PD¹

- Option for patients with advanced CKD who urgently and unexpectedly need dialysis are treated with PD
- Catheters are used within 48-72 hours of placement

Early Start PD¹

- More elective variant
- PD is initiated 3-14 days after catheter insertion

Acute PD²

- Renal replacement therapy for patients with AKI
- Generally, temporary until renal function resumes

¹Blake PG, Jain AK. Clin J Am Soc Nephrol. 2018;13(8):1278-1279

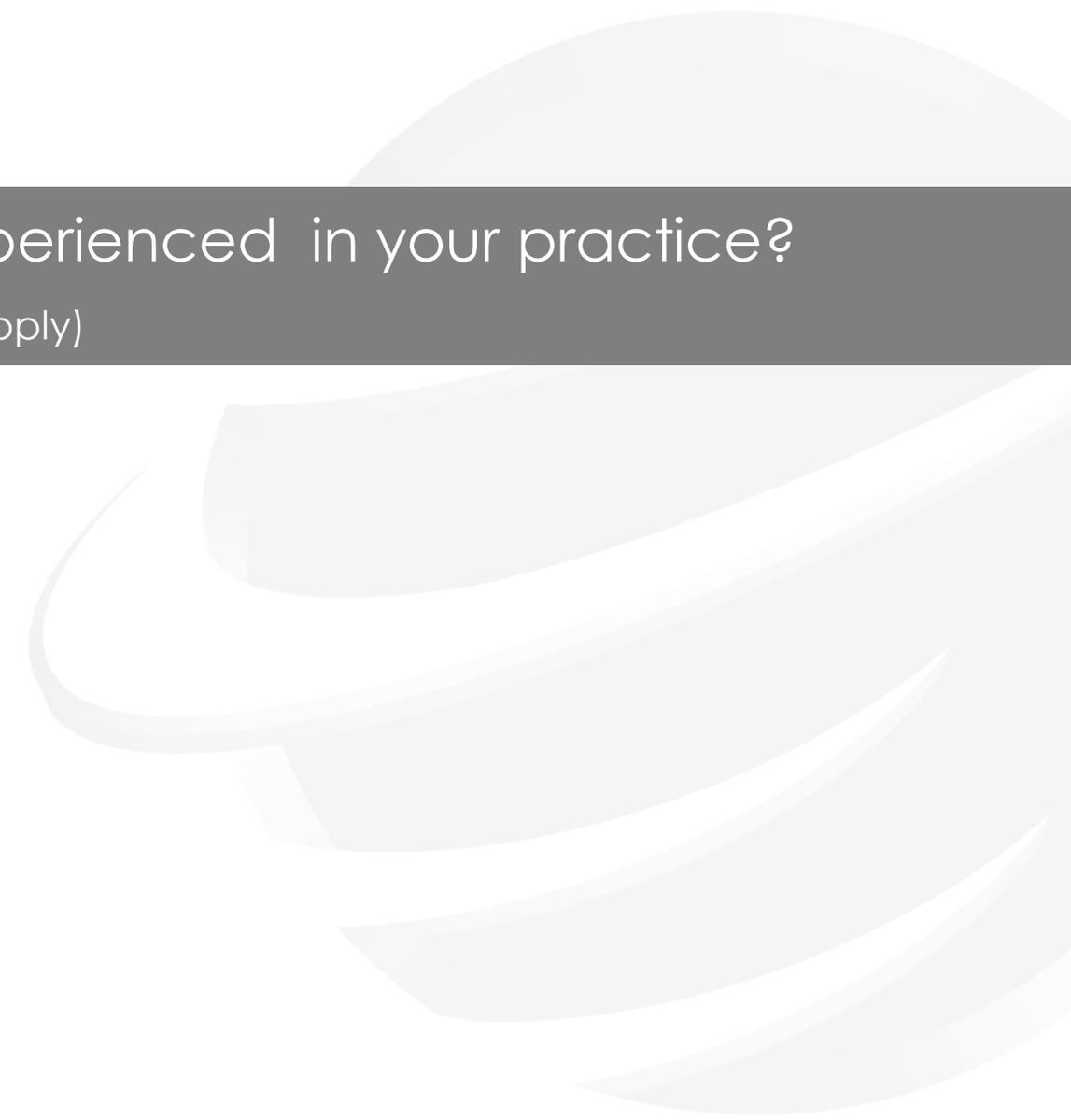
²Cullis B, et al. Perit Dial Int. 2014;34:494-517

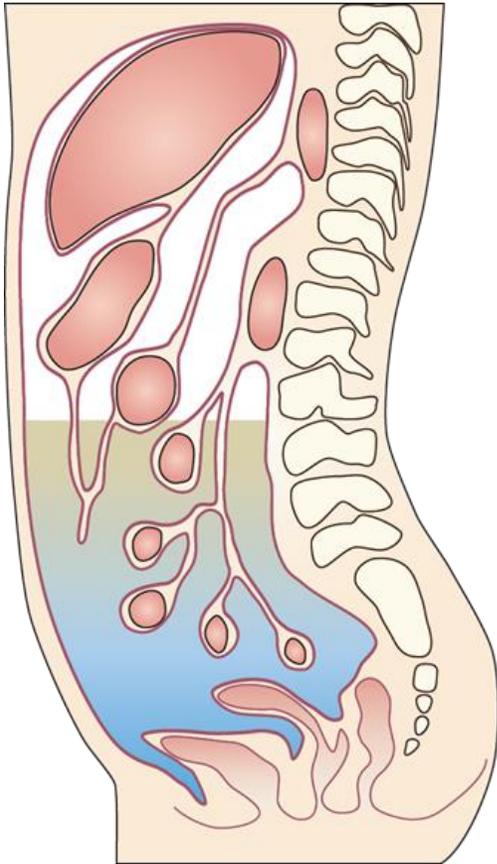
Polling Question

Which of the following have you experienced in your practice?

(select all that apply)

- A. Planned Start PD
- B. Urgent Start PD
- C. Early Start PD
- D. Acute PD

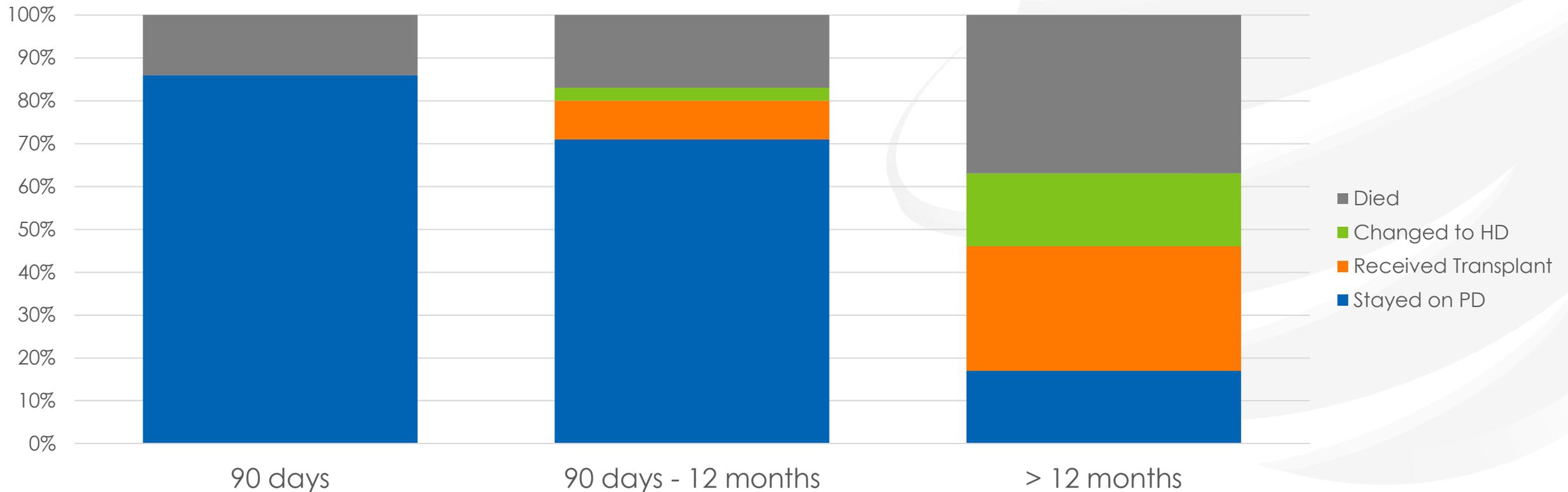




Outcomes, Potential Benefits, and Risks with Urgent Start PD

Patient Disposition After Urgent Start PD

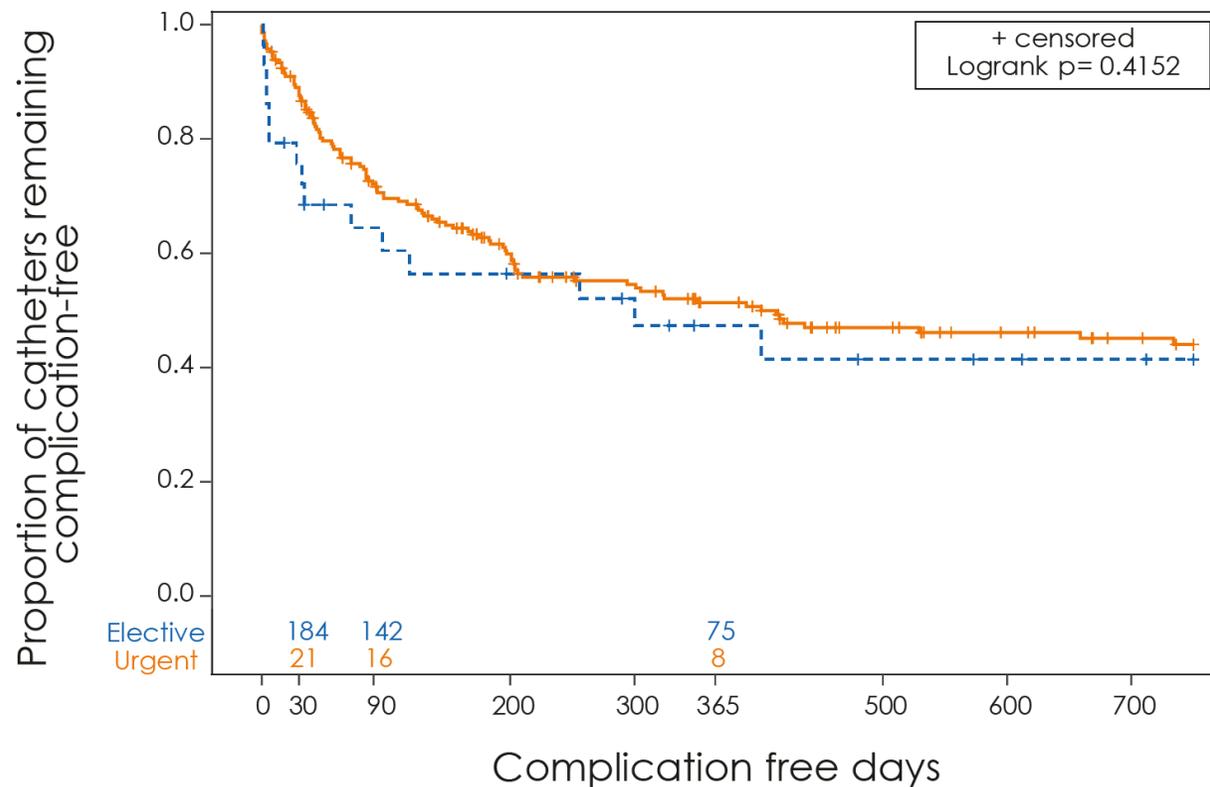
Patients who initiate dialysis with urgent start PD* tend to stay on PD in the first year



*Mean time between catheter insertion and PD initiation was 3.5 ± 2.3 days, range 0 - 8 days, n=35.

Complication Rates with Urgent Start PD

Except for catheter leaks, urgent start* and elective start PD have similar rates of catheter complications



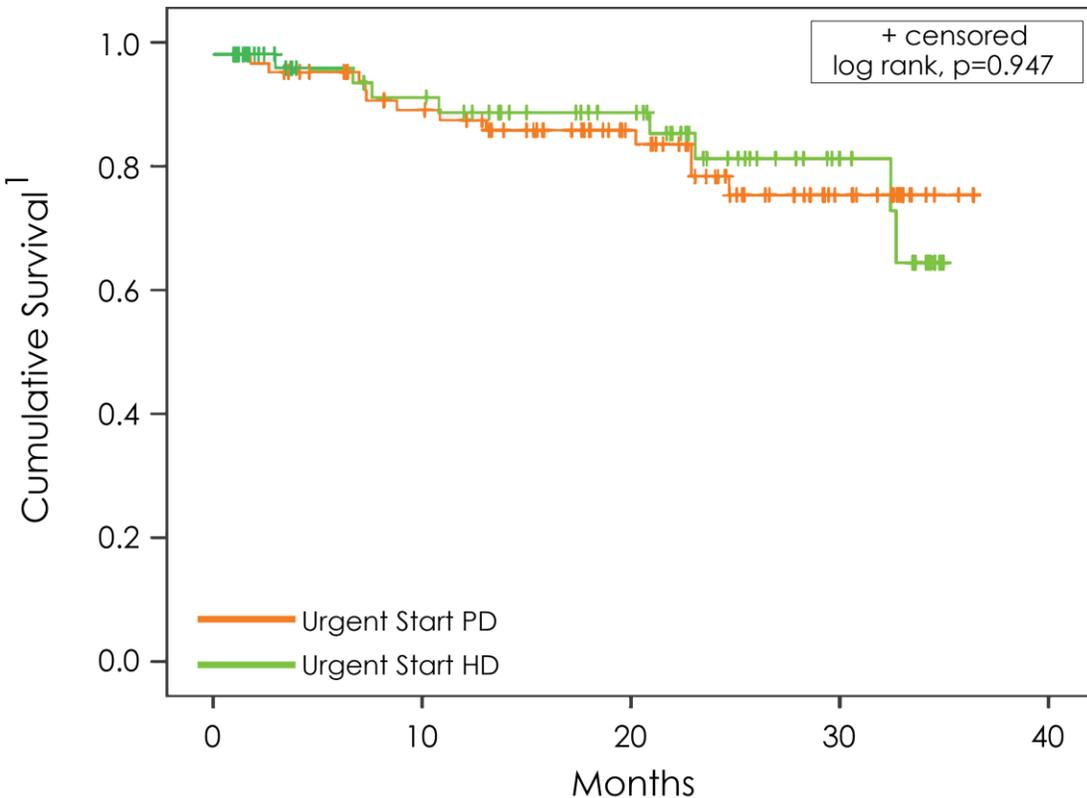
Catheter Complications in Urgent Start and Elective Start PD

	Elective (%)	Urgent (%)	p value
Exit site infection	5.2	3.5	0.683
Peritonitis	15.1	27.6	0.092
Catheter malfunction	28.4	17.2	0.203
Cather leak	3.3	13.8	0.011
Primary leak	1	3.5	0.256
Hernia	4.3	10.3	0.159
Hematoma or bleeding	2.8	0	0.358
Bowel perforation	0.5	0	0.710

* In the urgent start group, dialysis was started within 48 hrs of catheter placement.

Urgent Start PD vs Hemodialysis

Survival and outcomes are comparable
for urgent start PD and urgent start HD



Outcomes with Urgent Start PD and Urgent Start HD²

	PD (%)	HD (%)	p Value
Infection	35.4	44.0	0.10
Mechanical complication	24.7	37.4	0.06
Readmission within 30 days of discharge	35.4	44.0	0.10
Death	19.9	29.6	0.10

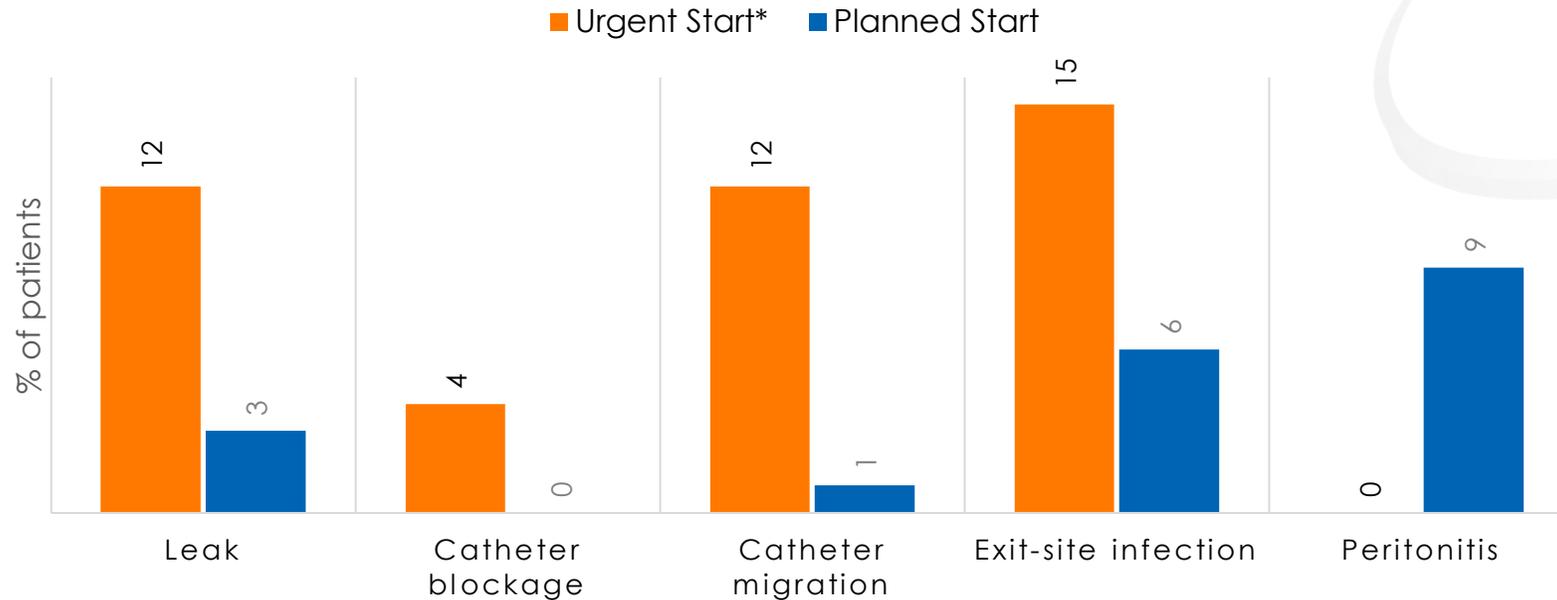
¹Jin H, et al. *PLoS One*. 2016;11(11):e0166181.

²Dias DB, et al. *Perit Dial Int*. 2020.

Risks with Urgent Start PD

Urgent start PD is associated with an increased risk for catheter complications, mostly catheter migration and leaks, compared to planned start PD

Complications Within 4 Weeks of PD Commencement¹



Risk of leaks can be mitigated with low volume, supine, intermittent exchanges²

*Median time between catheter insertion and PD initiation was 4 days, range 1 - 7 days

¹See EJ, et al. *Perit Dial Int*. December 2016.

²Ghaffari A. UpToDate; 2019:Topic 95328, Version 11.0.

Why Utilize Urgent Start PD?

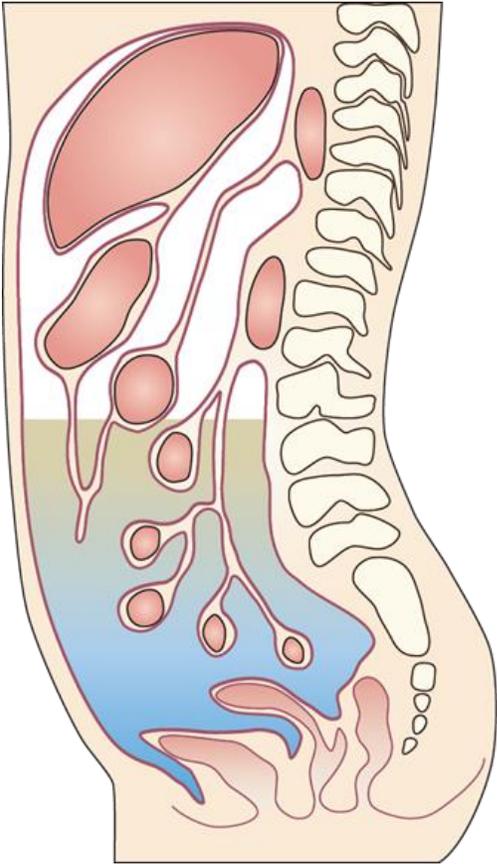
Avoid the need for two access types in patients who wish to eventually do PD

Avoids use of CVC and unnecessary HD exposure

Can be a safe and effective option for renal replacement therapy

Increases PD utilization

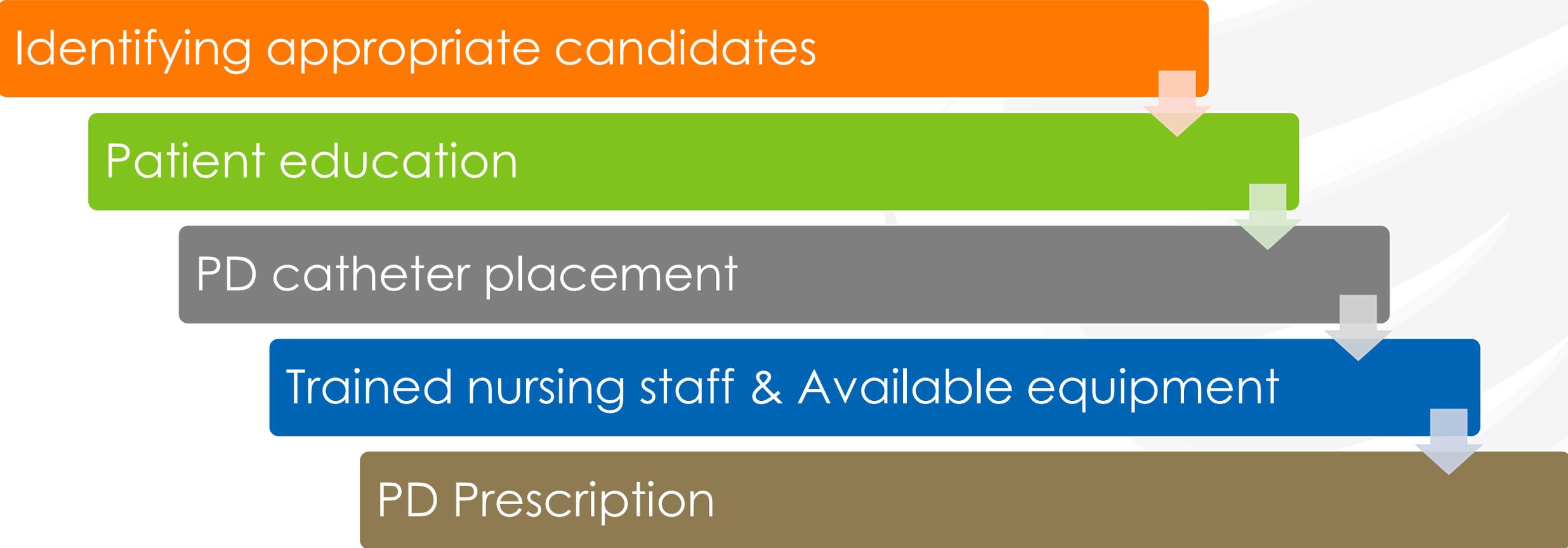
Possible preservation of residual renal function



Logistic Considerations for Urgent Start PD

Logistic Considerations for Urgent Start PD

Infrastructure and protocols to support:



Identifying Candidates

Identifying
Candidates

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription



- Patients who require urgent, but not emergent dialysis
- Could wait 24 – 48 hours before initiating



- Patients requiring emergent dialysis should initiate with hemodialysis.
- Particularly patients required immediate treatment for:
 - Critical illness
 - Volume overloaded
 - Hyperkalemia
 - Acidotic
 - Overdose

Polling Question

Which of the following patients is a potential candidate for urgent start PD?
(select one option)

- New patient
- Shortness of breath
- Hb 12.5, Cr 13.6, K 7.2

A

- Known CKD patient
- No SOB, normotensive
- Hb 11, Cr 6, GFR 10, K 4

B

- New patient, increasing fatigue over last 4 weeks
- Ankle edema
- Hb 10.9, Cr 8.4, K 5.8

C

- New patient
- Liver cirrhosis, history of social instability
- Active drug abuse confirmed
- Hb 9, Cr 7.2, K 4, Alb 2.4

D

Identifying Candidates

Survey to quickly evaluate possible candidates:

Identifying
Candidates

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

Work/Home

- Do you plan to work while on dialysis?
- Do you have a place you consider home?
- Do you have an accessible restroom for handwashing and effluent disposal?
- Do you have storage space?
- Can your home be kept clean?
- Do you have caregiver responsibilities?

Medical/Surgical

- What medical problems do you have?
- Do you suffer from any psychiatric disorders or memory problems?
- What abdominal surgeries have you had?
- Can you walk without the help of others?
- Can you lift 10-20 lb bag of fluid?
- Do you have any vision or hearing problems?

Patient Education

Identifying
Candidates

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

- Many urgent start patients have little to no knowledge of dialysis or therapy options
- In-hospital education should allow patients make an informed decision about their therapy choice

Provide support and empathy

Patient centered

Basic knowledge of kidney function

Therapy options available

Discuss benefits, risks, and challenges

Use of visual and written teaching aids

Urgent Education Influences Modality Choice

Identifying
Candidates

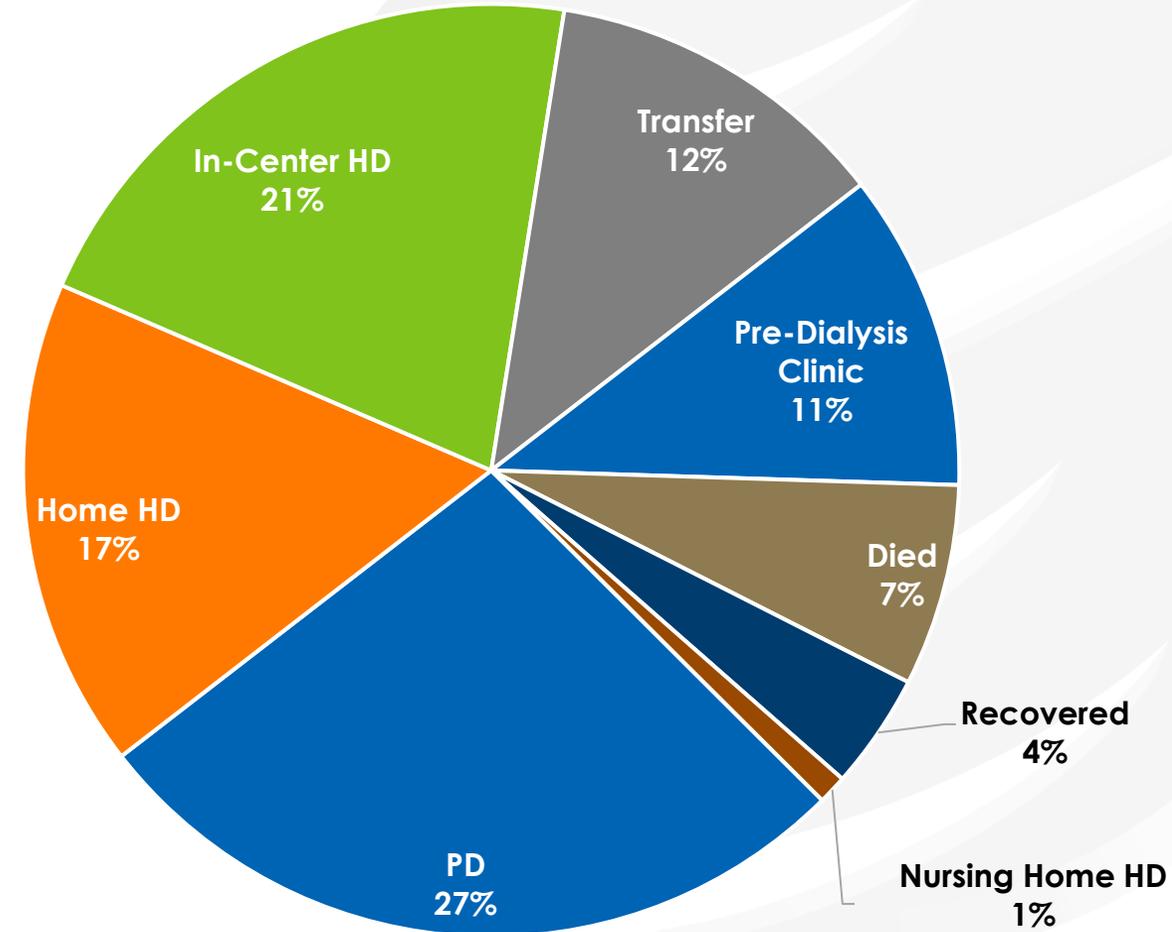
Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

- In-hospital education programs for urgent starters are feasible and effective
- Following an in-hospital education program, most patients pursued a home dialysis option



Polling Question

How are your PD catheters placed today?
(choose all that apply)

- A. Open surgical insertion
- B. Percutaneous needle-guidewire
- C. Basic laparoscopy
- D. Laparoscopy with adjunctive procedures

Urgent Start PD Catheter Placement

Identifying
Candidates

A major limiting factors in urgent start PD is the availability of willing surgeons, nephrologists, or interventional radiologists to place PD catheters competently on short notice¹

Patient
Education

Catheter Outcomes in Urgent Start PD²

	Surgical	Laparoscopic	Percutaneous
Total Patients	374	33	103
Catheter Leaks	9 (2.5%)	3 (9%)	8 (8%)
Catheter Migration	18 (5%)	2 (6%)	9 (9%)
Catheter Revision	11 (2%)	2 (6%)	9 (9%)

PD Catheter
Placement

- Studies are limited, but placement technique in urgent start PD does not appear to influence catheter mechanical outcomes
- In planned start PD, laparoscopic placement with adjunctive procedures has been shown to have better catheter function outcomes compared to surgical and percutaneous placement methods³

Staff and
Equipment

PD
Prescription

¹Blake PG, Jain AK. *Clin J Am Soc Nephrol.* 2018;13(8):1278-1279. ²Javaid MM, Khan BA. *Semin Dial.* 2019;32(3):225-228.

³Shrestha BM, et al. *Perit Dial Int.* 2018;38(3):163-171.

Staffing Requirements

Identifying
Candidates

Program coordinators are typically used to run urgent start programs and coordinate between nephrologist, surgeon, social workers, and outpatient clinic staff

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

Hospital

- Social worker or nurse to provide counseling and education to the patient and family
- Nurses with PD experience who have been trained specifically on urgent start PD, PD equipment, and post-operative catheter care
- Nephrologists with know-how to prescribe urgent start PD

Clinic

- PD nurses with availability to administer outpatient, intermittent PD to an untrained patient in the clinic or patient's home
- Nurses with flexibility to train patients who come in urgently

Equipment Requirements

Identifying
Candidates

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

Manual exchanges (CAPD) or PD cyclers (APD) can be used for urgent start PD

- Hospitals should have a ready supply of equipment and disposables:
 - PD Catheters
 - Catheter extension sets compatible with stocked supplies/equipment
 - Dialysate options
 - Cyclers
 - Ancillaries (caps, drain bags, adapters, etc)

Urgent Start PD Prescription Considerations

Identifying
Candidates

Evaluate patient for uremic symptoms to determine if dialysis is needed urgently or if early start PD is more appropriate (wait 3-14 days)

Patient
Education

If patient is not overtly uremic, delaying initiation or doing intermittent PD 3 – 5 days/week may be considered

PD Catheter
Placement

Initial PD prescription administered by hospital or clinic nurses until patient is trained

Staff and
Equipment

PD
Prescription

Prescription modeling can assist in determining an adequate prescription for urgent start

Urgent Start PD Prescription

Identifying
Candidates

There are currently no consensus guidelines or best practice recommendations regarding urgent start PD prescriptions

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

- Balance benefits of initiating urgent start PD with risk of early catheter leaks
- Adjust prescription to reduce risk of pericatheter leaks and other complications related to early use of the catheter
- Lower volume and supine positioning keep intraperitoneal pressure low
- Dry periods allows the incision site to heal

General suggestions
from the literature:

- ✓ Lower volume
- ✓ Supine positioning
- ✓ Dry periods

Urgent Start PD Prescription

Example 1: Based on BSA and GFR

Identifying
Candidates

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

Initial Urgent Start Prescription

	BSA $\leq 1.7 \text{ m}^2$	BSA $> 1.7 \text{ m}^2$
GFR > 7 mL/min	750 mL 4 cycles 5:00 hrs/day	1000 mL 5 cycles 6:40 hrs/day
GFR ≤ 7 mL/min	1000 mL 6 cycles 8:00 hrs/day	1250 mL 6 cycles 8:00 hrs/day

Other considerations:

- Solutions:
 - 1.5%: no peripheral edema or SOB
 - 2.5%: presence of edema or SOB
 - 4.25%: for severe volume overload in conjunction with oral diuretic
- Logistics
 - All supine exchanges
 - Patient uses restroom before being connected
 - Fluid is completely drained if patient needs to sit or walk
 - Cough suppressants as necessary
 - Avoid eating unless draining

Urgent Start PD Prescription

Example 2: Incremental Increases

Identifying
Candidates

Patient
Education

PD Catheter
Placement

Staff and
Equipment

PD
Prescription

CAPD Urgent Start Regimen

Day
1-3

- Fill volume: 500mL (1.5% glucose + 1000 U/L heparin)
- Dwell time: 3 hours
- Supine

Day
4-6

- Fill volume: 1000mL
- Dwell time: 4 hours
- Ambulatory

Day
7+

- Fill volume: 2000mL
- 4 exchanges/day

Polling Question

How would you initiate PD in this patient?
(select one option)

- 58-year old female
- Presenting with nausea and worsening hypertension
- Peripheral edema, and mild SOB
- Hb 11, Cr 8.4, K 5.6

A

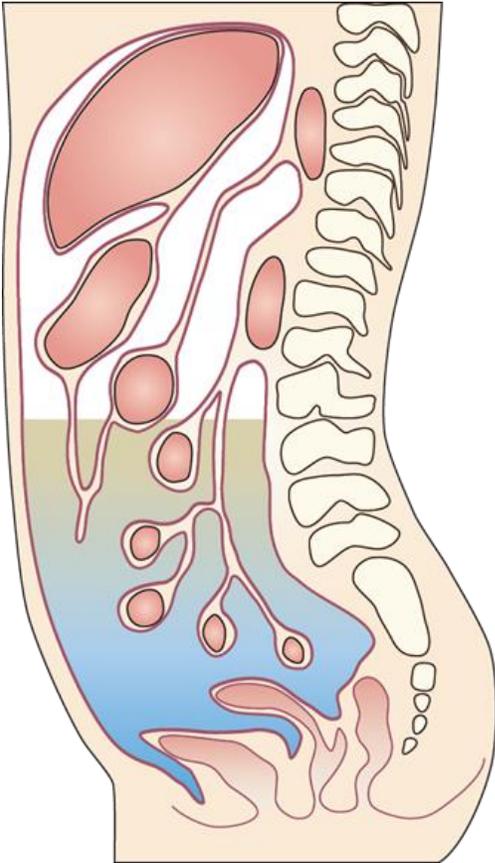
Urgent start PD: Immediate initiation of PD after catheter insertion, 1 L fills, 1-hour dwells, supine, for 24 hours/day

B

Urgent start PD: Initiate PD 24h after catheter insertion with 1 L fills, 2-hour dwells, supine, for 10 hours/day

C

Early start PD: Initiate PD 7 days after catheter insertion with 1 L fills, 2-hour dwells, supine, for 8 hours/day



PD for Acute Kidney Injury

PD for Acute Kidney Injury

PD should be considered as a suitable method of continuous renal replacement therapy in patients with acute kidney injury

Benefits

- Technically simple
- Minimal infrastructure requirements
- Anticoagulation not necessary
- Gradual solute removal
- Potential for cytokine removal based on peritoneal physiology*

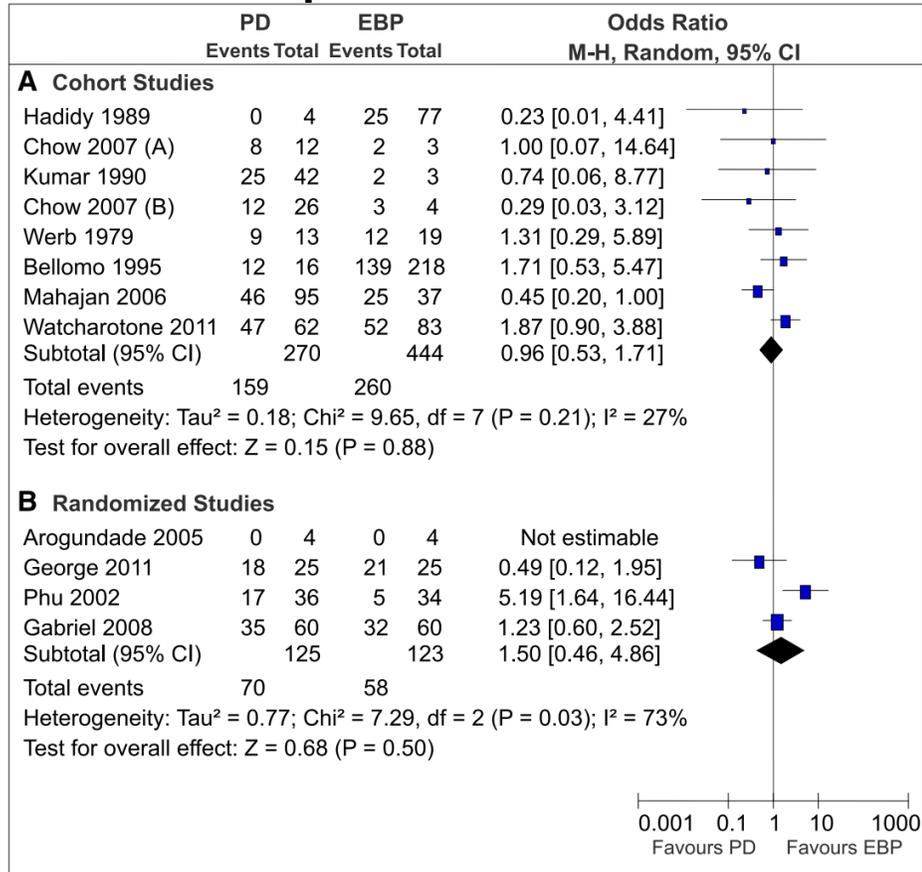
Challenges

- Risk of peritonitis
- Unpredictable fluid removal rates
- Possibly inadequate solute clearance
- Glucose absorption and protein loss
- Impaired diaphragmatic movement
- Not appropriate for ventilated or prone patients

* No studies have definitively demonstrated this occurs

Outcomes with PD for AKI

Effect RRT modality on mortality in patients with AKI



- Well-designed studies are limited
- Meta-analysis suggests no difference in mortality between PD and extracorporeal RRT

Acute PD Prescription Considerations

Targeting a weekly Kt/V urea of 3.5 provides outcomes comparable to that of daily HD; for many patients with AKI targeting a weekly Kt/V of 2.1 may be acceptable

During initial 24 hrs of therapy, cycle times should be dictated by clinical circumstances. Initial correction of hyperkalemia, fluid overload, and/or metabolic acidosis requires shorter dwells.

Avoid fluid overload and hypovolemia by adjusting dextrose concentrations

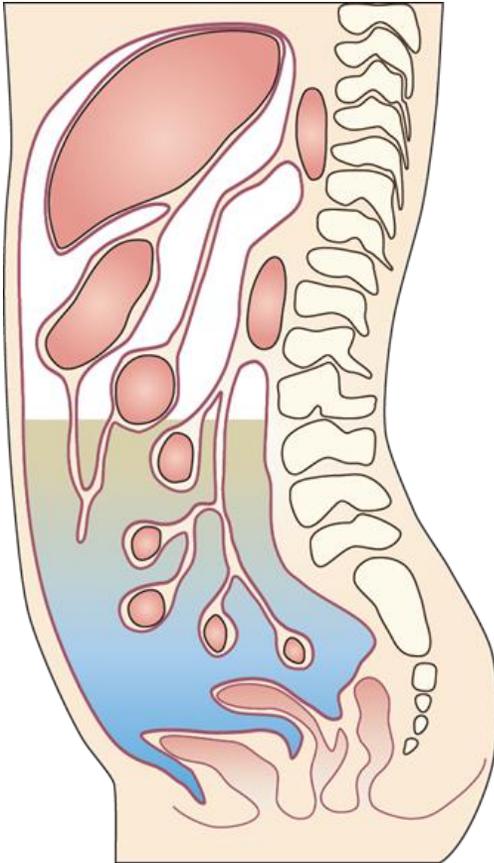
Monitor levels of medications as clearance may be enhanced

Acute PD Prescription Example

Acute PD with Standard Dialysate using an APD Cycler

- ✓ Continuous therapy
- ✓ 2 L fill volumes
- ✓ Dwell time:
 - ✓ Initially: 1-3 hrs
 - ✓ After acidosis, pulmonary edema,
and/or hyperkalemia resolved: 4-6 hrs
- ✓ 500 U/L IP Heparin

Clinical Takeaways



- ✓ Urgent start PD is a safe and effective renal replacement therapy that can achieve similar outcomes to planned start PD and urgent start HD
- ✓ Infrastructure and clinical protocols are necessary for successful urgent start programs
- ✓ Ensuring low volume, supine exchanges mitigates risk of catheter leaks
- ✓ PD can be used to treat AKI in some cases



Fresenius Medical Care Renal Therapies Group
a division of Fresenius Medical Care North America
920 Winter Street • Waltham, MA 02451

Fresenius Medical Care, the triangle logo, the Advanced Renal Education Program, and the AREP logo are trademarks of Fresenius Medical Care Holdings, Inc., or its affiliated companies.

© 2016, 2020 Fresenius Medical Care, All Rights Reserved.

P/N 102075-01 Rev D 07/2020

Audience Q&A

For More Information:



Maryam Alabood 469-916-3803
Visit: www.esrdnetwork.org



arep@fmc-na.com
Visit: www.esrdnetwork.org