

## MYTHS RELATED TO PD PATIENT SELECTION

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## MODALITY SELECTION

- In the era of patient centered care, we like to give patients as far as possible the choice to do PD or HD
- But some patients are considered ineligible to do PD for medical or psychosocial reasons
- However criteria for ineligibility differ greatly by center and by nephrologist

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## INELIGIBILITY FOR RRT MODALITIES Mendelssohn NDT 2009

	PD	HD	Transplant
Medically Ineligible	13%	2%	46%
Psychocially ineligible	17%	5%	29%
Ineligible for either reason	24%	5%	47%

1303 CKD 3-5 patients at 7 centers

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### PD Eligibility By Centre in Actual Dialysis Starts

	Centre M	Centre H	Centre L	Centre O	Centre S	
Identified	93%	87%	86%	73%	91%	
Assessed						
Eligible	X 62%	54%	63%	65%	74%	X
Offered	99%	100%	98%	100%	100%	
Chose	58%	44%	44%	44%	55%	
Received	91%	62%	84%	81%	93%	

- > 500 actual ESRD patients from DMAR database
- > 2012-14 Courtesy Oliver MJ et al

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### Medical Ineligibility for PD Mendelssohn et al NDT 2009

Reason for ineligibility	Number (N= 170)	Percent
Age	33	19.4%
Multiple surgeries/severe adhesions	26	15.3%
Morbid obesity	20	11.8%
Uncorrected hernias	18	10.6%
Terminal illness	14	8.2%
Inflammatory/Ischemic bowel disease	14	8.2%
Non-adherence	8	4.7%
Colostomy	6	3.5%
Uncontrolled DM	6	3.5%

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### Psychosocial Ineligibility for PD Mendelssohn et al NDT 2009

Reason for ineligibility	Number (N= 217)	Percent
Strong preference against	33	19.4%
Family against	26	15.3%
Age	20	11.8%
Behavioural/Adherence concerns	14	10.6%
Dementia/Psychiatric/Psychologic	14	8.2%
Prefers Conservative Care	14	8.2%
Expected longevity	8	4.7%

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PD Ineligibility Varies By Centre  
Mendelssohn et al NDT 2009

- Mean eligibility of PD overall was 78% but varied by centre from 58 to 92%
- Ineligibility by age ranged from 68-86 years (mean 78.7) v eligible 19-87 (mean 65.5)
- Ineligibility by weight ranged from 73 to 158 kg (mean 118) vs eligible 35-223 kg (mean 86)

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CASE ONE

- 70 year old woman with progressive CKD V (Cr 5 mg/dl) referred for evaluation
- History of depression and agoraphobia
- Lives alone an old farmhouse with multiple cats
- Social worker elicits that she is a hoarder and lives in squalor and is intensely reclusive

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CASE ONE

- Patient is unwilling to do HD and would prefer conservative therapy but is willing to consider home dialysis
- Home care services express reluctance to visit her home to assist with PD
- PD team express concern about hygiene and infection risk

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### CASE ONE

- Patient has now been on APD for 5 years
- Still agoraphobic, still a hoarder, still has cats but has only had 1 peritonitis
- Her life is not easy but is pleased she did dialysis
- You do not really know if PD will work for a patient until you help them try it

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### CASE TWO

- 55 year old man with diabetic CKD V, weighs 125 kg
- Values independence and wants to do PD
- Is this OK?

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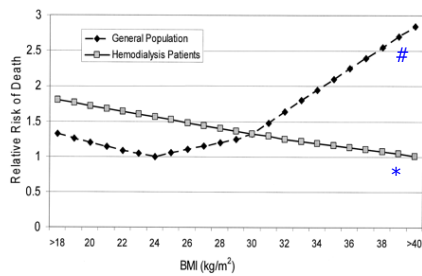
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### REVERSE EPIDEMIOLOGY IN HD Kalantar Zadeh et al (AJCN 2005)



\* Leavey et al NDT 2001

# Calle et al NEJM 1999

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**ASSOCIATION OF BODY MASS INDEX WITH MORTALITY IN PERITONEAL DIALYSIS PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS**

Seyed-Foad Ahmadi,<sup>1,2</sup> Golar Zahmatkesh,<sup>1</sup> Elani Streja,<sup>1,3</sup> Rajnish Mehrotra,<sup>4</sup> Connie M. Rhee,<sup>1</sup> Csaba P. Kovessy,<sup>5,6</sup> Daniel L. Gillen,<sup>2,7,8</sup> Emad Ahmadi,<sup>9</sup> Gregg C. Fonarow,<sup>10</sup> and Kamyar Kalantar-Zadeh<sup>1,2,3,8</sup>

PDI 2015 On line only

Used registry studies from ANZDATA, US, Canada and Brazil

Underweight do worse in year 1

Overweight and obese do better in year 1 but obese tend to do a bit worse in years 3 to 5

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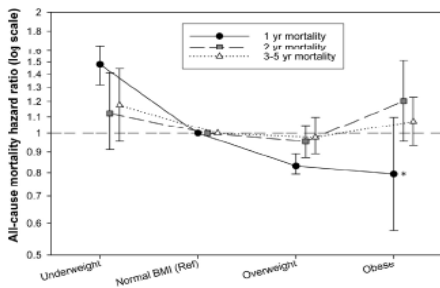
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**OBESITY AND MORTALITY IN PD – META-ANALYSIS**  
Ahmadi et al PDI 2015




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**BMI AND MORTALITY ON PD**

- Relationship is time dependent
- In first year or two on dialysis, malnutrition and inflammation are often major issues and higher BMI may be protective while low BMI is big risk
- In later years, cardiovascular disease is main issue and obesity is an aggravating factor

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PDI 2015 Epub only

Also looked at Technique Failure

Overweight and obese have higher risk of Technique Failure in all 4 large registry studies

Effect c 15%

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**BMI AND PERITONITIS/ANZDATA**  
MacDonald et al (PDI 2004)

- 10,709 PD patients in ANZDATA 1991 -2003
- Time to Peritonitis shorter for higher BMI (adjusted RR 1.08 for each 5 extra)
- Prevalence of obesity 17%

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**BMI AND PERITONITIS/ANZDATA**  
MacDonald et al (PDI 2004)

	Underweight	Normal	Overweight	Obese	
BMI (m2/kg)	< 20	20-24	25-29	30 +	
N	1215	4123	3291	1839	
Age (yrs)	60	61	52	58	<0.001
Weight (kg) median (IQR)	49 (45-54)	63 (57-69)	75 (69-82)	90 (81-98)	<0.001
Peritonitis rate per year (IQR)	0.69 (.66-.73)	0.79 (.77-.81)	0.88 (.85-.90)	1.06 (1.02-1.09)	<0.001

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WHY MORE PERITONITIS IN OBESE PATIENTS?

- Is it exit site care – difficult to see and clean exit site?
- Is it more skin folds and more skin colonization?
- Is it do with making safe connections?
- Is enteric peritonitis more common?

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ADEQUACY OF PD

- Is a target Kt/V of 1.7 per week harder to reach in very obese patients?
- It depends on how you calculate V

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HOW TO CALCULATE 'V'

- In HD, done using urea kinetics – kinetic V is an estimate of actual body water
- In PD, done using an anthropometric formula such as Watson – based on age, sex and weight
- But Watson V does not distinguish between obese 80 kg and large frame 80 kg patient

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### HOW TO CALCULATE 'V'

- We are dialyzing body water and fat contains less body water (c 10%) than muscle (c 75%)
- Alternative is to use V based on desirable or non-obese weight
- This means more clearance is required in wasted malnourished patients but less in obese patients
- Supported by KDOQI and other guidelines

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### EFFECT OF USING DESIRABLE 'V'

- Took last 50 patients to have UKM done
- Compared actual weight and desirable weight
- Compared Kt/V by both methods
- Compared numbers reaching targets

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### EFFECT OF USING DESIRABLE 'V'

- Mean actual and desirable weights were 83.2 and 74.7 kgs respectively
- On average patients weighed 11% more than desirable weight
- 15 (30%) weighed less and 35 (70%) more
- 7 (14%) were 20% less and 8 (16%) were 20% more

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**EFFECT OF USING DESIRABLE 'V'  
ON Kt/V**

- With 'desirable' method mean Kt/V rose 6% from 1.96 to 2.07
- 70% went up and 30% went down
- With standard method 10/50 were under 1.7 but with 'desirable' method only 4
- 7 went from < 1.7 to > 1.7 and 1 went the other way

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**EFFECT OF USING DESIRABLE 'V'  
EXAMPLES**

- A 138 kg male on full APD prescription has Kt/V 1.51 per week but his desirable weight of 90 kgs gives Kt/V 2.04
- A thin wasted 50 kg male on day dry APD has Kt/V of 2.0 with actual weight but drops to 1.53 with desirable

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**THEORETICAL 'DESIRABLE' WEIGHT LIMIT TO  
ACHIEVE Kt/V 1.7/week FOR EACH  
PRESCRIPTION IF ANURIC**

	Weight limit (kg)
CAPD 3 x 2L	50
4 x 2L	70
4 x 2.5L	80
APD 5 x 2L + 2L	75
5 x 2L + 2L + 2L	90

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### CASE THREE

- 63 year old man with CKD V has multiple previous surgical procedures
- Appendectomy, cholecystectomy, bowel resection for stage 1 colon cancer, 10 years earlier
- Told about risk of adhesions but still wishes to do PD

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### Previous Surgeries, Adhesions and Catheter Outcomes Crabtree et al Am Surg 2009

- 436 laparoscopic placements in 402 patients
- 252 (58%) previous surgery and 88 (35%) had adhesions and 80 (32%) had adhesiolysis
- 184 (42%) had no previous surgery and 6 (3.3%) had adhesions requiring lysis
- More mechanical obstruction episodes in those adhesiolysed but no difference in catheter survival

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### Previous Surgeries, Adhesions and Catheter Outcomes Crabtree et al Am Surg 2009

TABLE 1. *The Incidence of Adhesiolysis during 436 Attempted Catheter Implantation Procedures According to History of Prior Abdominal Operations*

Number of Prior Abdominal Operations	Number Requiring Adhesiolysis	Number Not Requiring Adhesiolysis
4 +	13 (52.0%)	12 (48.0%)
2-3	37 (38.9%)	58 (61.1%)
1	30 (22.7%)	102 (77.3%)
0	6 (3.3%)	178 (96.7%)

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Previous Surgeries, Adhesions and Catheter Outcomes  
Crabtree et al Am Surg 2009

TABLE 2. The Effect of Type and Number of Prior Intraoperative Operative Procedures on the Need for Adhesiolysis during 252 Attempted Peritoneal Dialysis Catheter Implantation Procedures in Patients with Previous History of Abdominal Surgery\*

Operative Procedures	Number of Prior Intraoperative Operative Procedures					
	1 Procedure		2-3 Procedures		4 + Procedures	
	Adhesiolysis	No Adhesiolysis	Adhesiolysis	No Adhesiolysis	Adhesiolysis	No Adhesiolysis
Aortic repair, reconstruction	2	2	1	1	—	—
Colorectal	1	2	7	5	—	—
Abdominal hysterectomy and/or salpingectomy, oophorectomy	7	10	13	11	7	—
Caesarean section	3	8	11	31	16	20
Uterine tube ligation	1	12	6	8	—	4
Transabdominal ureter, bladder, or retroperitoneum	1	2	2	2	2	—
Open appendectomy	5	15	12	15	2	3
Laparoscopic appendectomy	1	—	—	3	—	—
Open cholecystectomy	—	13	7	5	4	3
Laparoscopic cholecystectomy	1	7	3	4	2	3
Operations on the diaphragm, stomach, spleen, or small intestine	1	3	6	8	9	5
Transabdominal nephrectomy	—	1	3	3	3	—
Umbilical, ventral, or incisional hernia repair	1	2	1	9	3	3
Peritoneal dialysis catheter implantation	6	24	14	35	9	11

\* Excludes procedures performed substantially from an extraperitoneal approach, e.g., nephrectomy through flank incision, kidney transplant, inguinal hernia repair, vaginal hysterectomy, and retroperic bladder and prostate surgery. Excludes procedures to remove peritoneal dialysis catheters.

Previous Surgeries, Adhesions and Catheter Outcomes  
Crabtree et al Am Surg 2009

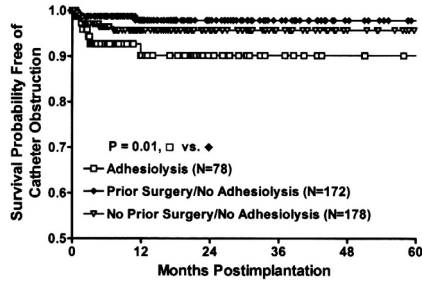


FIG. 1. Shown are the survival curves for the probability of remaining free of mechanical flow obstruction after peritoneal dialysis catheter implantation. Censored subjects appear as data point symbols on the flat part of curves.

Previous Surgeries, Adhesions and Catheter Outcomes  
Crabtree et al Am Surg 2009

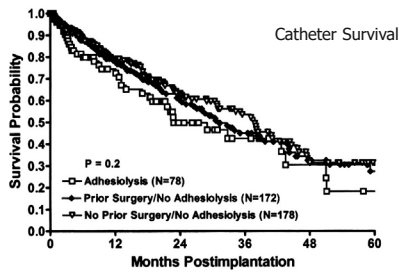


FIG. 2. Illustrated is the overall probability of catheter survival from loss due to mechanical complications, infection, transfers to hemodialysis because of inadequate peritoneal dialysis, psychosocial reasons or medical problems, and death. Censored subjects appear as data point symbols on the flat part of the curves.

Previous Surgeries, Adhesions and Catheter Outcomes  
Keshavari et al PDI 2010

- 217 catheter placements in 207 patients
- 93 (43%) had previous abdominal surgery and 25 (27%) of these had notable adhesions
- 124 (57%) had no previous surgery and 6 (5%) had adhesions
- Of 31 with adhesions only 3 needed adhesiolysis

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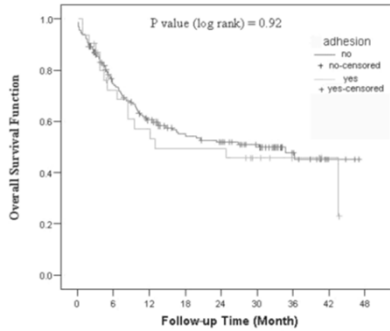
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Previous Surgeries, Adhesions and Catheter Outcomes  
Keshavari et al PDI 2010

217 placements  
93 previous surgeries  
31 adhesions  
3 adhesiolysis

No difference in catheter survival, with or without revisions, dysfunction, infection or surgical revision rates



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CONCLUSIONS

- Significant adhesions present in less than a third with previous surgery and there is no way to predict
- Not all adhesions need to be lysed
- If patients want to do PD and are otherwise suitable, go ahead
- I would exclude those with history of recurrent bowel obstruction due to adhesions or major viscus perforation or intrabdominal infection

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## CONCLUSIONS

- There are few absolute contraindications to doing PD
- There are lots of potential barriers but they can be overcome
- We are very poor at predicting who will do well on PD and who will not
- If someone is motivated give them a chance
- Do not be dogmatic – evidence does not support it!

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