What do the EuroBCM and IPOD-PD studies tell us?

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EuroBCM

- 28 centres
- 6 countries (Belgium, France, Poland, Romania, United Kingdom, Switzerland)
- All prevalent PD patients
  - >18 years
  - No metallic implants or pacemaker
  - No amputations
- 661 patients

Van Biesen PlosOne 6:e17148 2011

Patient Details

Variable	Value
Age	59 yrs
Male	55%
Diabetes	24%
Heart failure	32%
BMI	26 kg/m^2
Blood pressure	137/80
GFR	6.6 ml/min
Anuric (<100 ml/d)	19%
PD Vintage	33 months

Variable	Value
Ultrafiltration	940 ml/d
APD	53%
Polyglucose	64%

Transport Status	Frequency
Fast	17%
Fast average	33%
Slow average	28%
Slow	6%
Unknown	16%

IPOD PD

Results

Overhydration	1.7±2.3 litres
OH/ECW	8.6 ±11.5%

- Dehydrated 7%
- Normohydrated 40%
- Overhydrated 53%
- Of which:

  Severely overhydrated 25%

  (OH/ECW>15%)

Van Biesen PlosOne 6:e17148 2011

Euro BCM: Hydration and Blood Pressure

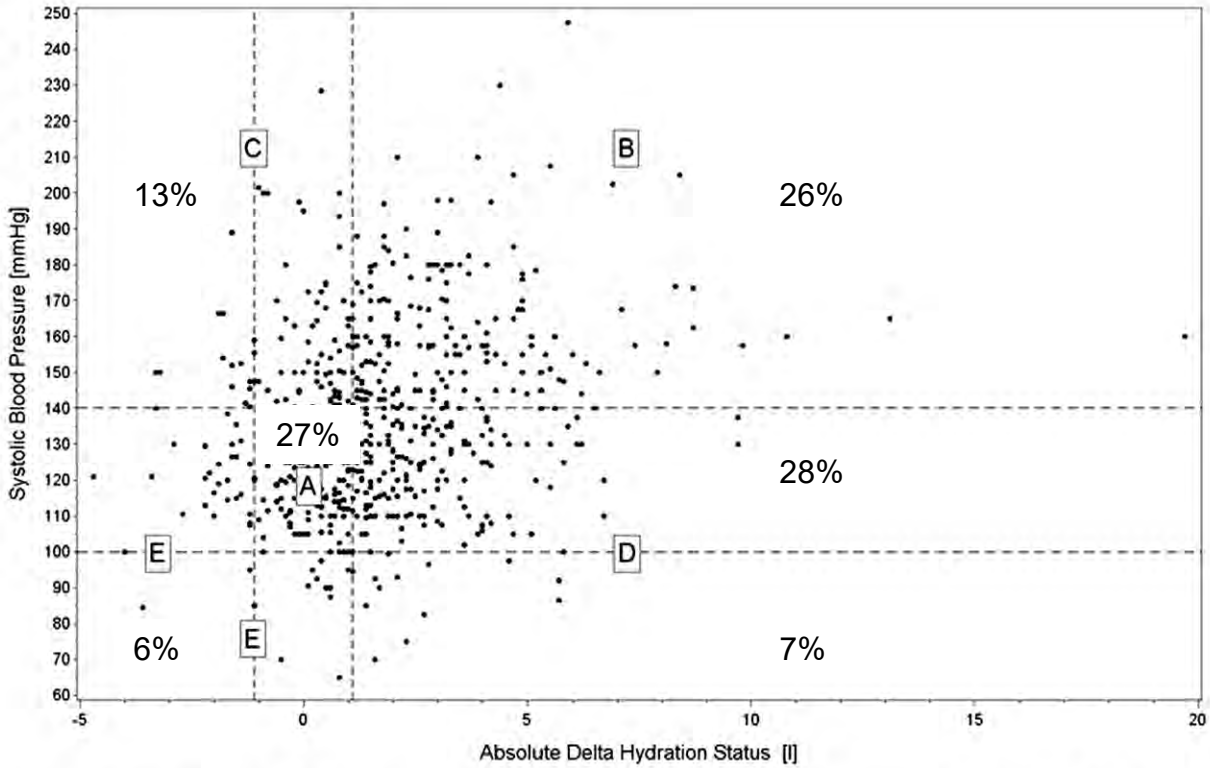
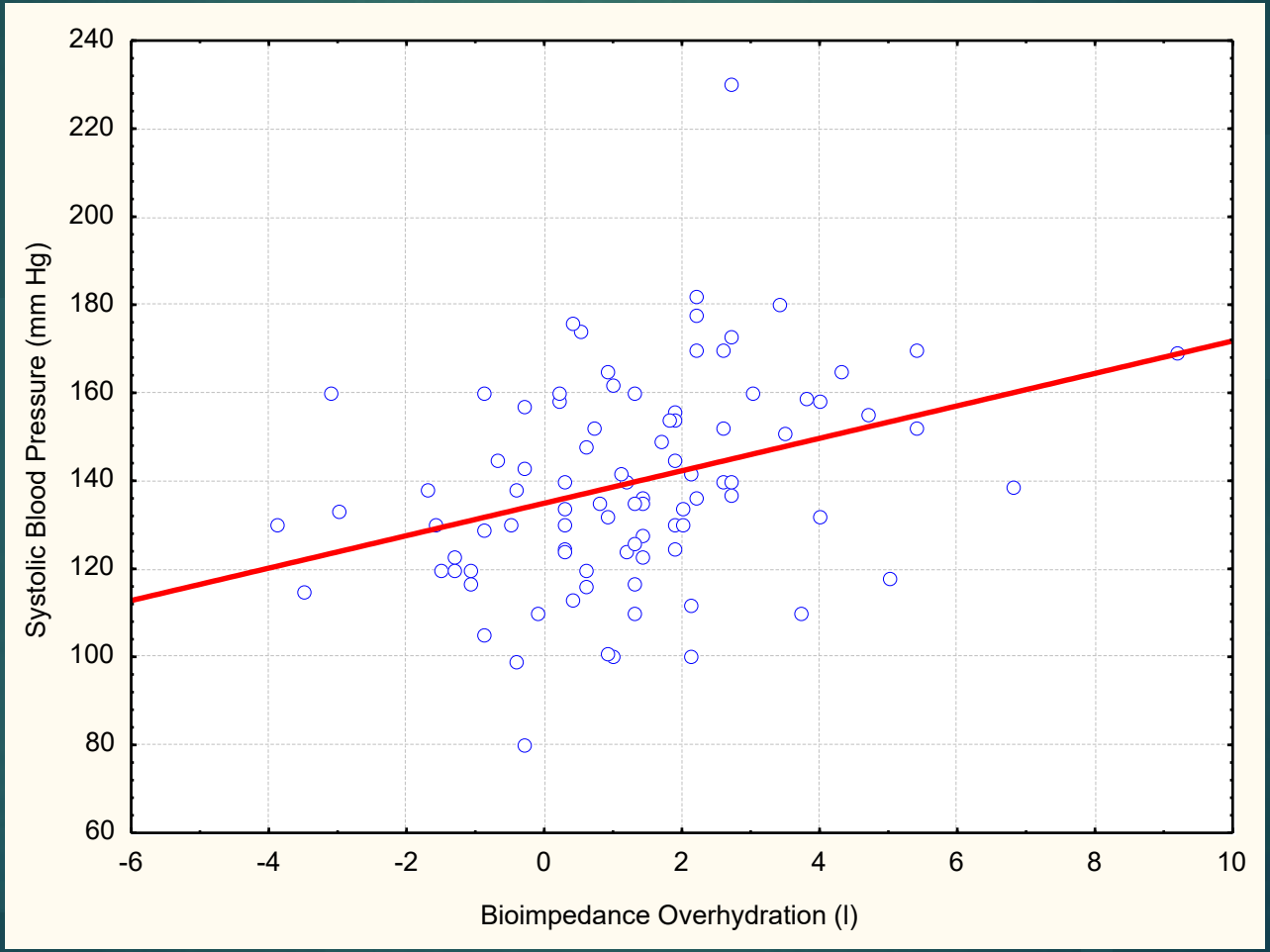


Figure 1. Scatter plot of the relation between absolute Δtissue hydration (litres) in the X-axis and systolic blood pressure (mmHg) in the Y-axis in the individual patients of the EuroBCM study cohort. Dotted vertical lines indicate the 10th and 90th percentile of absolute Δtissue hydration in the healthy population (−1.1 and +1.1 liter respectively), representing thus the limits of "normohydration". Dotted horizontal lines indicate the "normotensive range" for systolic blood pressure.
doi:10.1371/journal.pone.0017148.g001

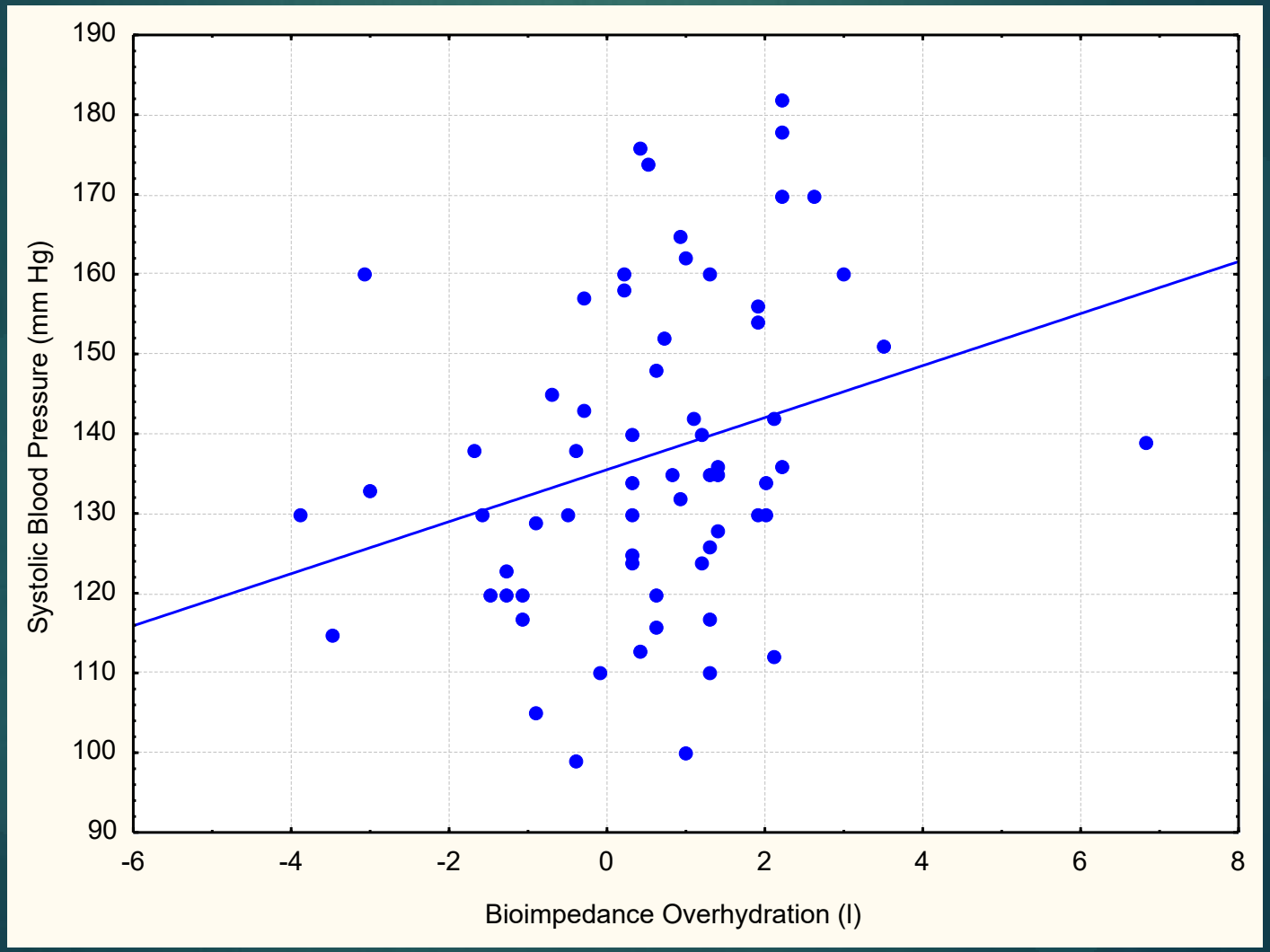
661 patients

Van Biesen PlosOne 6:e17148 2011

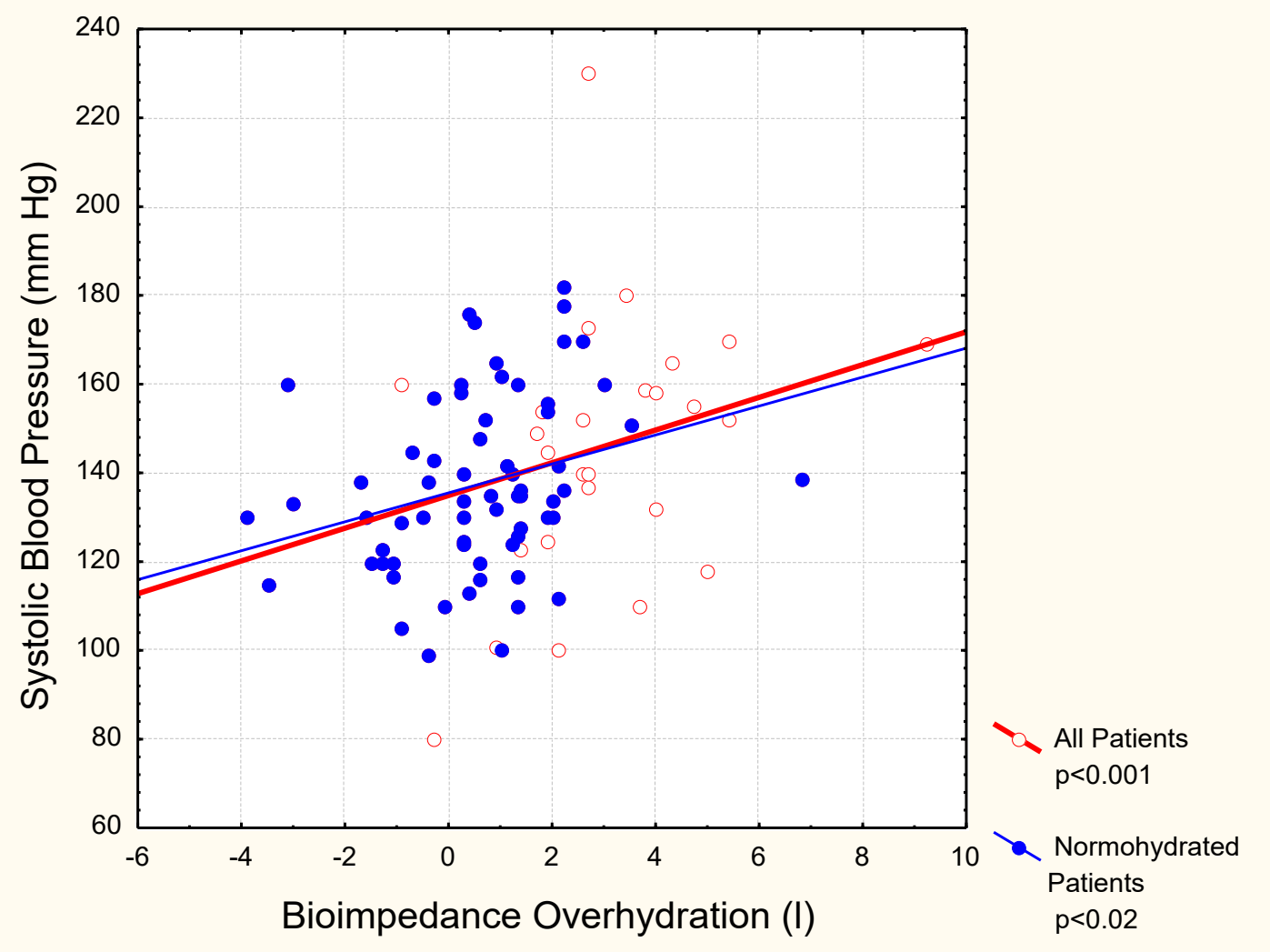
Overhydration & Systolic Blood Pressure Herlev

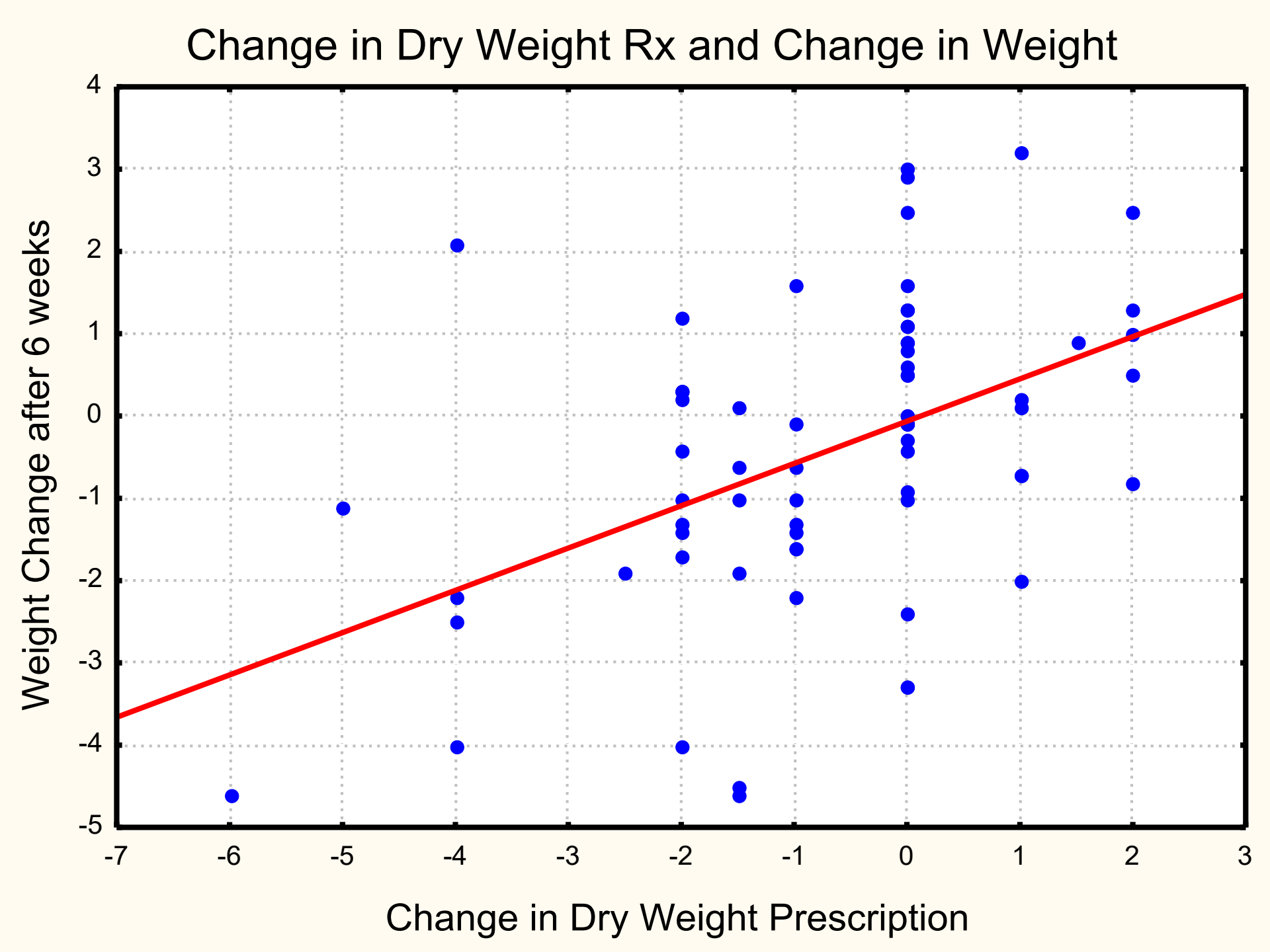


Overhydration & Systolic Blood Pressure Clinically Normohydrated Patients Only



Overhydration and Systolic Blood Pressure




Change in Dry Weight Rx and Change in Weight
Weight Change after 6 weeks
Change in Dry Weight Prescription
4
3
2
1
0
-1
-2
-3
-4
-5
-7
-6
-5
-4
-3
-2
-1
0
1
2
3

Independent Correlations to Fluid Overload

Parameter	Coefficient
Intercept	**30.27**
Age (per year)	**0.10**
Sex (female vs male)	**−3.04**
Albumin per g/l	**−0.75**
BMI per kg/m^2	**−0.66**
Diabetes (vs no diabetes)	**4.86**
Systolic BP (per mmHg)	**0.09**
Glucose at least once 2.5% vs. 1.5% only	**−0.73** NS
Glucose at least once 3.86/4.25% vs. 1.5% only	**5.18**

All p<0.001

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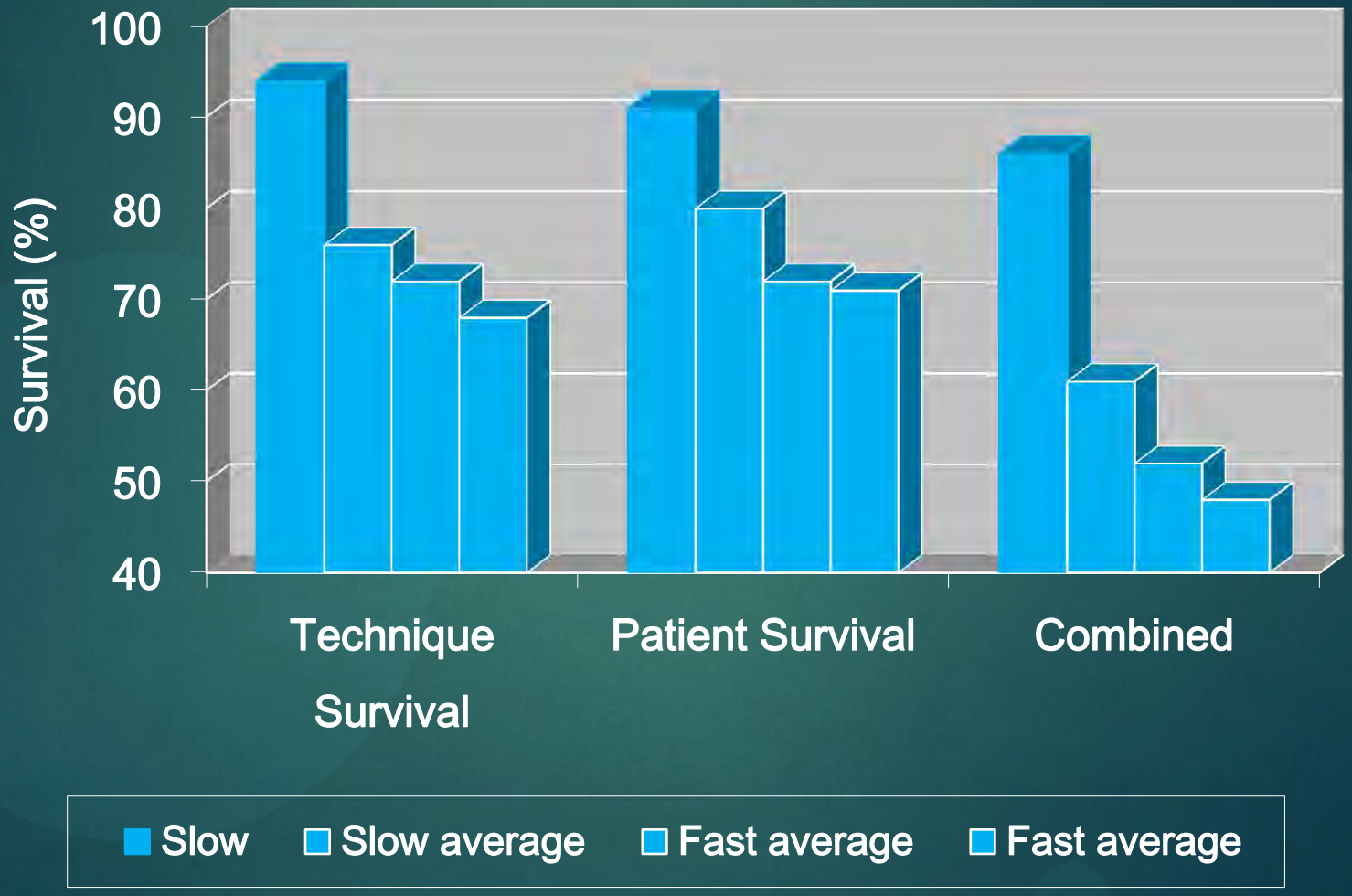
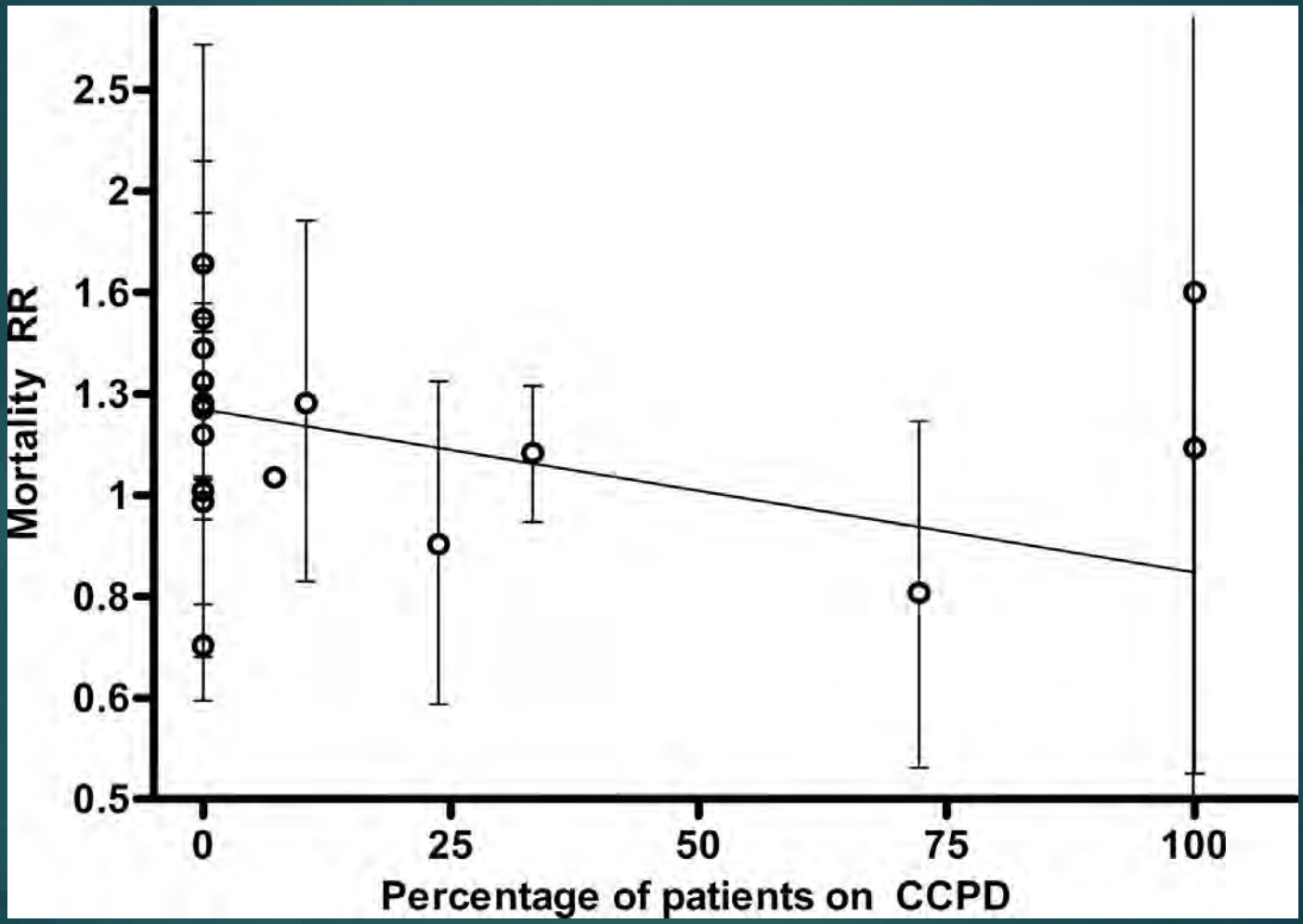
IPOD PD

2 year Survival in CAPD

CANUSA Studiet. Churchill et al. J Am Soc Nephrol. 1998; 9:1285-92



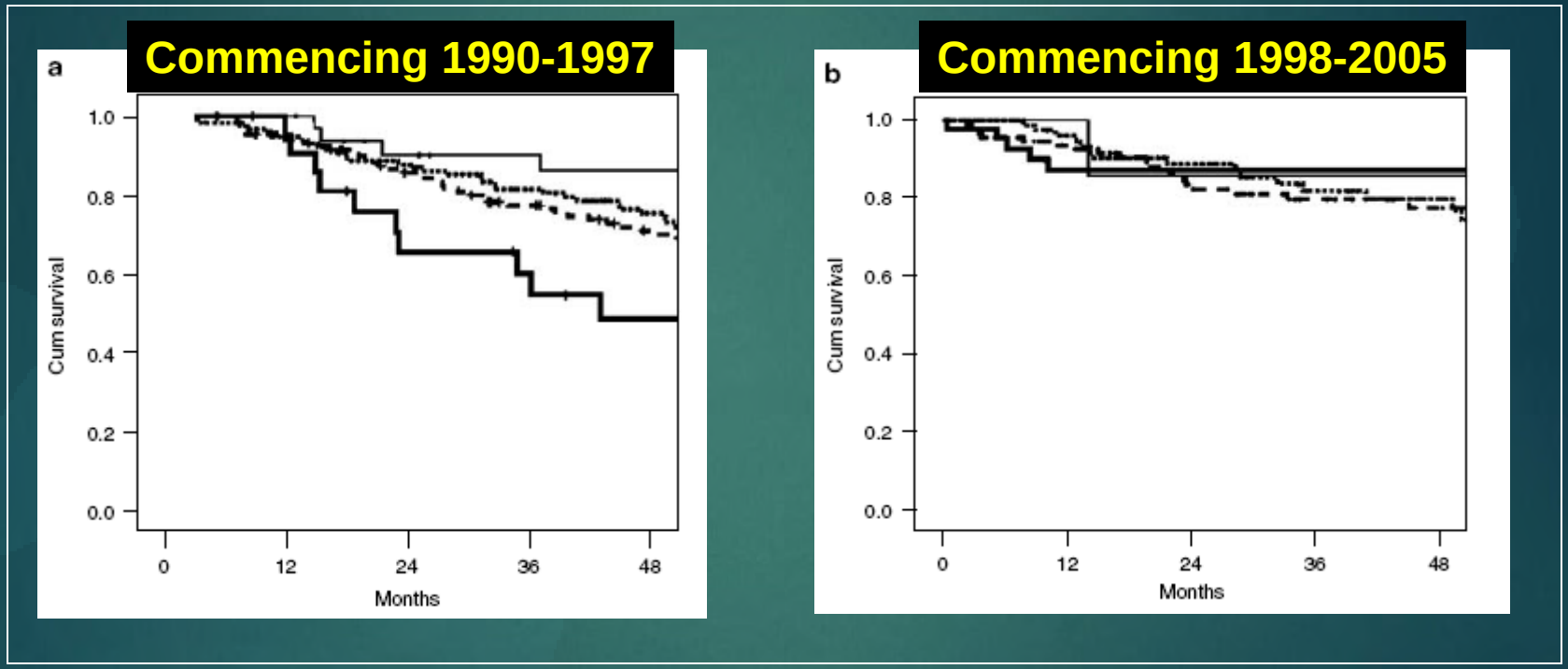
Relative Risk of Death for Fast Transporters



Brimble JASN 17:2591 2006

IPOD PD

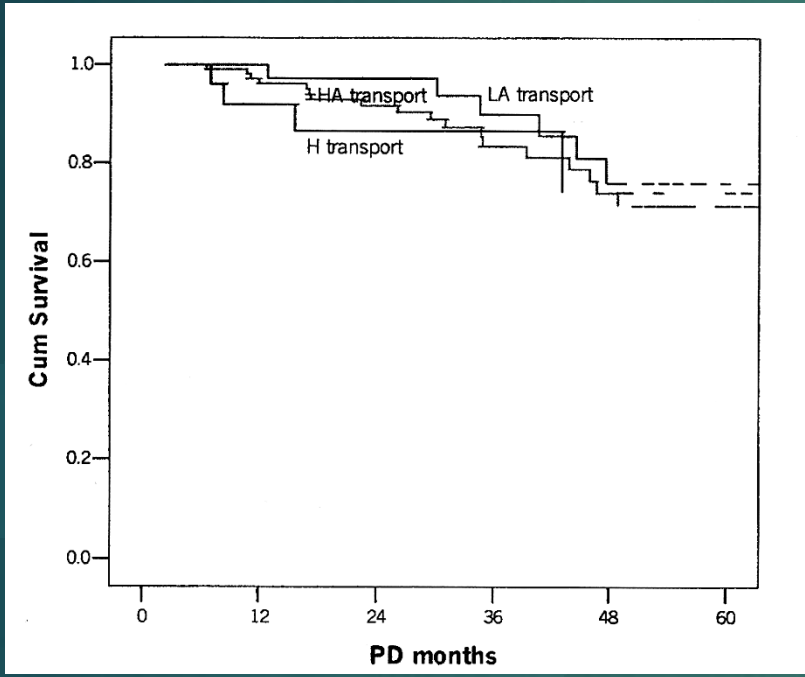
Outcome in high transporters is improved during recent years



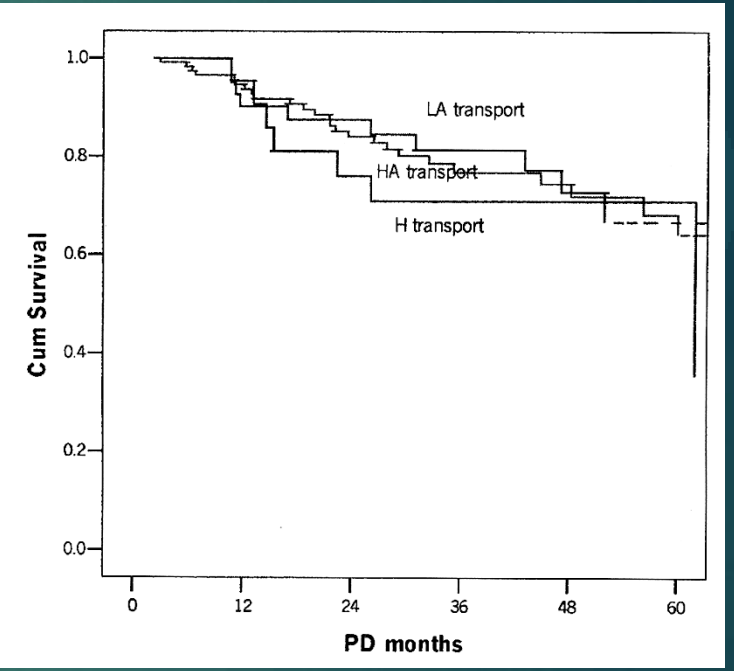
Davies SJ, Kidney Int 70: S76-S83, 2006

IPOD PD

High Peritoneal Permeability is not associated with Higher Mortality or Techniques Failure in Patients on Automated Peritoneal Dialysis



Technique Survival



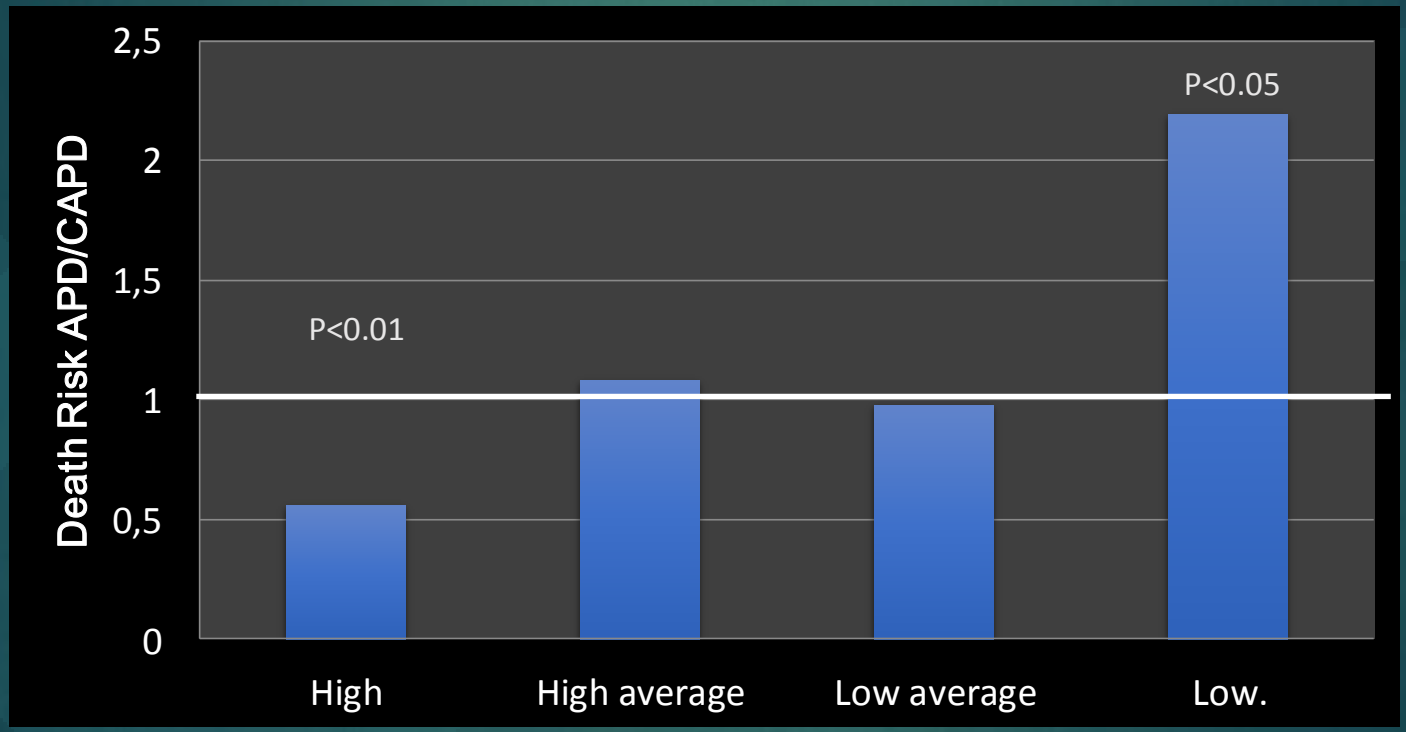
Patient Survival

193 pts. 61% APD. 37% Icodextrin. 78% APD or Icodextrin

Yang PDI 28:82 2008

IPOD PD

ADP vs CAPD: Transport Status



Multivariate analysis

Johnson NDT 25,1973 2010

Transport and Hydration

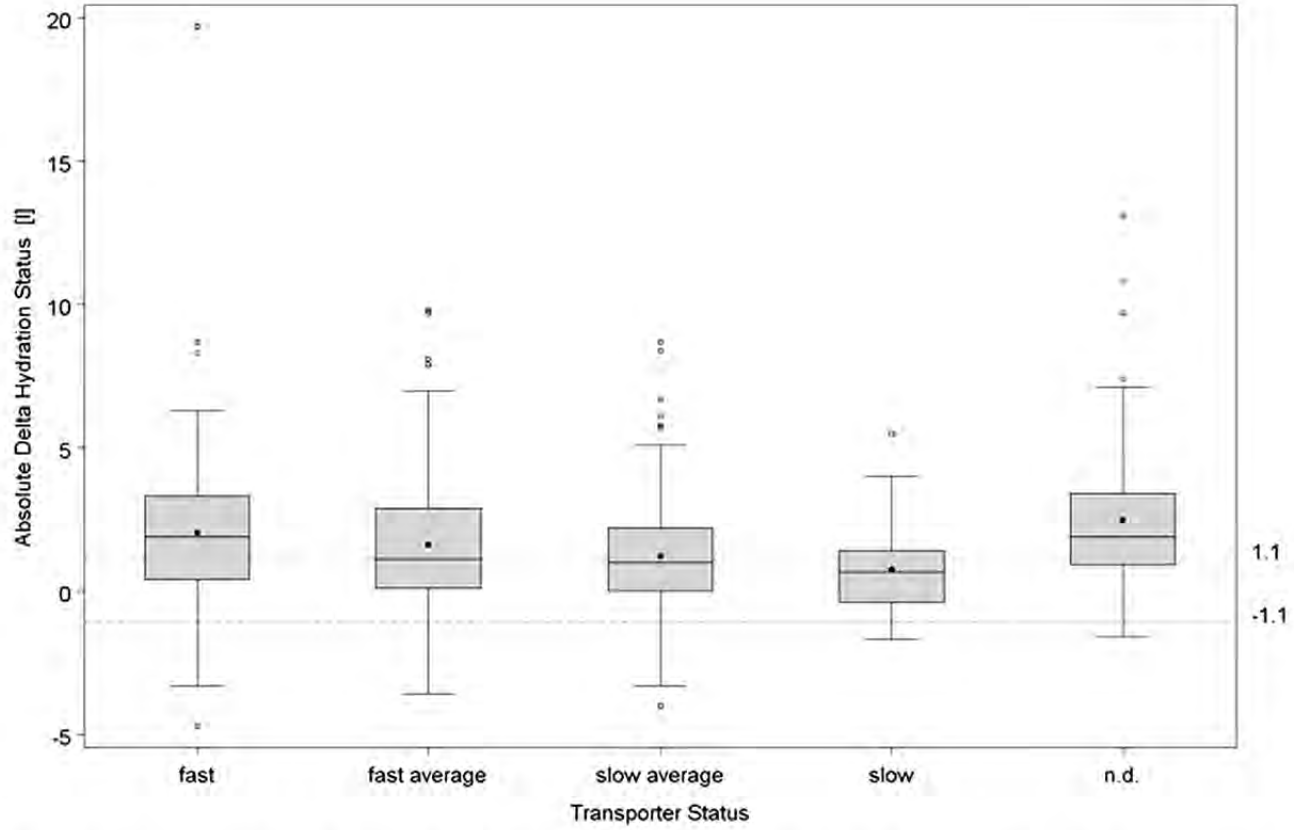


Figure 2. Box and whisker plots (median, 25th and 75th quartile, outliers) of Absolute ΔTissue Hydration (in liters) in the different transport categories. n.d.: no peritoneal transport characteristics available in the 4 months before the BCM measurement.
doi:10.1371/journal.pone.0017148.g002

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PD patients have same fat mass but higher muscle mass than HD patients

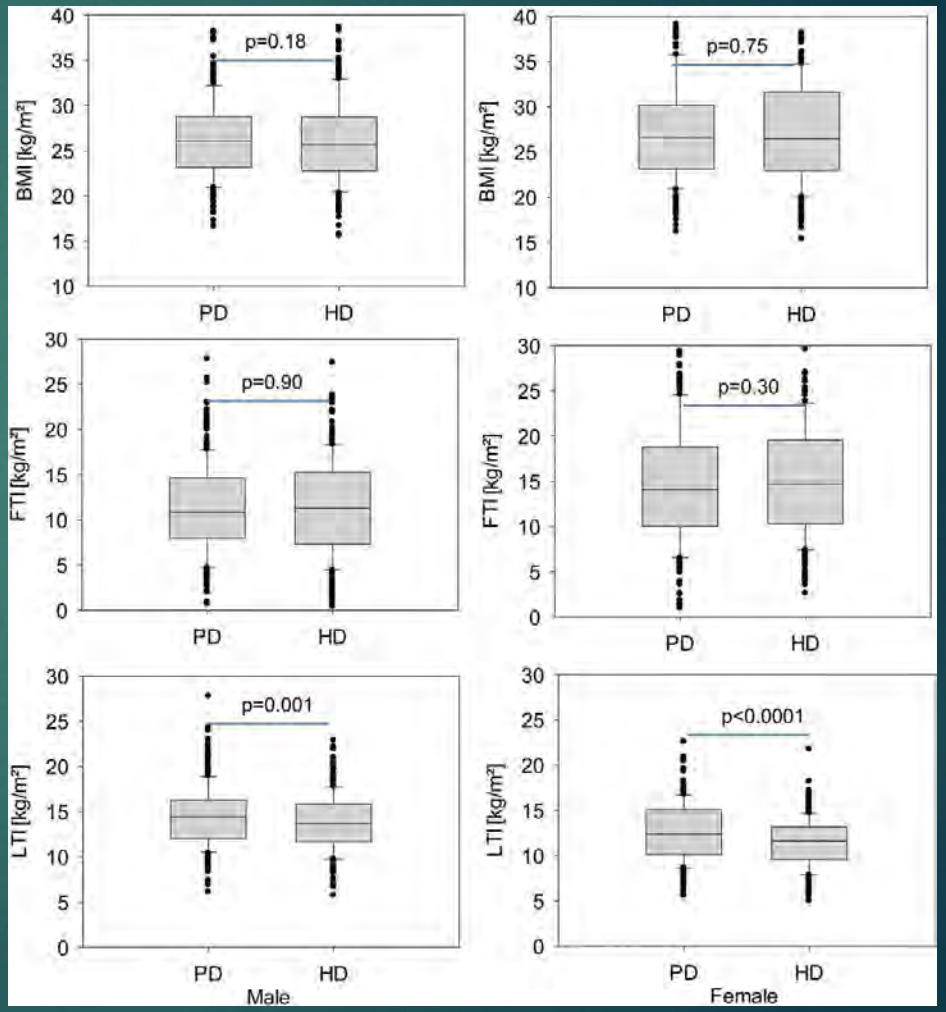
491 matched pairs
Matched for country, gender, age, dialysis vintage

PD patients from EuroBCM
HD patients from EuCliD database (>20,000 patients with BCM)

Fat tissue index (FTI): no difference

Lean tissue index (LTI) (kg/m^2)

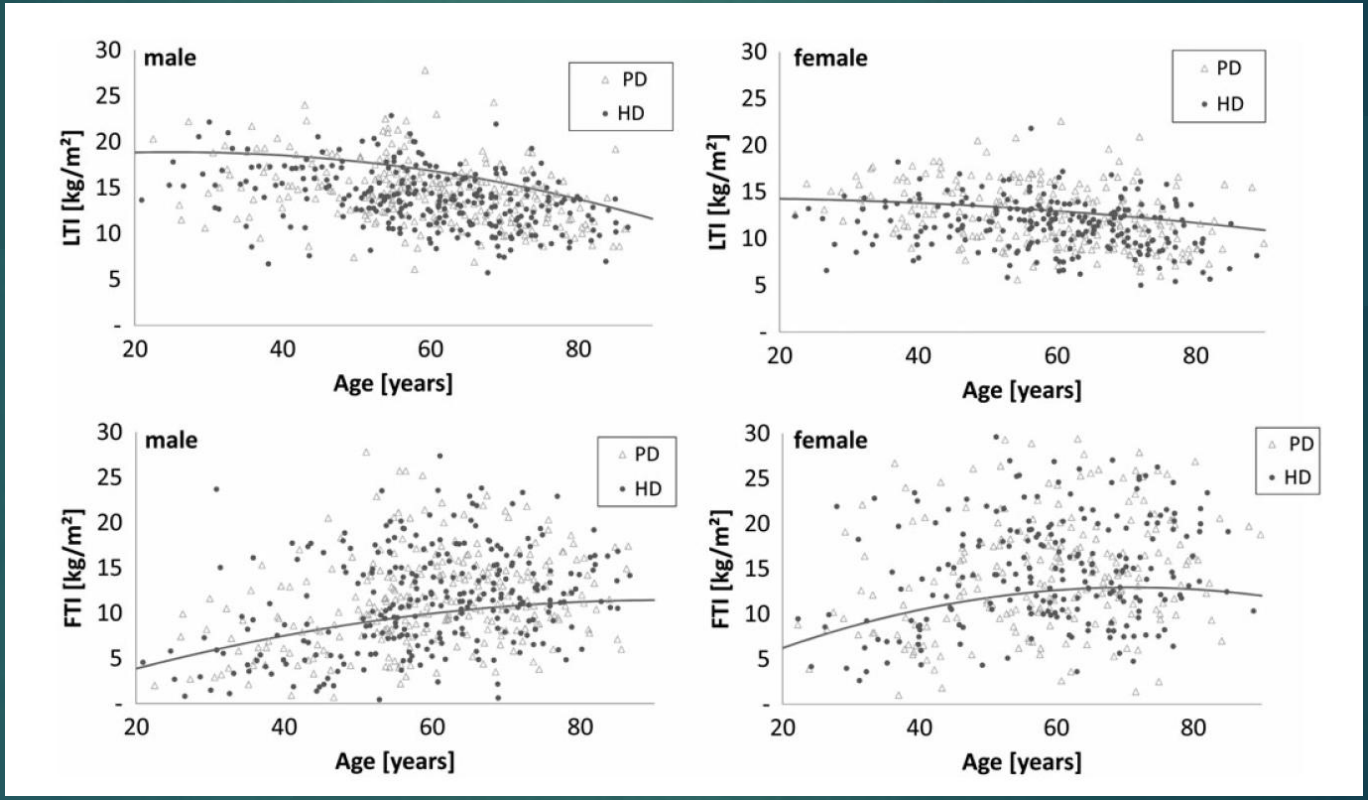
	PD	HD
Males	14.5	13.7
Females	12.6	11.5



van Biesen Nephrol. Dial. Transplant. 2013;28:2620

IPOD PD

Nutrition Dialysis vs. Normals



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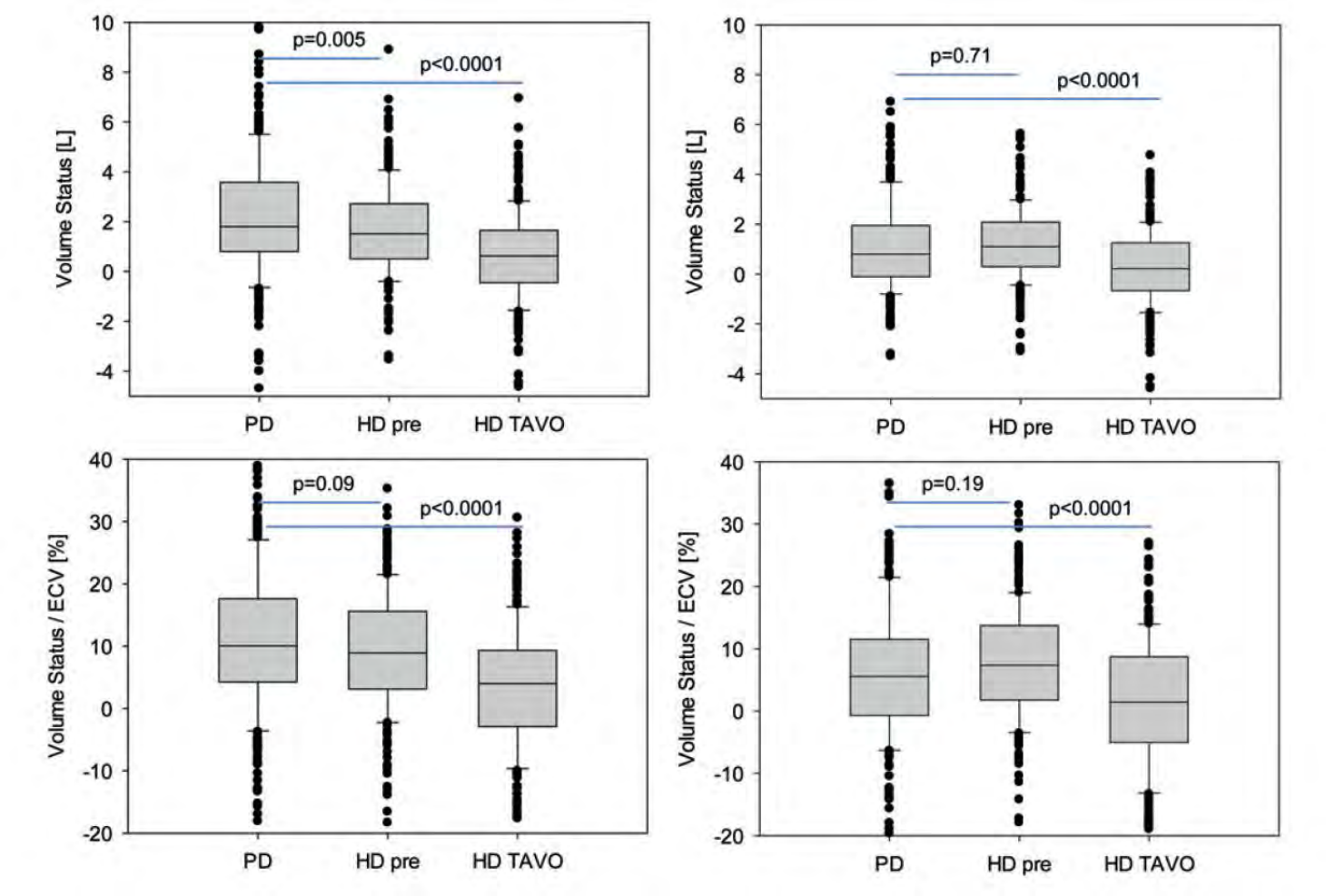
Volume Overload PD vs. HD



TAVO: Tme averaged volume overload

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IPOD-PD Project Preliminary Results

Protocol (3)

At least 300 adult PD patients (APD and CAPD)

Inclusion criteria

- incident patients directly before the start of first peritoneal dialysis is planned
- patients in whom routine measurement of BCM is possible
- patients with at least 18 years of age
- written informed consent to study participation and data submission

Exclusion criteria

- patients treated with HD or been transplanted before start of PD
- patients who have any condition which prohibit the use of BCM;
  implanted electronic medical device or connected to an external electronic medical device
  any kind of metal implants or metal artificial joints
- patients with major amputations (e.g. lower leg)
- pregnant women

IPOD PD

Protocol

Schedule

The data will be documented in following schedule

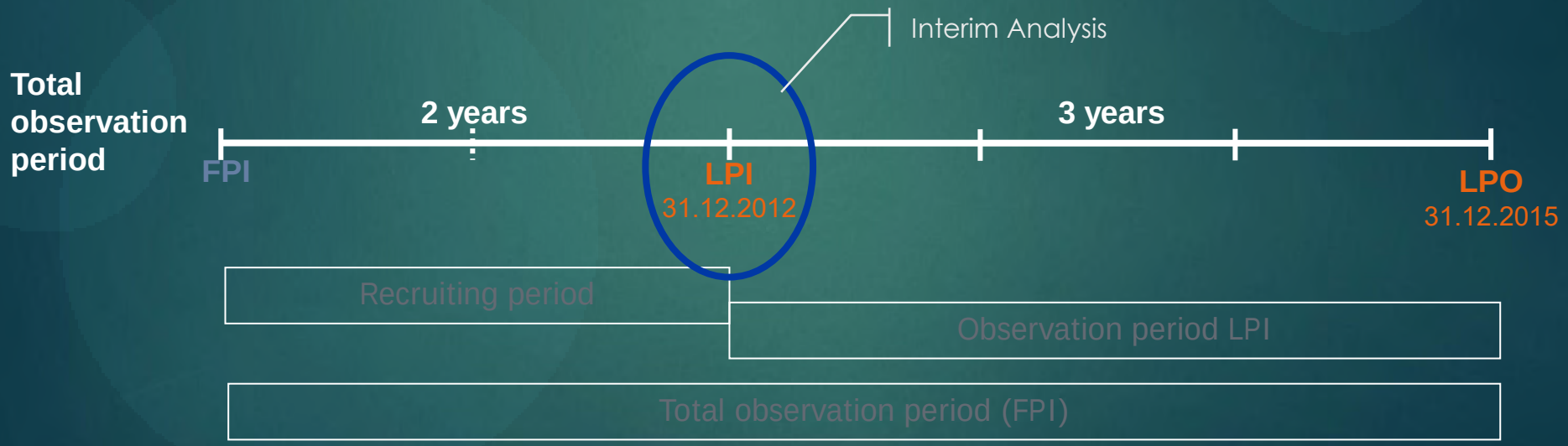
- Baseline data at PD start (BCM measurement performed between ± 3 days before / after PD start)
- 1 month after PD start (± 5 days)
- 3 months after PD start (± 1 week)
- Every 3 months (± 1 month) thereafter during a period of up to 5 years
- Non-interventional, prospective, observational, multicentre, international
- The patients will be treated according to the practice of the clinics and will receive the peritoneal solutions according to physician's decision

IPOD PD

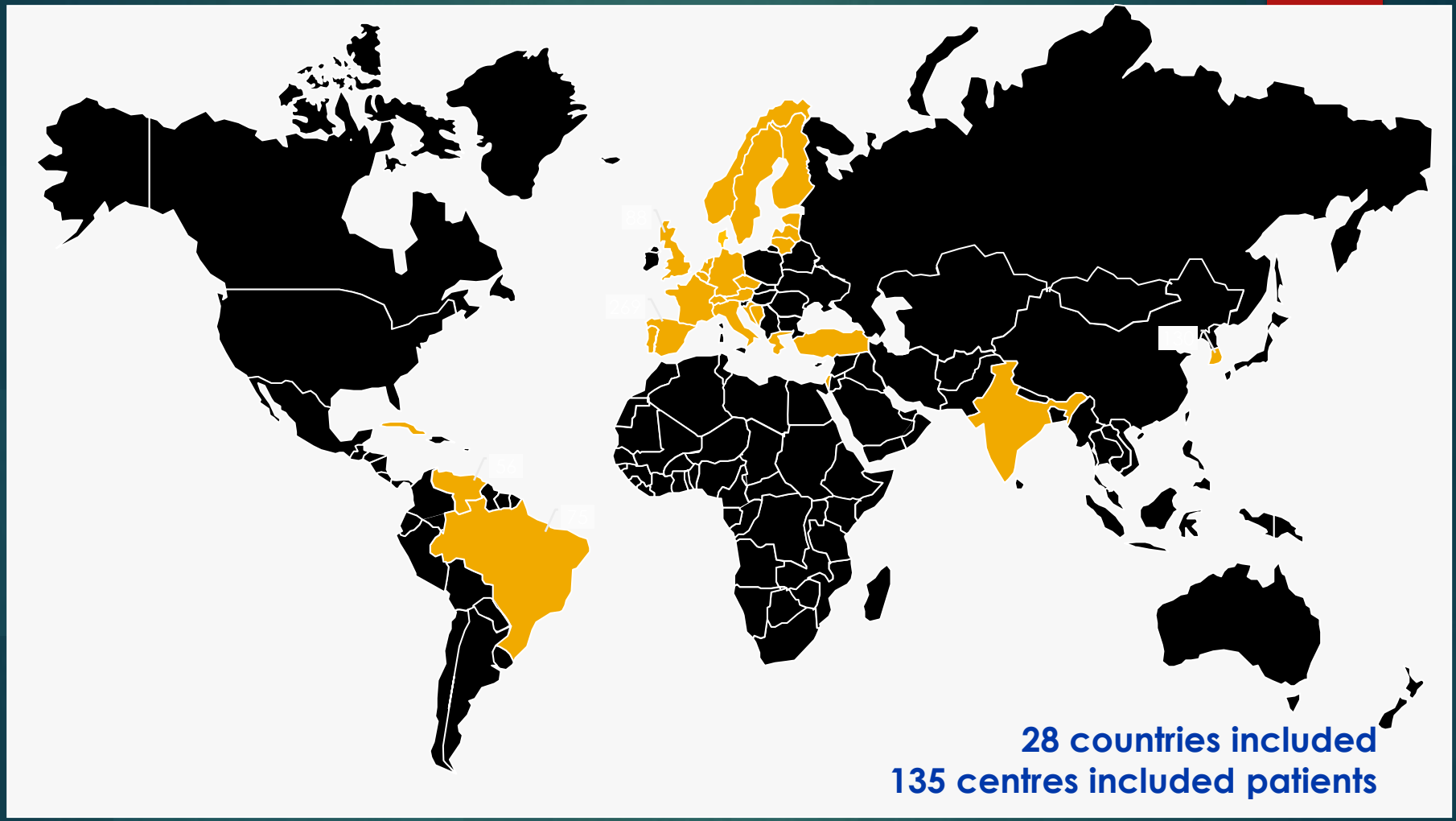
Protocol (5)

Timelines

- Recruiting period ends app. 2 years after inclusion of the first patient (FPI)
- After inclusion of the last patient (LPI) all patients will be observed for 3 more years



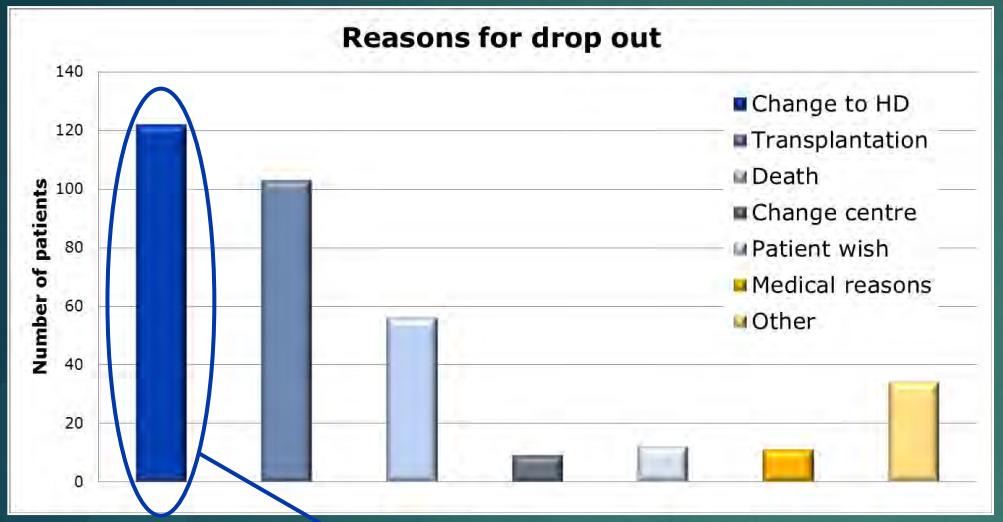
Participating countries

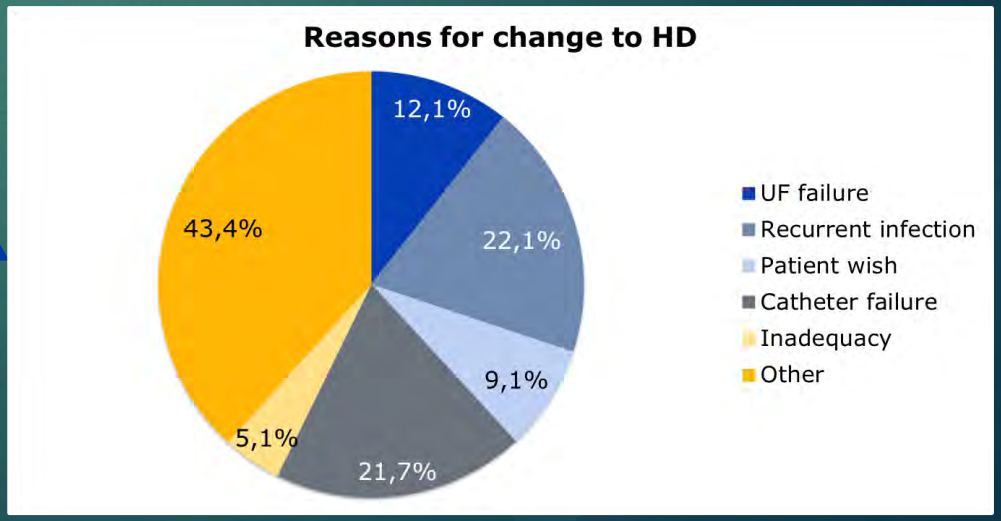


1093 patients

IPOD PD

Premature study termination until 15.08.2013

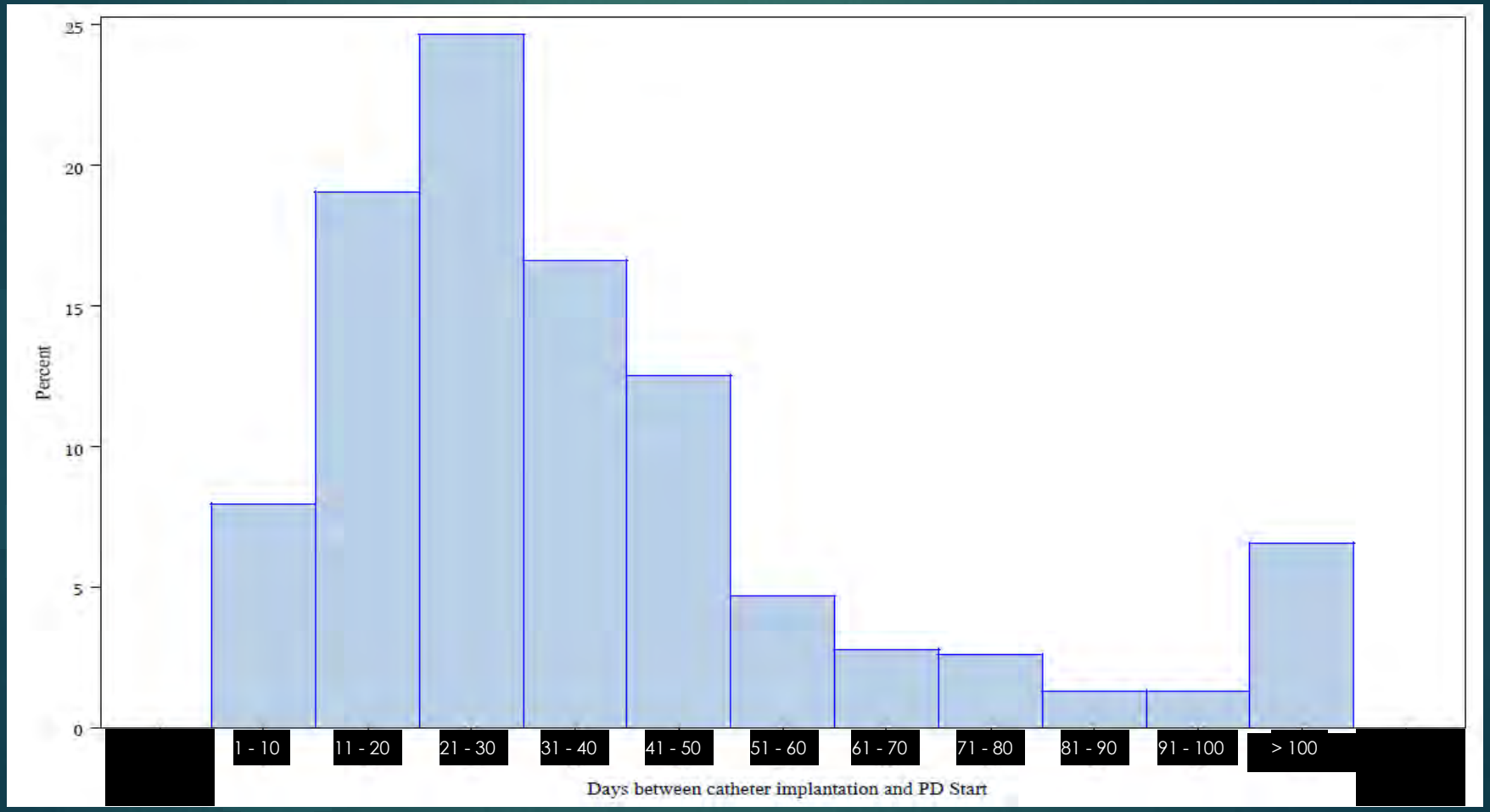




Ca. 340 patients

History (3)

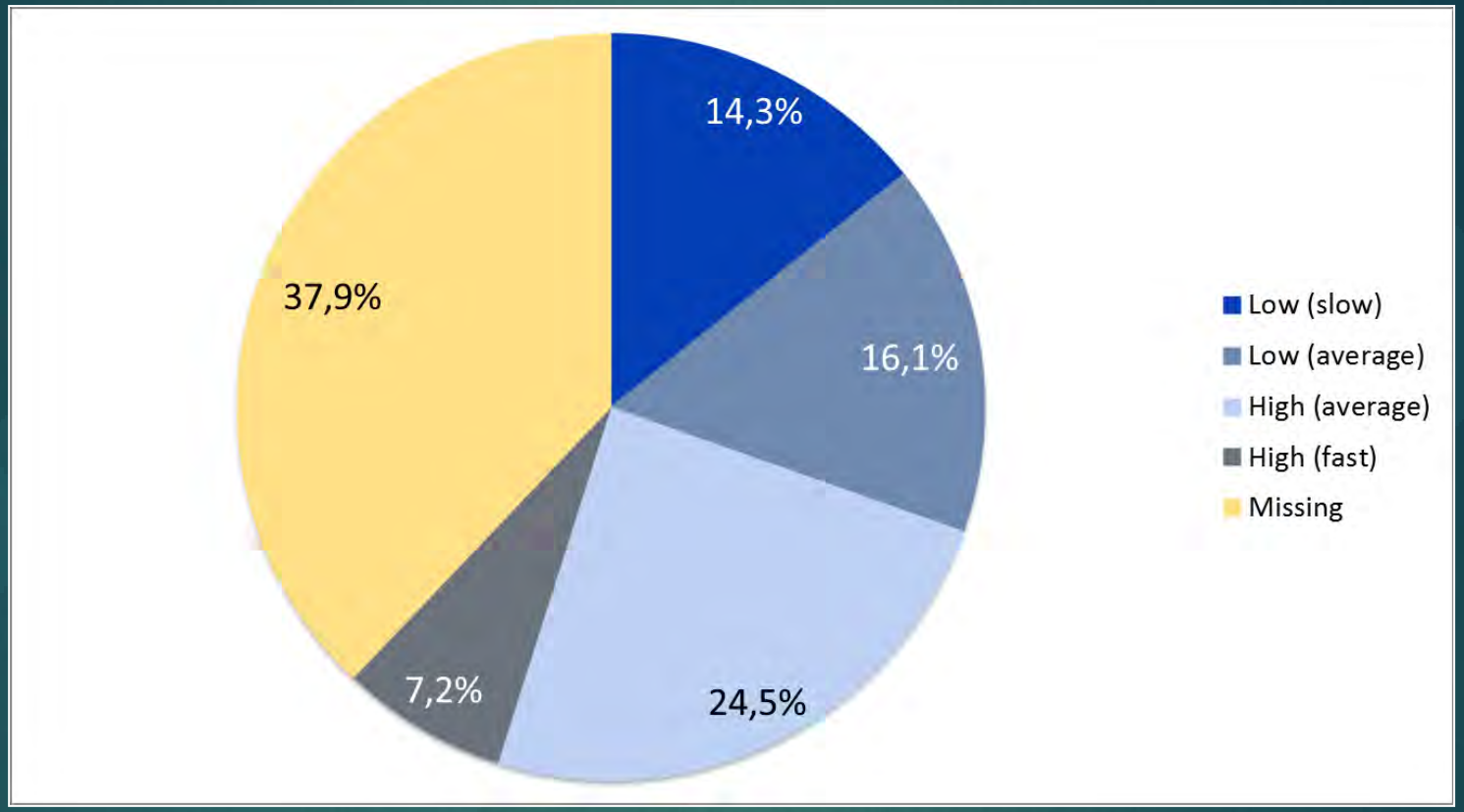
- Catheter implantation



Assigned PD prescription

		Baseline (n = 1031)
Mode [%]	APD	22.4
	CAPD	77.6
Osm. Agent	No polyglucose	84.9
	Polyglucose	15.1

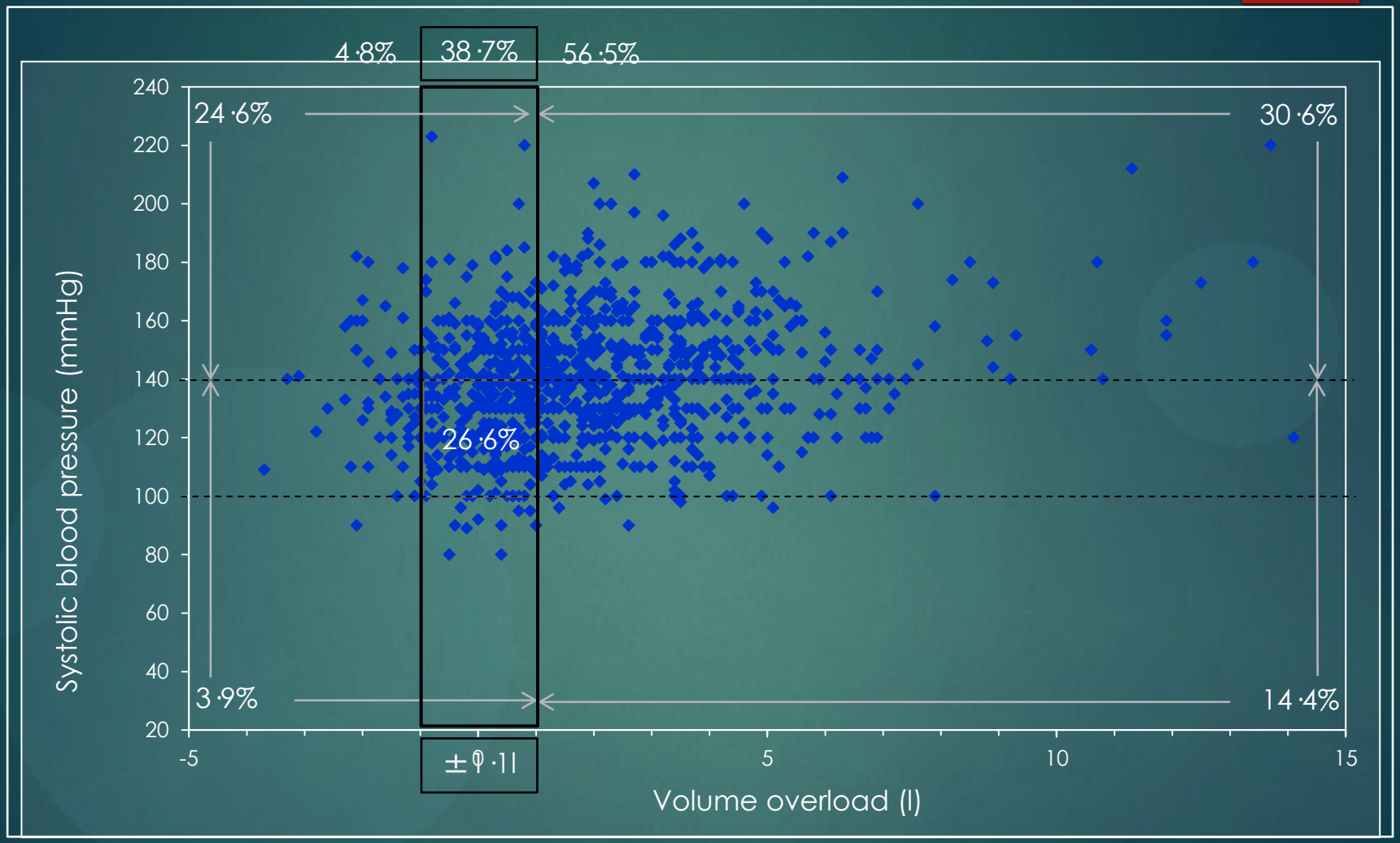
Transporter status at first assessment (Month 1/Month 3)



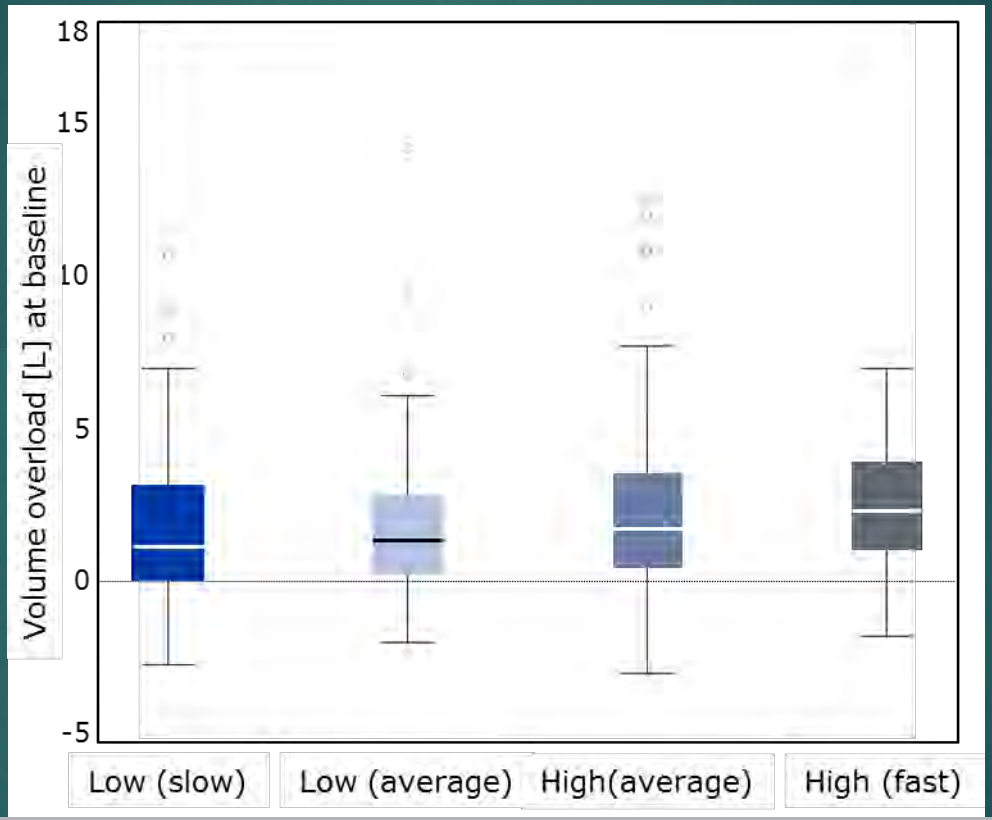
<0.55	Slow
0.55-0.65	Slow average
0.65-0.80	Fast average
>0.8	Fast(fast)

IPOD PD

Volume overload vs. blood pressure at baseline

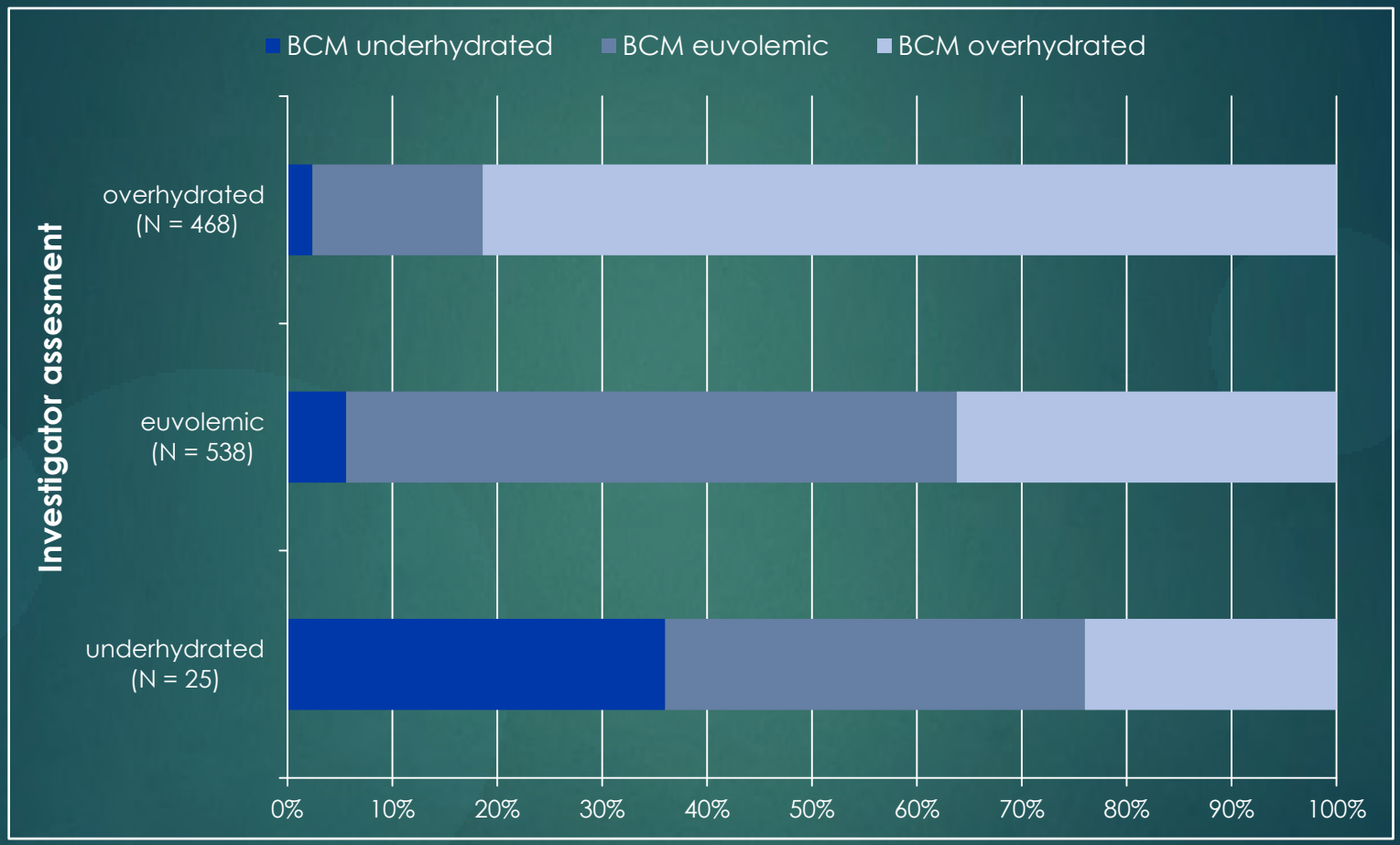


Volume overload (L) by transport status at first assesment



Mean	1.5	1.6	2.0	2.3
Median	1.1	1.3	1.6	2.3

Investigator vs. BCM assessment of volume overload at baseline



Kappa of agreement: 0.3739. 95%CI=[0.3152. 0.4325]