An Innovative, Patient-Centric Approach to Intraperitoneal Nutrition (IPN)

for Malnourished Peritoneal Dialysis (PD) Patients

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BACKGROUND:

Protein Energy Wasting (PEW) is a common and serious complication among patients undergoing peritoneal dialysis (PD), characterized by persistent malnutrition, protein deficits, sarcopenia and poor physical function. Intraperitoneal Nutrition (IPN), which delivers amino acids (AA) directly into the peritoneal cavity by replacing a portion of the dextrose in the dialysate solution, has emerged as a valuable therapeutic option to address PEW. However, traditional cycler IPN formulations often require high-volume (5–6 L) bags, which can present physical and logistical challenges for patients, including limited storage space, reduced mobility, and increased therapy burden.

OBJECTIVE:

This abstract presents an innovative, patient-centric approach to cycler IPN that utilizes lower-volume (2–3 L) formulations designed to enhance AA delivery while minimizing the burdens associated with traditional high-volume therapy. These lower-volume IPN bags are tailored to meet ultrafiltration requirements and provide protein, while compatible with various PD cycler machines and cassette types. Key prescription considerations include cycler brand, cassette configuration, fill volume, dextrose concentration, and total dialysate volume.

RESULTS:

Clinical observations from this provider's service indicate that patients receiving lower-volume IPN demonstrated higher retention rates at six months compared to those using traditional high-volume IPN (74% vs. 58%, respectively). This improvement may be attributed to reduced therapy burden, increased tolerability, and optimization of protein delivered.

CONCLUSIONS:

Lower-volume IPN offers a promising alternative for dietitians, nurses, and physicians managing nutrition in PD patients, particularly those with limited physical capacity, home support, or storage space. While high-volume (5-6 L) IPN remains effective, this lower-volume (2-3 L) IPN, patient-centered innovation may improve adherence and outcomes for a broader range of patients. Future research should explore the long-term clinical benefits, optimal patient selection criteria, and broader applicability of lower-volume IPN in addressing PEW.

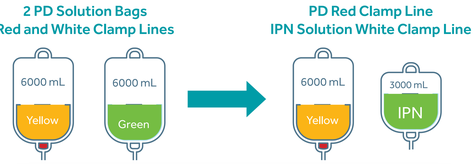
PD Regimen with IPN added as a 3L bag

PD Regimen

Claria cycler: 4 fills of 2,200 mL for a total volume of 8,800 mL. Dwells 1.5hrs

- Patient would remove (1) 6L from current PD regimen and replace with a 3L IPN bag that will be attached to the white clamp on the cycler machine.

Fill	IPN Fluid Transferred	IPN Volume Remaining	Osmolarity	Gram of Protein Delivered
1	0	3000	346	0
2	2200	800	386	12
3	800	0	399	17
4	0	0	399	16



IPN Rx: 1.5% amino acid in 3L cycler bag providing 45g of protein (no loss of amino acid with priming lines = 45g of protein delivered)

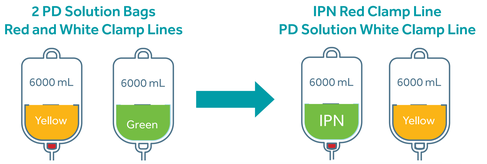
PD Regimen with IPN replacing a 6L bag

PD Regimen

Claria cycler: 4 fills of 2,200 mL for a total volume of 8,800 mL. Dwells 1.5hrs

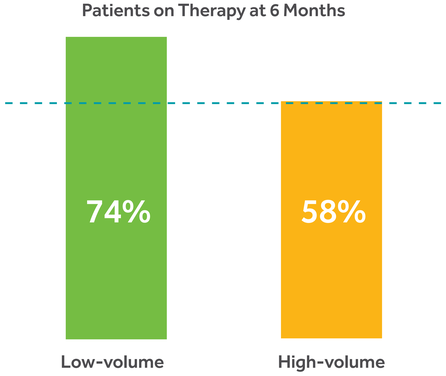
- Patient would remove (1) 6L from current PD regimen and replace with a 6L IPN bag that will be attached to the red clamp on the cycler machine.

Fill	2nd Bag Fluid Transferred	2nd Bag Fluid Remaining	Osmolarity	Gram of Protein Delivered
1	0	6000	401	17
2	2200	3800	381	10
3	2200	1600	368	7
4	1600	0	362	5



IPN Rx: 0.75% amino acid in 6L cycler bag providing 45g of protein (1-to-2g amino acid lost with priming of lines = 37-38g of protein delivered)

Retention Rate



Benefit	Impact
Reduced therapy burden	Increases adherence
Smaller bag size	Easier handling, storage
Increased tolerability	Higher retention
Customizable fill volumes	Supports UF goals
Compatible with multiple cyclers	Flexible implementation

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