



★ **Modifiable Risk Factors for PD Outcomes : Center Effect**

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★ **Why Might Size Unit Matter?**

Ability to:

- ★ Individualize Rx
- ★ Problem solve
- ★ CQI
- ★ Improve knowledge base
- ★ Nursing / MD experience

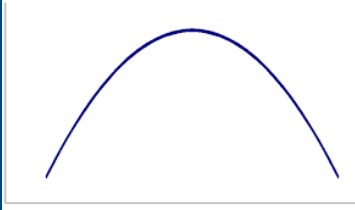
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★ **Center Size and Risk for Technique Failure**




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PD Program Size Operational Efficiency and Retention

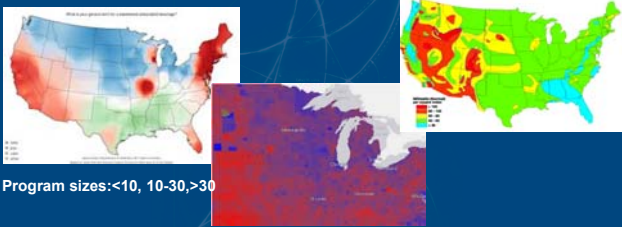


"U shaped curve for program outcomes"

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Layering Heat Map Data Findings to Develop Action Plans for Intervention:




Program sizes: <10, 10-30, >30

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Peritoneal Dialysis Center Characteristics : A Modifiable Risk Factor to Improve Peritoneal Dialysis Outcomes


- **Small programs have higher technique failure rates**
 - Program sizes: 6-12, 13-24, >24
 - Program sizes: 15-25: <20 patients
 - Program sizes: <10, 10-30, >30
 - Program sizes: <25, >25
 - Centers adding <16 patients /yr. (lowest >48 new patients/yr.)**



* death, modality transfer, death censored

** Multicenter Registry Analysis of Center Characteristics Associated with Technique Failure in Patients on Incident Peritoneal Dialysis. [Hsu H, Cho Y, Passaro BM, Darsson D, Nadeau-Forsels AC, Jewley C, Clayton PA, Borsoo M, Badve SV, Sud N, Spornik N, McDonald SP, Johnson DW. Clin J Am Soc Nephrol. 2017 Jul 7;12\(7\):1090-1099.](#)
 Estimation of the Center Effect on Early Peritoneal Dialysis Failure: A Multilevel Modeling Approach. [Gullerotti S, Veniec G, Verger C, Béchade C, Fichoux M, Utzcu J, Lobbedez T. Perit Dial Int. 2016 9;10:36\(5\):519-25.](#)
 Are Peritoneal Dialysis Center Characteristics a Modifiable Risk Factor to Improve Peritoneal Dialysis Outcomes? [Lambie M, Davies SJ. Clin J Am Soc Nephrol. 2017 Jul 7;12\(7\):1032-1034.](#)
 A systematic review of the impact of center volume in dialysis. [Pegler D, Mathes T, Marshall MR. BMC Res Notes. 2015 Dec 22;8:812.](#)

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★ Conceptual Model for PD Services Based on Program Census

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★ Small Program (<10 Patients)

- At risk to fail
- Patient training at a larger alternate facility, if close
 - Greater staff efficiency, and more consistent training processes
- Assess viability semi-annually
- Action plan to grow
- Staff could share on-call duties with other regional small programs (e.g. consolidation)
- Staff needs continued support and education opportunities because their exposure to patients is limited

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★ A Systematic Review of the Impact of Center Volume in Dialysis

With respect to PD, center volume has an **effect on technique survival only**. There was no effect on mortality risk or patient survival, while the evidence for peritonitis was positive. A systematic review of the impact of center volume in dialysis is inconclusive due to a limited number of studies.

Pieper D1, Mathes T2, Marshall MR3,4
BMC Res Notes. 2015 Dec 22;8:812. doi: 10.1186/s13104-015-1785-5.

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Causes of PD Dropout: Consider Impact of Center Size

Multiple factors can impact results for program dropout as a result of center size

Mujais S, Story K. Peritoneal dialysis in the US: Evaluation of outcomes in contemporary cohorts. *Kidney Int* 2006;70 (Suppl 103):S21-S26

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Center Effects and Peritoneal Dialysis Peritonitis Outcomes: *Peritonitis-treatment response*

<u>Variables</u>	<u>OR (95% CI)</u>	<u>P</u>
<i>Center-level characteristics</i>		
<i>PD proportion</i>		0.04
<18%	1.03 (0.90-1.17)	0.7
18-29%	1.00 (reference)	
>29%	1.21 (1.04-1.40)*	0.01
* Catheter removal: <18%-1.23, 18-29%-1.0, >29%-0.78 p=.03		

Center Effects and Peritoneal Dialysis Peritonitis Outcomes: Analysis of a National Registry. Htay H, Cho Y, Pascoe EM, Darshan D, Nadeau-Fredette AC, Hawley C, Clayton PP, Bordeas M, Badve SV, Sud K, Boudville N, McDonald SP, Johnson DW. *Am J Kidney Dis*. 2017 Dec;28

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Center Characteristics Associated with the Risk of Peritonitis in Peritoneal Dialysis: a hierarchical modelling approach based on the data of the French Language Peritoneal Dialysis Registry

Program size can impact patient education and Home visit ability

Nephrol Dial Transplant (2017) 32: 1016-1023

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★ Predictors of Drop out from PD Program Who is at risk??

1. In the United States, more than 1 in 5 adverse outcomes (transfer to HD or "other" event) occurred within 90 days of PD start.
2. Patients who had received any previous treatment with HD experienced significantly worse outcomes.
3. The socio-economic characteristics of the neighborhoods in which the PD patients received their care did not have any meaningful effect on outcomes; the only exception seems to be the worse outcomes for patients treated in neighborhoods with a larger proportion of black residents.
4. Patients treated in units located in remote rural areas seem to have worse outcomes.
5. Patients in Network 17 and 18 (California, Alaska, Guam, Hawaii, the Mariana Islands, and American Samoa) consistently have better outcomes than those observed in other parts of the country.



One in 5 transfer within 90 days of start !!!

Rajnish Mehrotra,1,2 Kenneth Story,3 Steven Guest,3 and Michelle Fedunyszyn,3 PDI 2011



★ What Should the First 90 Days Look Like ?



Start with the end in mind!!

Not adequate to simply assess individual processes of care, but rather groups or processes, or "bundles" of activities that need to occur to lead to a better outcome.

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★ First 90 Days...

What should the first 90 days look like?

INTAKE	FIRST 30	30-60	60-90
Intake Process: Key first step <ul style="list-style-type: none"> • Assessing the patient: defining risk • SW assessment: depression screens • Dietary assessment: SGA/LBM/need for supplements • Medication review: what is not prescribed (ACE, ARB/Quercin) 	Training and First 30 Days <ul style="list-style-type: none"> • Observations during training • Catheter performance • UF behavior: edema • Home visit • Weekly clinic visits in first month • PET evaluation • Mid-week patient calls 	<ul style="list-style-type: none"> • Assess mortality stability • Dietsite prescription: QOL, ADLs • Assess RRF pattern; protect at all cost • Functional status assessment 	<ul style="list-style-type: none"> • Patient demonstrates exchange technique • Discuss QOL and daily activities • Assess any change in RRF • Assess risk factor control: <ul style="list-style-type: none"> - Blood pressure - Blood sugar - Cardiovascular risk factors (especially smoking)

FIG. 3. The first 90 days require a cadence of timed activities to optimize technique survival.

Changing Landscapes for Peritoneal Dialysis: Optimizing Utilization. Schwaber MJ Jr, Sehmi Dal. 2017 Mar;30(2):149-157


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★ Patient Safety: Program Size Matters....time??
★ Safety refers to PD complication rates and resolution

- Do you effectively wash or sanitize your hands between patients 100% of the time?
- Do you perform Home visits in a timely fashion ?
- Do you teach, engage, and partner with patients/families to optimize outcomes?
- Do you follow all infection control practices with your patients and their families in efforts to keep them safe?
- Do you let colleagues know when you observe them doing something that could endanger patients and ask them to do the same if they observe you exhibiting unsafe practices?
- In the unit we discuss ways to prevent complications from happening again?
- Do you track complication rates and network with other centers (SME-BDPs)?


Patent Safety - Doing Your Part.
 Ulrich B. Nephrol Nurs J. 2017 Jan-Feb;44(1)9
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★ Reducing Hospitalizations/ Patient Volume : PD^{1,2}


- Increase training days/retraining on aseptic technique
- Use prophylactic antibiotics at the CES
- Require optimal PD catheter placement
- Leverage pre-procedural prophylaxis
- Use prophylaxis to prevent fungal infections
- Utilize bridge antibiotics w/in 2 hours of symptoms

¹ Campbell EJ, et al. Prevention of peritoneal dialysis related infections. Cj Respiratory Dialysis Transplantation. vol. 20 issue 3 September 2015. p. 1451-1472. ² Yu R, Zhou M et al. Advanced nursing experience is beneficial for lowering the peritonitis rate in patients on peritoneal dialysis. Perit Dial Int 2015; 35: 85-88. ³ Ruzsopoli C, et al. Fungal peritonitis in peritoneal dialysis patients: successful prophylaxis with fluconazole as demonstrated by prospective randomized control trial. Perit Dial Int 2010; 30: 619-625.
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★ Networking Based on Experienced Centers of Excellence

- Magnet training center
- Hub and spoke : Quality Monitoring
- Collaborative Quarterly Quality Meeting



Role of a center of excellence program in improving the quality of peritoneal dialysis—a Chinese experience. Yao Q, Zhou G Perit Dial Int. 2014 Jun;34 Suppl 2:559-62.
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If You Are a Small Program, What Should You Do?

- Grow the program or redesign (hub and spoke model)
- Network with other centers: clinical competence/mentoring
- Think prevention
- Monitor metrics: patient losses, PTN rates, hospitalization, patient safety

.....Thank you

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