Gestion à long-terme de la Dialyse Péritonéale Transferts

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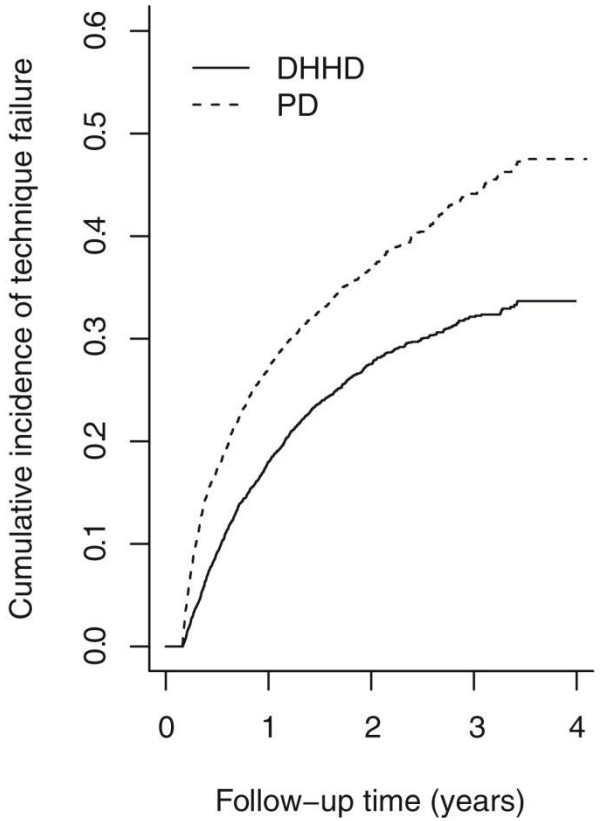
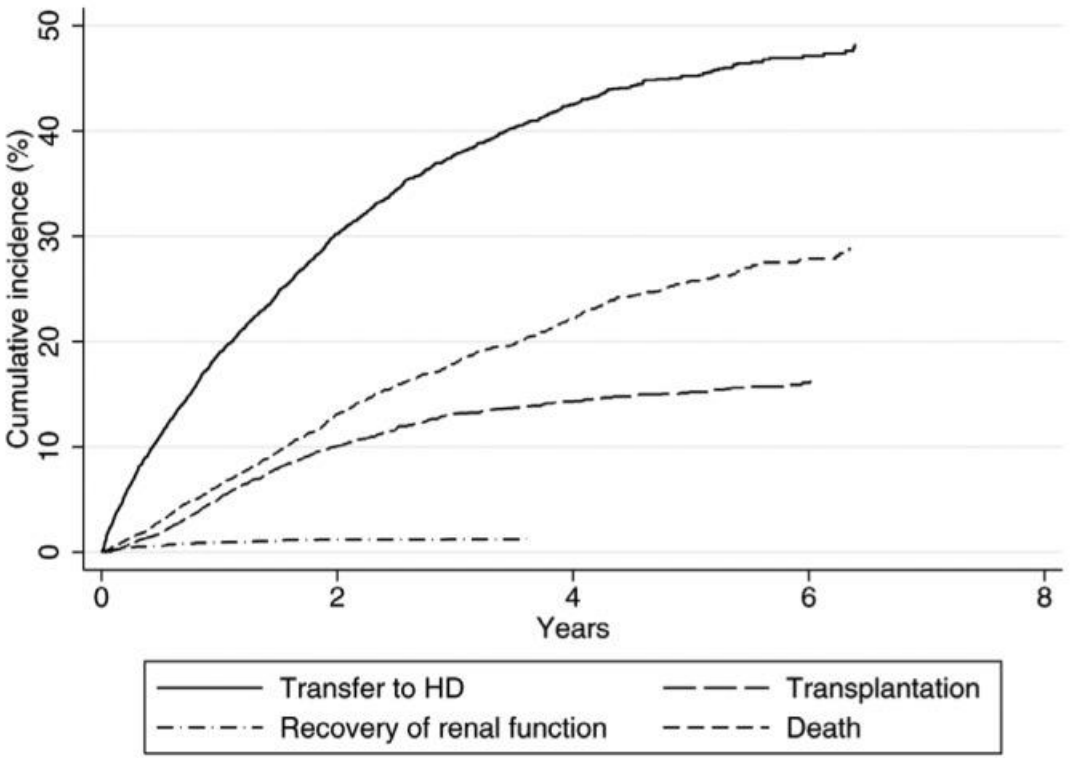
UCL Université catholique de Louvain

Mortality, Hospitalization, and Technique Failure in Daily Home Hemodialysis and Matched Peritoneal Dialysis Patients: A Matched Cohort Study



Weinhandl E et al Am J Kidney Dis 2016 ; 67 : 98-110

Cumulative incidence of peritoneal dialysis cessation for different reasons



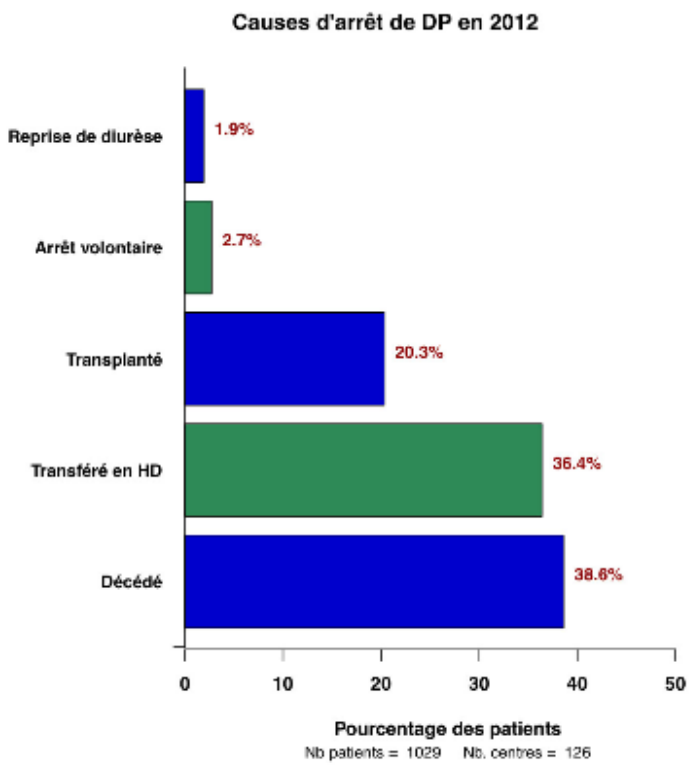
Lan PG et al Perit Dial Int 2015 ; 35 : 306-15

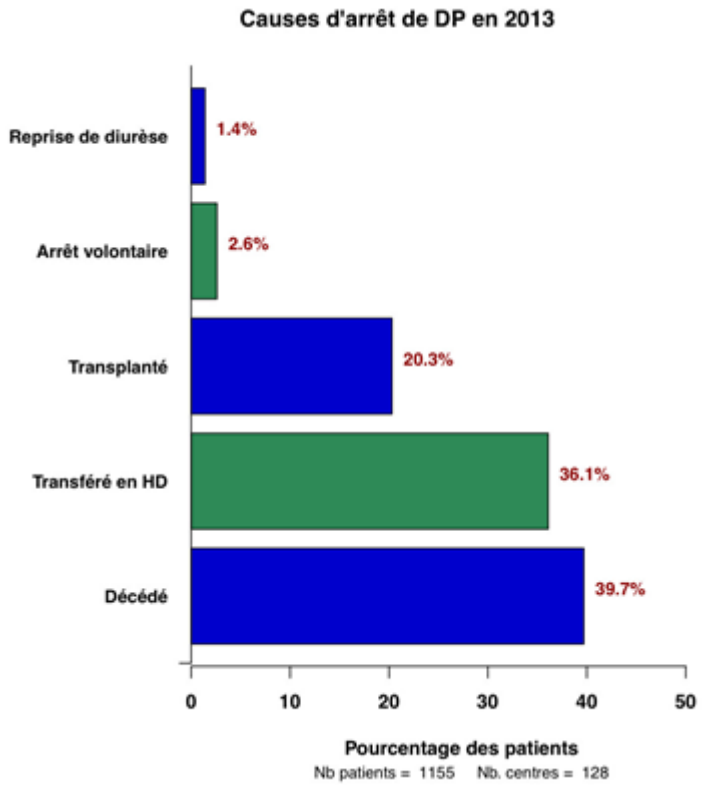
Causes de transfert

Study	N	Technique Survival			Time Off PD To Qualify as Technique Failure
		1- year	2-year	3-year	
Shen *et al* (2013)	1587	80.2%	61.2%	45.2%	30 days
Kumar *et al* (2014)	1378	83%	62%	-	120 days
Weinhandl et al (2016)*	1368	80.9%	75.3%	62.5%	60 days

* PD within 6 months of ESRD onset

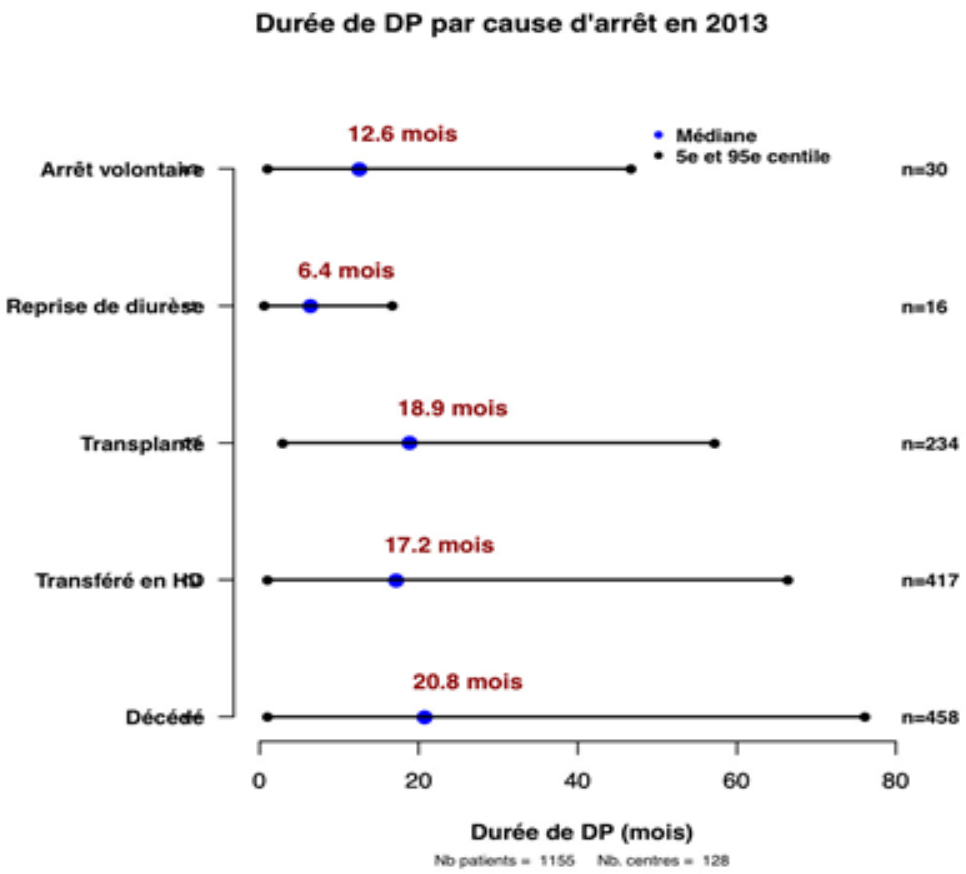
Causes de transfert





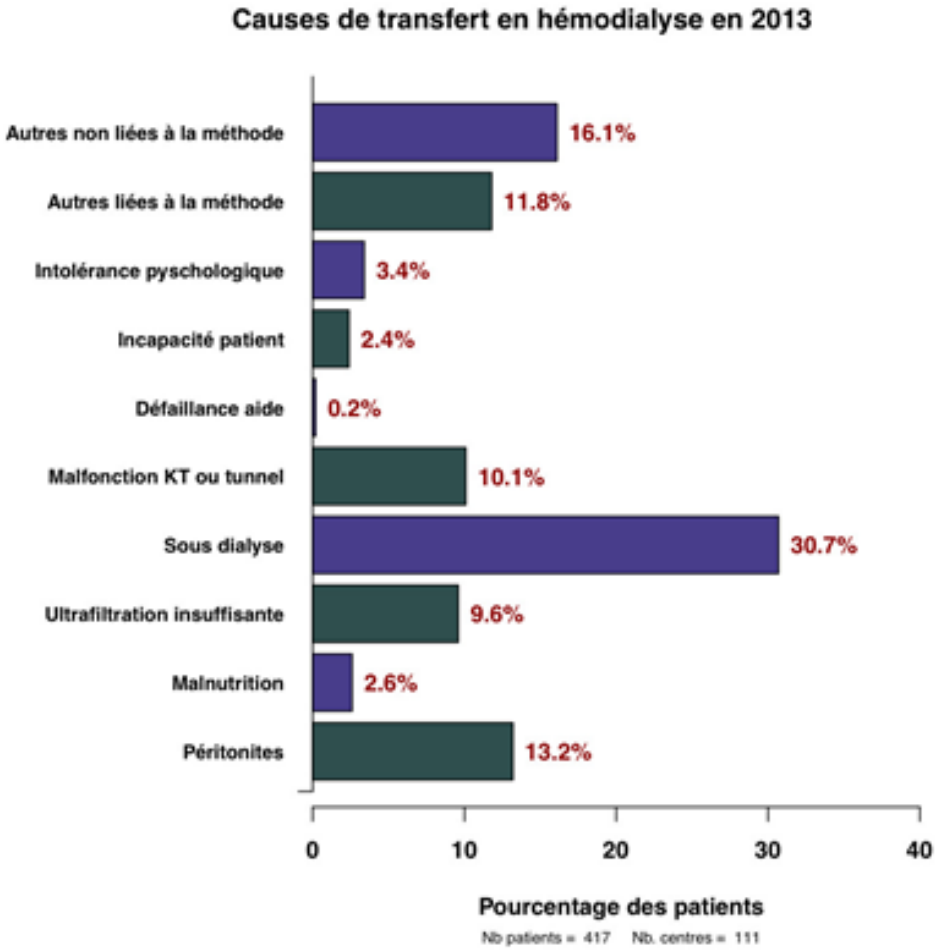
RDPLF 2013

Causes de transfert



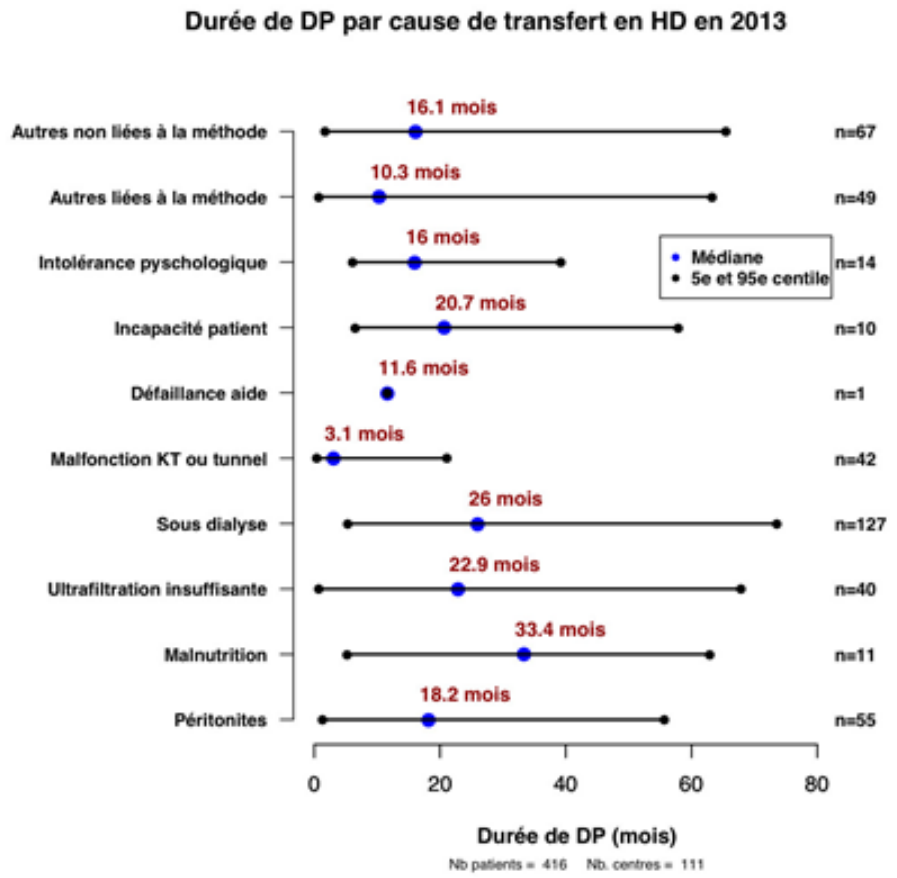
RDPLF 2013

Causes de transfert



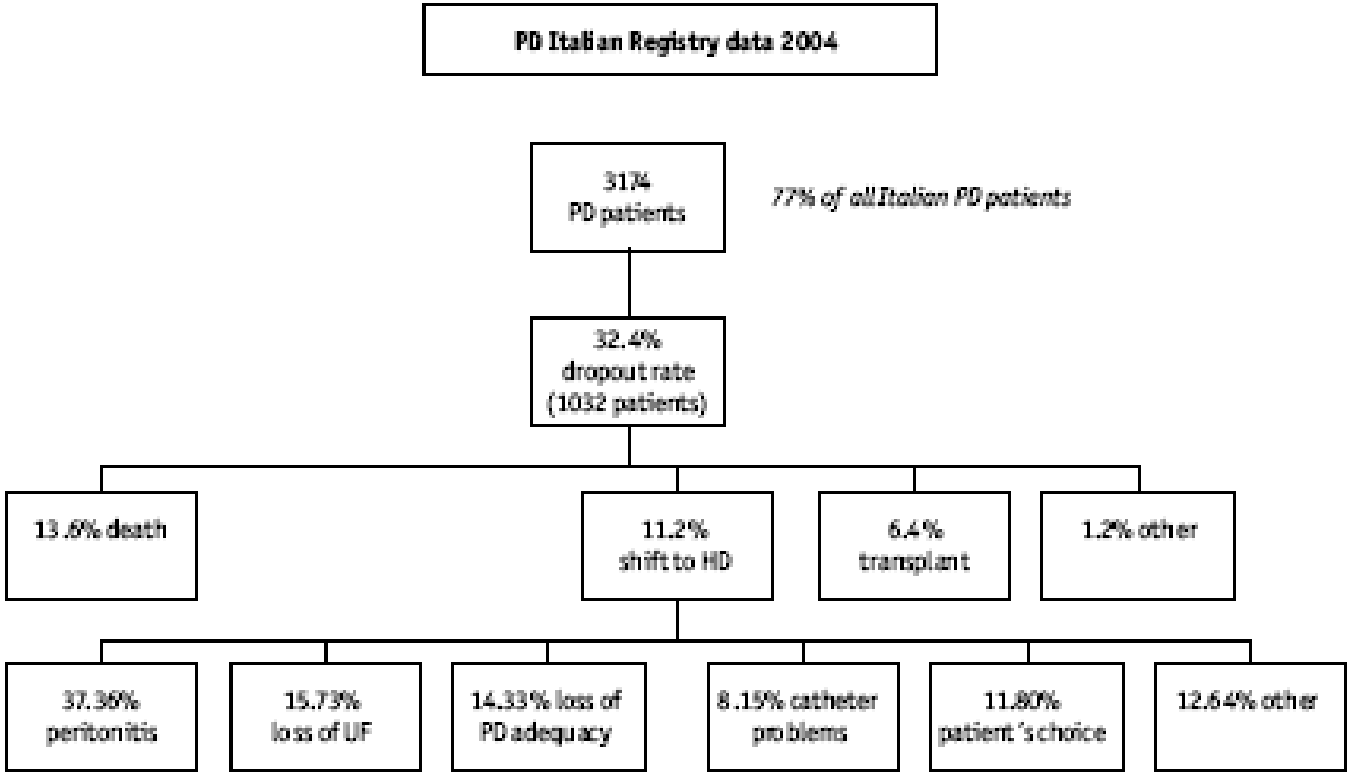
RDPLF 2013

Causes de transfert



RDPLF 2013

Causes de transfert



Chiarelli et al Perit Dial Int 2008

Causes de transfert

Causes of PD Technique Failure and Modes of Death in the Study Cohort

PD technique failure cause	Number of patients (%)	Mode of death	Number of patients (%)
Peritonitis	40 (42%)	Sudden death / cardiovascular event	32 (31.4%)
Choice or not coping	15 (15.8%)	Debilitation with(out) dialysis withdrawal	19 (18.6%)
Leak or mechanical problems	14 (14.7%)	Peritonitis	13 (12.7%)
Inadequate solute removal	10 (10.5%)	Infections	10 (9.8%)
Ultrafiltration failure	6 (6.3%)	Malignancy	7 (6.9%)
EPS or EPS suspicion	4 (4.2%)	Mixed	6 (5.9%)
Other	6 (6.3%)	Other	2 (2.0%)
		Not known	13 (12.7%)

PD – peritoneal dialysis; EPS – encapsulating peritoneal sclerosis. Total number of patients – 286, total number of technique failures – 95, total number of deaths – 102.

Pajek J et al Perit Dial Int 2014 ; 34 : 289-298

Causes de transfert

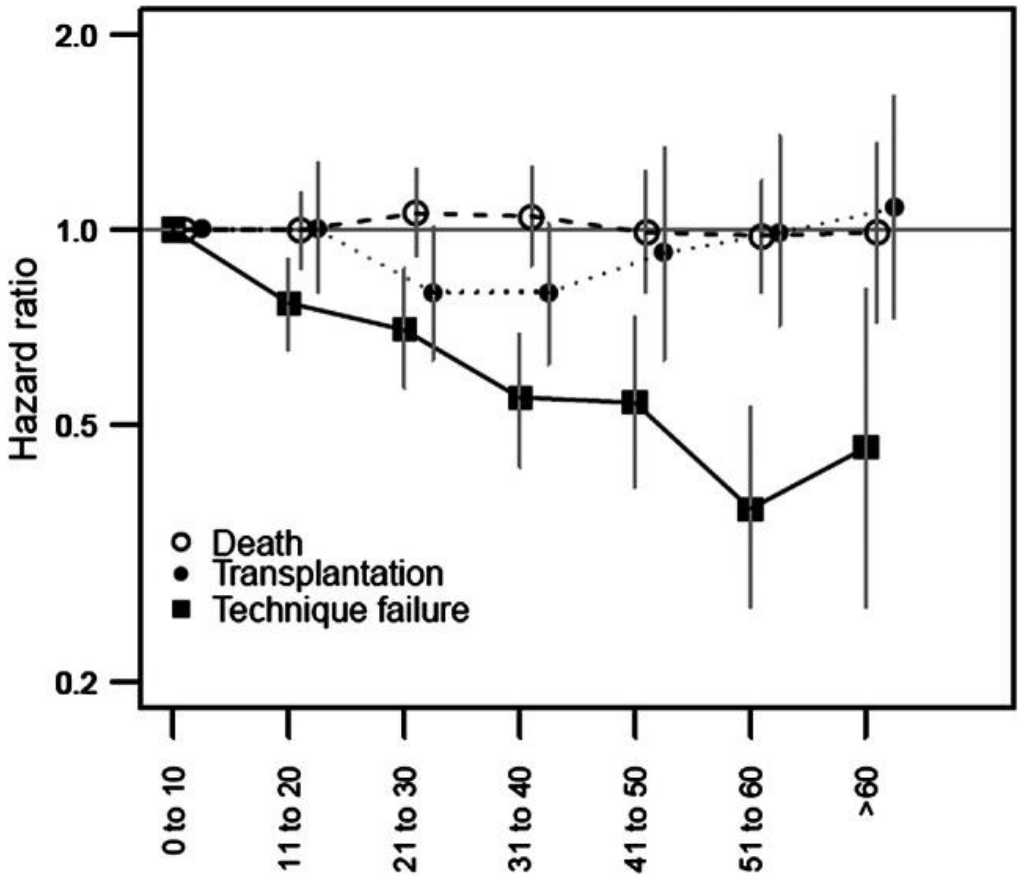
Predictors of Technique Failure

Covariate	Unadjusted HR (95% confidence interval)	Adjusted HR (95% confidence interval)	*p* (adjusted)
Age (years)	1 (0.99–1.01)	1.01 (0.99–1.02)	0.53
Female Gender	0.78 (0.49–1.23)	1.27 (0.69–2.32)	0.45
Davies comorbidity grade 1	1.54 (0.94–2.54)	**2.2 (1.23–3.92)**	**0.008**
Davies comorbidity grade 2	2.01 (0.98–4.13)	**3.19 (1.34–7.6)**	**0.009**
GFR (mL/min/1.73m^2)	**0.88 (0.81–0.95)**	0.97 (0.87–1.08)	0.55
Serum creatinine (µmol/L)	**1.002 (1.001–1.003)**	**1.003 (1.001–1.004)**	**0.001**
Serum albumin (g/L)	0.97 (0.92–1.02)	0.97 (0.92–1.03)	0.36
BMI (kg/m^2)	**1.04 (1–1.09)**	**1.06 (1.01–1.11)**	**0.018**
APD (vs CAPD)	0.85 (0.52–1.39)	0.72 (0.43–1.21)	0.21
HD start	**1.94 (1.06–3.56)**	1.73 (0.87–3.45)	0.12

HR – hazard ratio; GFR – residual glomerular filtration rate; APD – automated peritoneal dialysis; CAPD – continuous ambulatory peritoneal dialysis; BMI – body mass index; HD start – having a short period of HD (up to 120 days) before starting with PD. Overall adjusted Cox proportional hazard model: likelihood ratio test=39.9 at 9 degrees of freedom, $p<0.001$. No. of cases with missing values: 39, No. of patients in the analysis: 247, No. of events: 78. Included patients and number of events were the same for unadjusted analysis. The statistically significant results are in bold.

Pajek J et al Perit Dial Int 2014 ; 34 : 289-298

Causes de transfert : importance de l'expérience !



Evans D et al BJM Open 2013

Original Article

ndt
Nephrology Dialysis Transplantation

Early failure in patients starting peritoneal dialysis: a competing risks approach

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Nephrol Dial Transplant 2014 ; 29 : 2127-2135

ABSTRACT

Background. Technical failure is more likely to occur in the first 6 months of peritoneal dialysis (PD). This study was carried out to identify risk factors for early transfer from PD to haemodialysis (HD) in a country where assisted PD is available.

Methods. All patients from the French Language Peritoneal Dialysis Registry (RDPLF) who started PD between 1 January 2002 and 31 December 2010 were included. Time to transfer, death and transplantation during the first 6 months on PD were analysed by the multivariate Cox proportional hazard model. The Fine and Gray model was used to examine the occurrence of technical failure by considering death and transplantation as competing events.

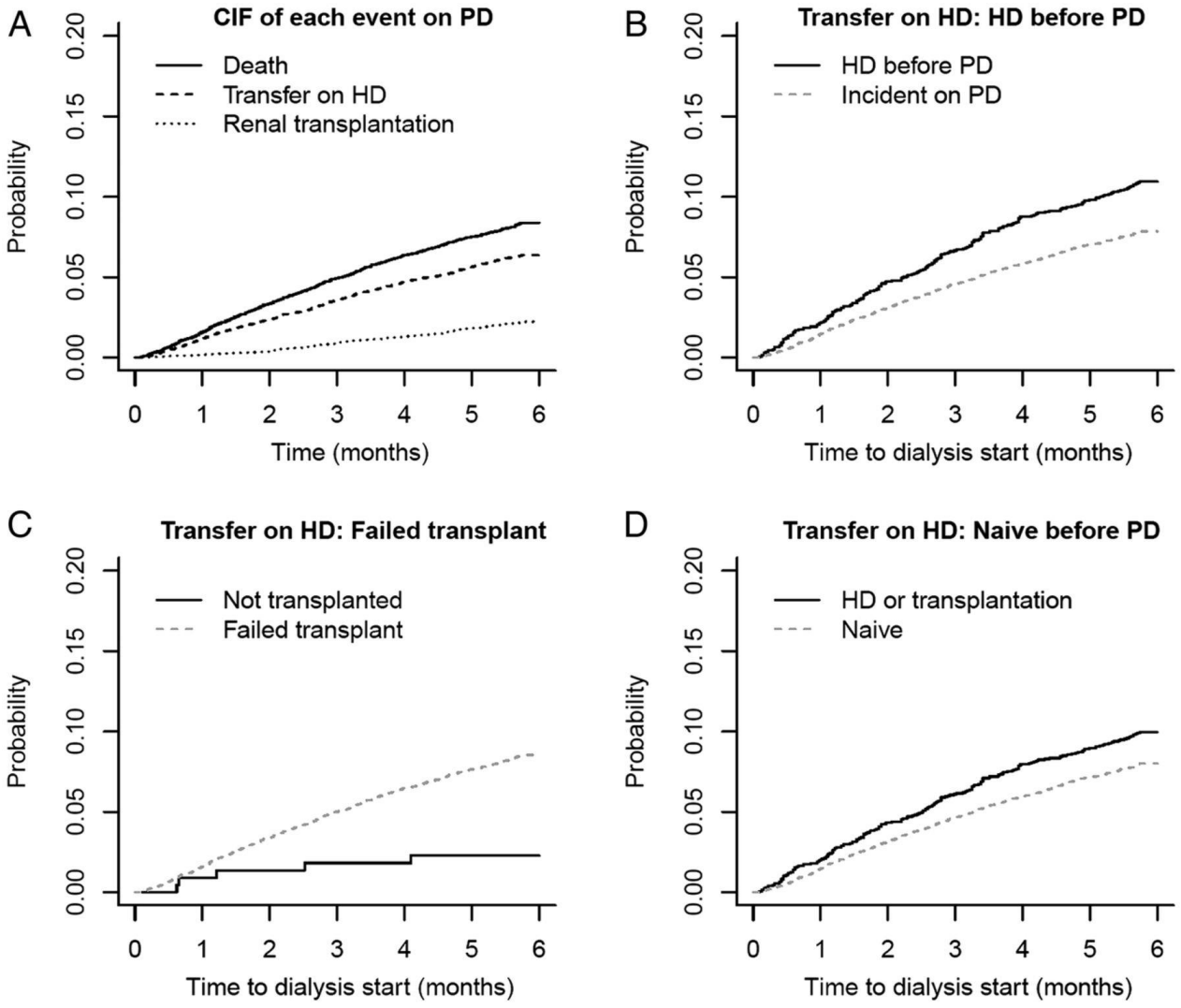
Results. Of 9675 patients included, 615 (6.3%) moved to HD during the first 6 months of PD. Cumulative incidence of transfer to HD was 6.6% at 6 months. On multivariate analysis by both the Cox model and the Fine and Gray model, HD prior to PD, allograft failure and early peritonitis were associated with a higher risk of early technical failure, whereas being dialysed in a centre treating more than 20 new patients per year was associated with a lower risk of early transfer to HD.

Conclusions. Patients treated by HD before PD and failed transplant patients had a higher risk of early PD failure when competing events were considered.

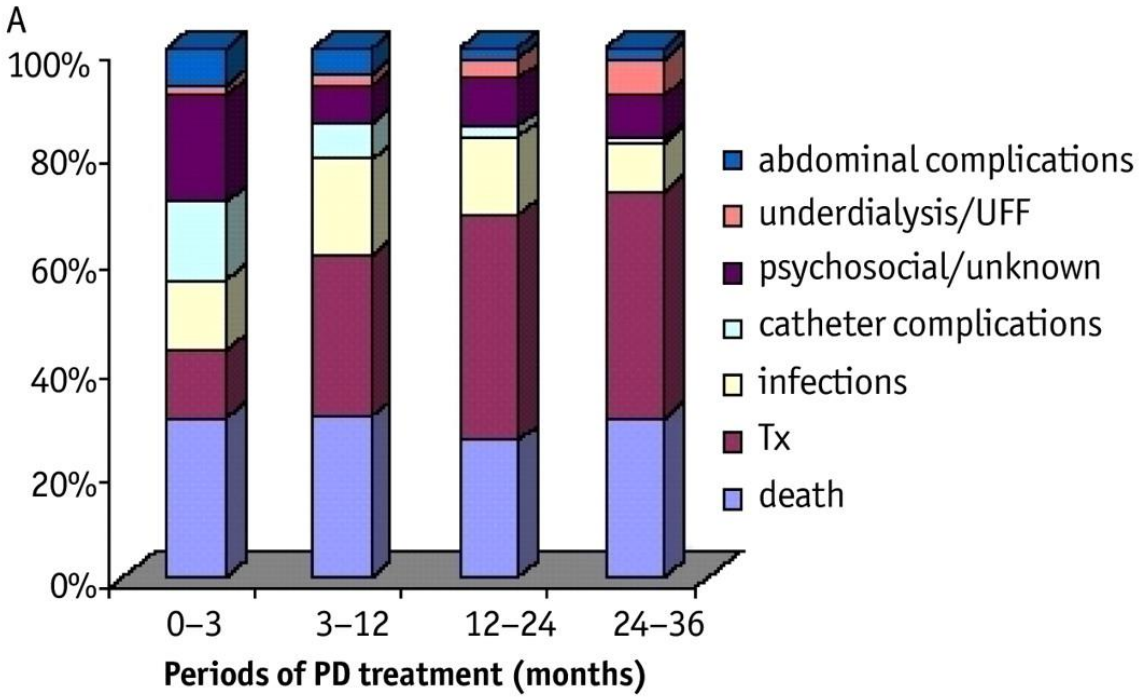
Table 2: Cause of early transfer to HD

	Number	Per cent
Catheter dysfunction	111	18.05
Psychosocial reasons	101	16.42
Miscellaneous reasons related to PD	95	15.45
Peritonitis	94	15.28
Miscellaneous reasons unrelated to PD	82	13.33
Dialysis inadequacy	73	11.87
Ultrafiltration failure	48	7.80
Malnutrition	11	1.79

Cumulative incidence function (CIF) of events on PD. (A) CIF of the three events in all population; (B) CIF of the event transfer to HD in subgroups according to HD before PD; (C) CIF of the event transfer to HD in subgroups according to transplantation before PD; (D) CIF of the event transfer to HD in subgroups according to renal replacement therapy or not before PD. HD, haemodialysis; PD, peritoneal dialysis.



Causes of modality change vary by time on therapy

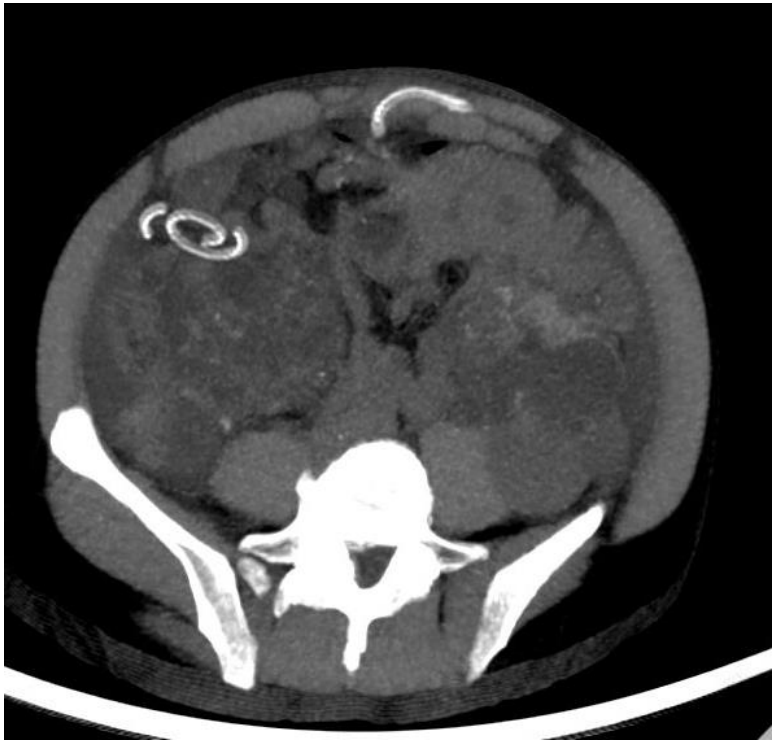


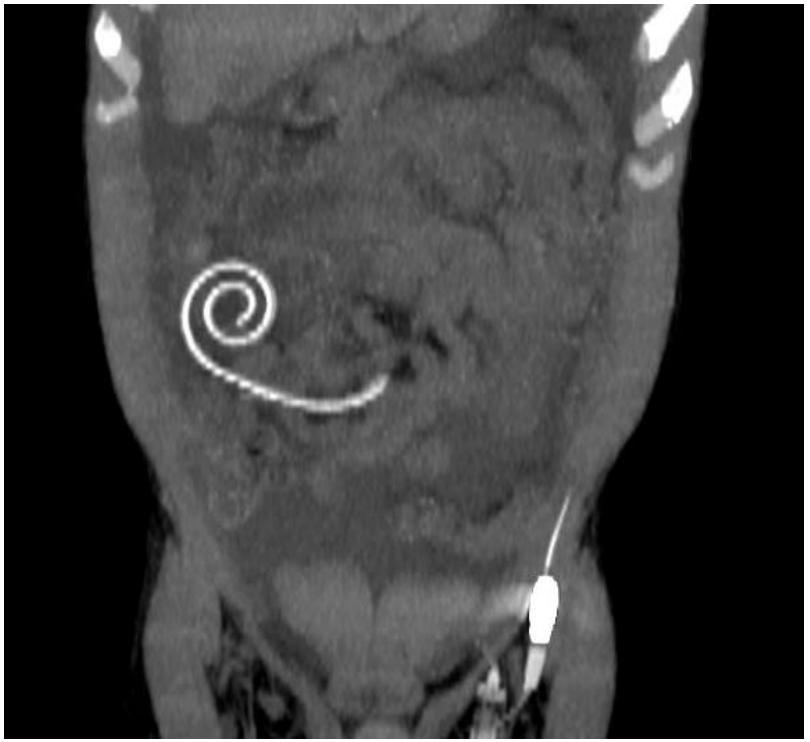
Kolesnyk I et al Perit Dial Int 2010 ; 30 : 170-7

Causes de transfert

1. Dysfonction cathéter
2. Perte d'UF / dialyse inadéquate
3. Infection péritonéale
4. Péritonite sclérosante encapsulante

1. Dysfonction cathéter

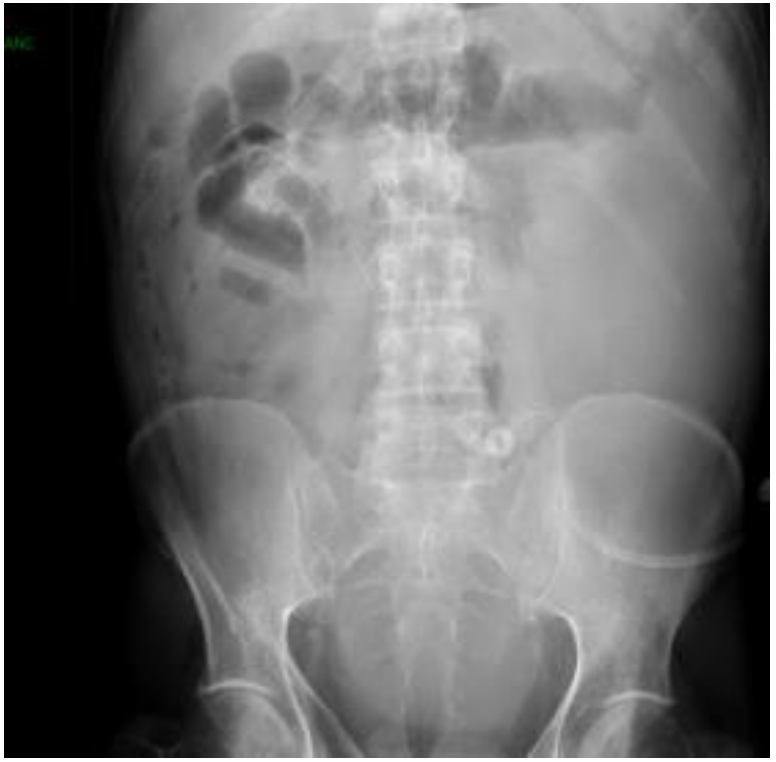




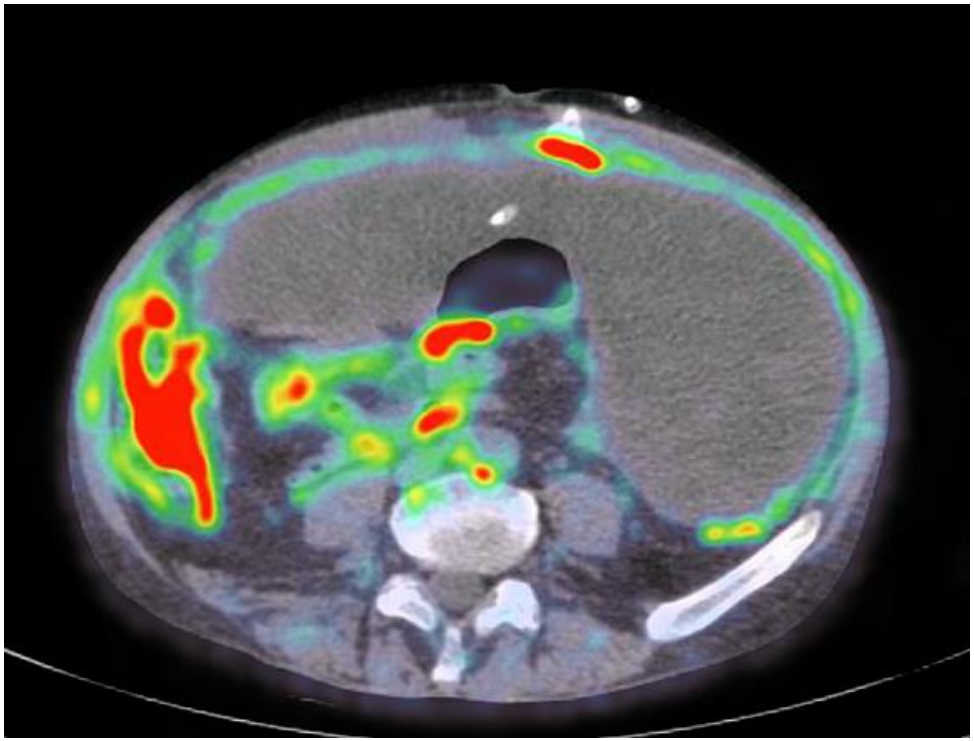
Importance diurèse résiduelle

Catheter migration

A 56 yo male
Ritonavir Nephrotoxicity
Severe alcoholism
On CAPD for 2.5 years
No peritonitis
APR - weight loss > 10 kgs
Diag : acute alcoholic hepatitis
Pet-scan prescribed
One way obstruction (drainage) for 5 days



Catheter migration



2. Perte UF / Dialyse inadéquate

Guideline 3: «The minimum peritoneal target for net ultrafiltration in anuric patients is 1.0 liter per day, the minimum target for Kt/V urea is a weekly value of 1.7. It should be aimed to fulfill both targets.»

Evidence C.

2. Perte UF / Dialyse inadéquate

Guideline 4: «When the targets are not achieved, patients should be monitored carefully for signs of over-hydration, uremic complaints and malnutrition. Appropriate therapy changes should be considered.»

Evidence C.

Effects of Increased Peritoneal Clearances on Mortality Rates in Peritoneal Dialysis: A Prospective, Randomized, Controlled Trial
ADEMEX Trial

STUDY POPULATION

965 patients
On 4 exchanges of
2L standard PD fluid

INTERVENTION

STANDARD
2L x 4 exchanges/day

versus

MODIFIED
Target pCrCl60 L/wk/1.73 m2

2.5L x 4 / 3L x 4 / 2.5L x 5/
3L x 5/ 2.5L x 2 + 3L x 2

MEASURES

2 yrs

Total Kt/v

2.13

p<0.001

2 yrs

2.27

OUTCOMES

SURVIVAL (2 years)

68.3%

p - NS

69.3%

DEATH
RR (intervention/control)

No difference
RR - 1
(95% CI - 0.8 - 1.24)

Conclusion : Increase in peritoneal small-solute clearances have a neutral effect on patient survival.

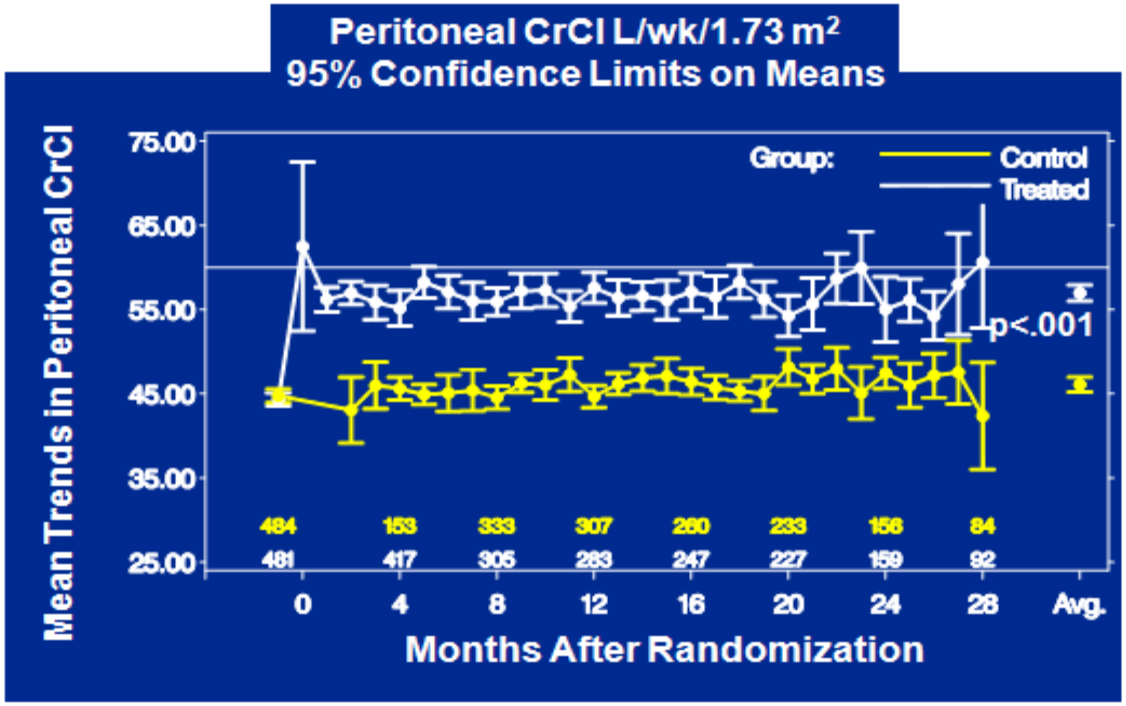
Paniagua et al for the Mexican Nephrology Collaborative Study Group
JASN May 1, 2002 13: 1307-1320

@aakashshingada

NEPHROLOGY SOCIAL MEDIA COLLECTIVE EST 2013

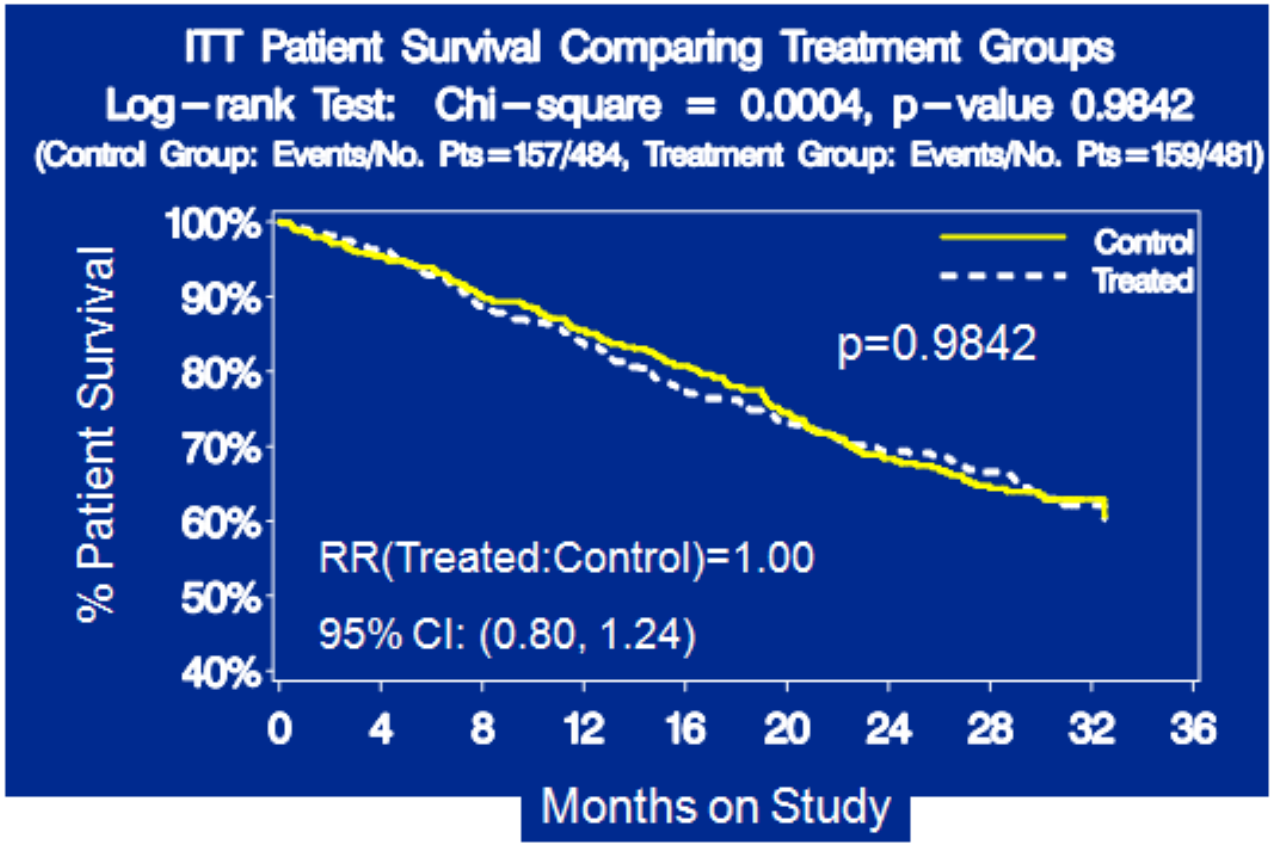
2018 NEPH MADNESS

2. Perte UF / Dialyse inadéquate



Ademex study

2. Perte UF / Dialyse inadéquate



Ademex study

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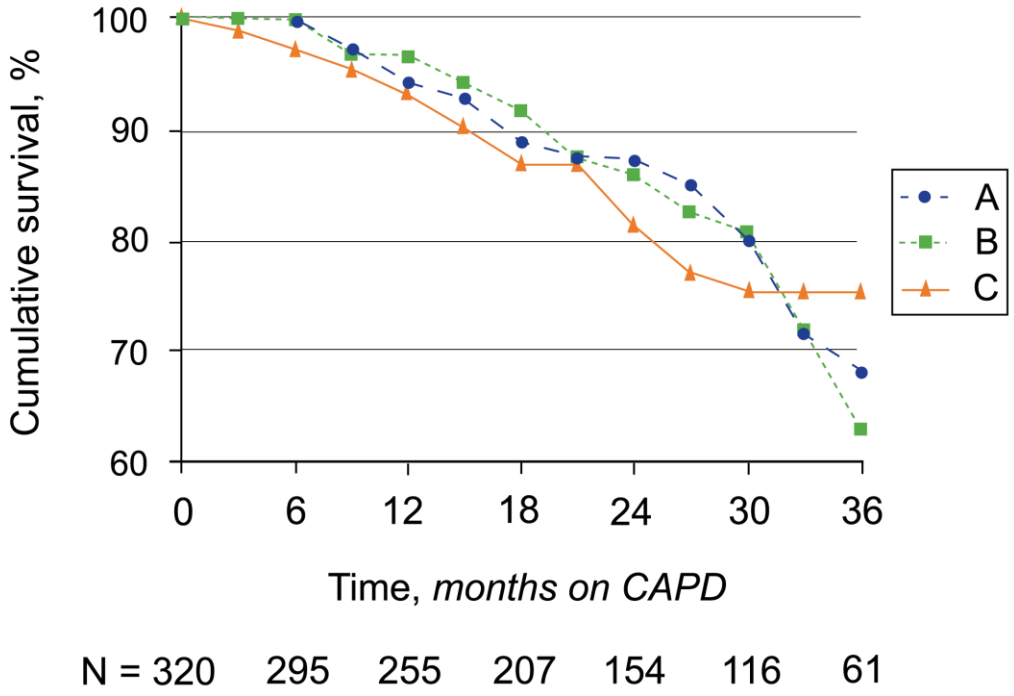


Total Kt/V targets (randomized !!!)

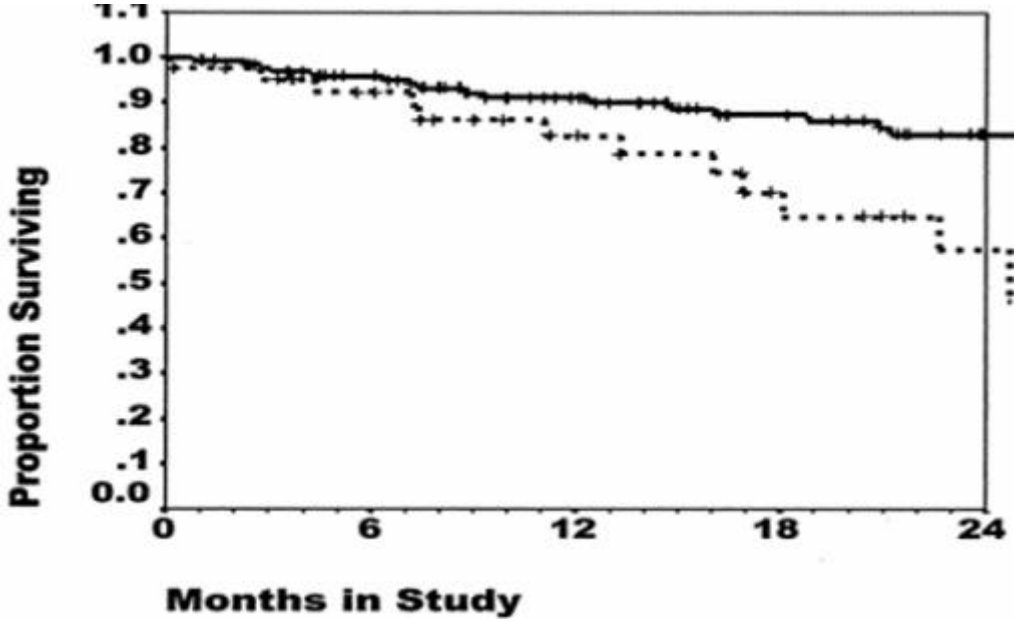
A : 1.5 to 1.7

B : 1.7 to 2.0

C : > 2.0

Lo WK et al Kidney Int 2003

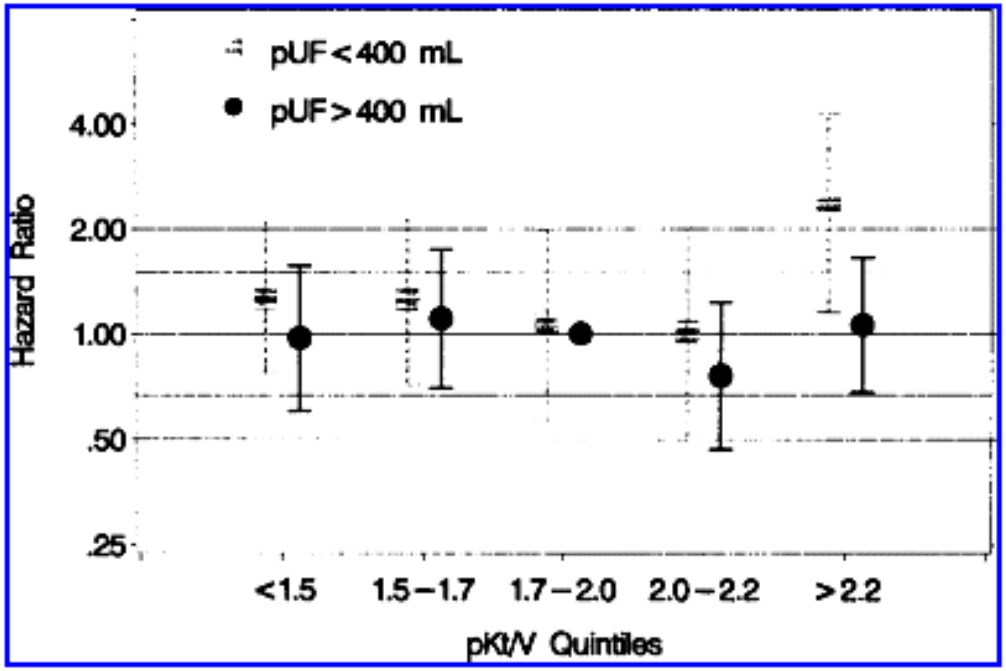
2. Perte UF / Dialyse inadéquate



EAPOS J Am Soc Nephrol 2003

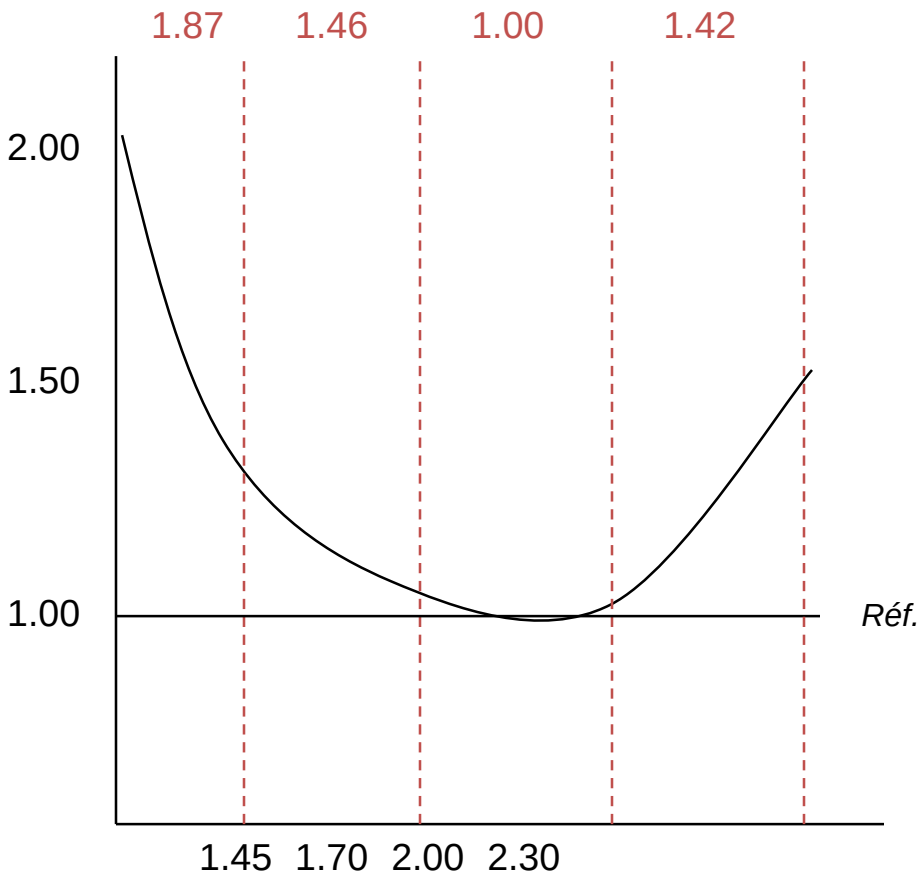
2. Perte UF / Dialyse inadéquate

Relecture of Ademex study : importance of UF



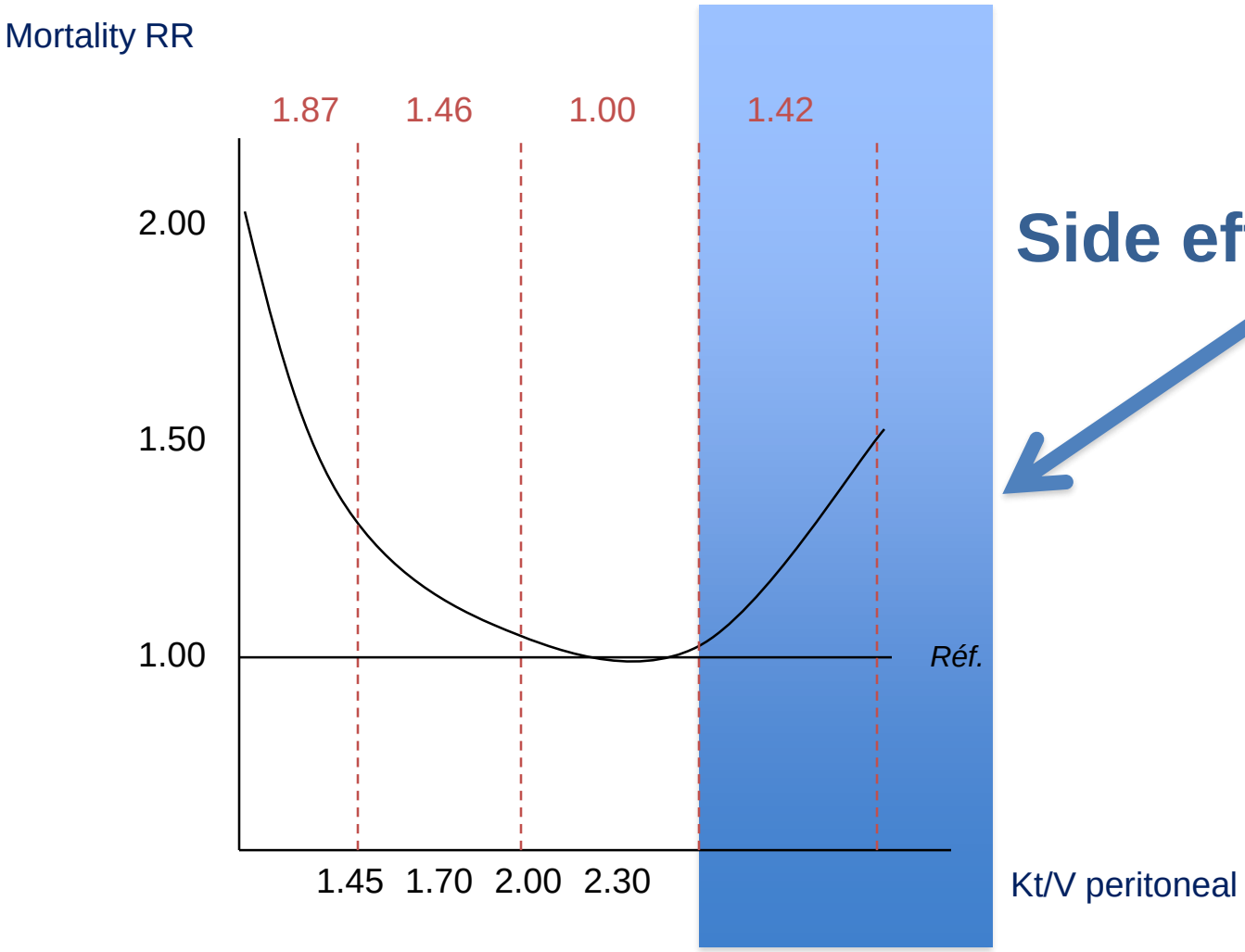
Vonesh E Perit Dial Int 2009

Mortality RR



ANZDATA data 2002-2005
N = 2434 incident patients

Rumpsfeld et al Perit Dial Int 2009



Side effects of PD ?

Rumpsfeld et al Perit Dial Int 2009

Side-effects of PD ?

Increased glucose absorption ?

pCrClairance 10 L/sem/1,73 m2 = peritoneal glucose absorption of 10 g/d

Deleterious effects of dialysate bio-incompatibility

Cochrane Database Syst Rev 2014 : 36studies ; 2719 patients.

Conclusion: better diuresis and RRF with new PD solutions

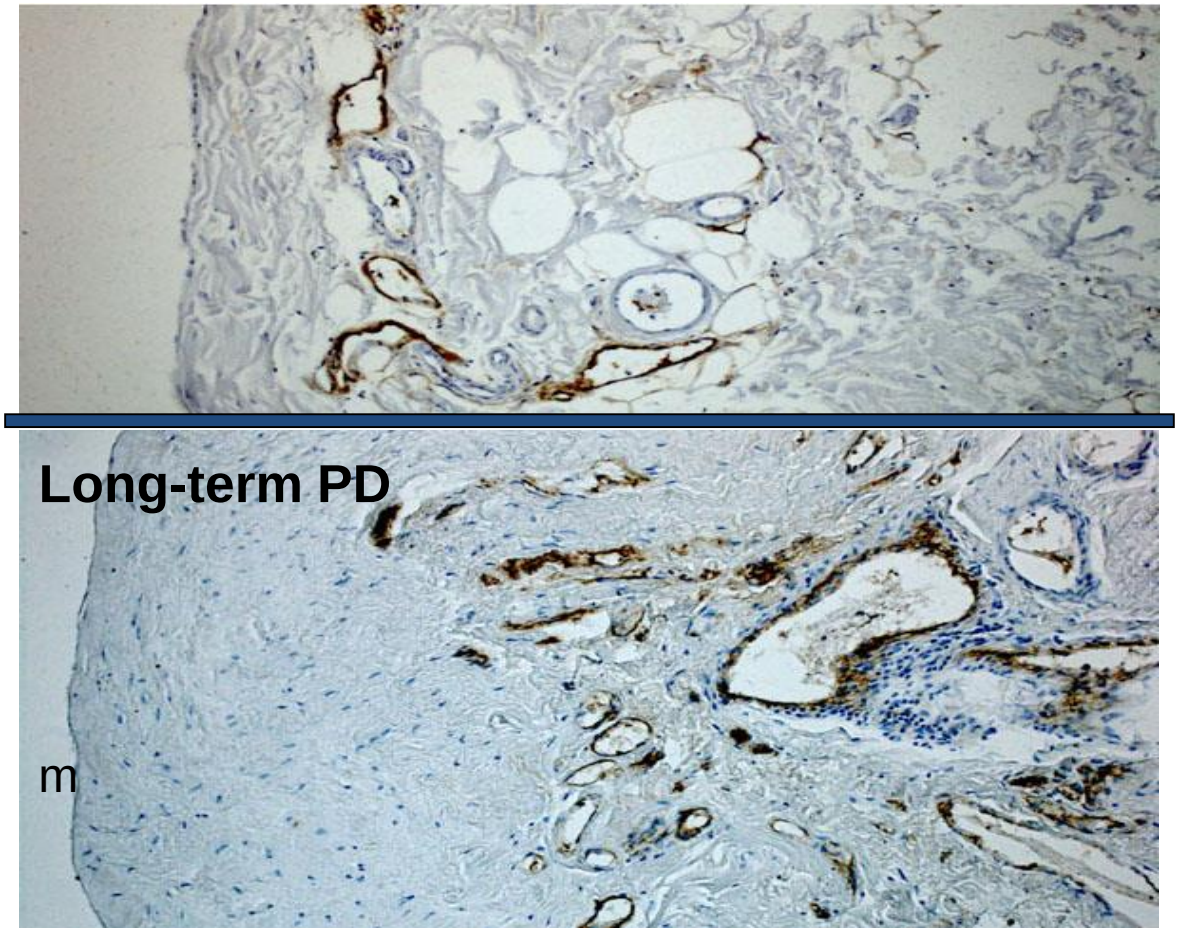
Less Na extraction

CAPD vs APD : Na extraction 180 mmol/d versus 90 mmol/d.

Increased protein losses

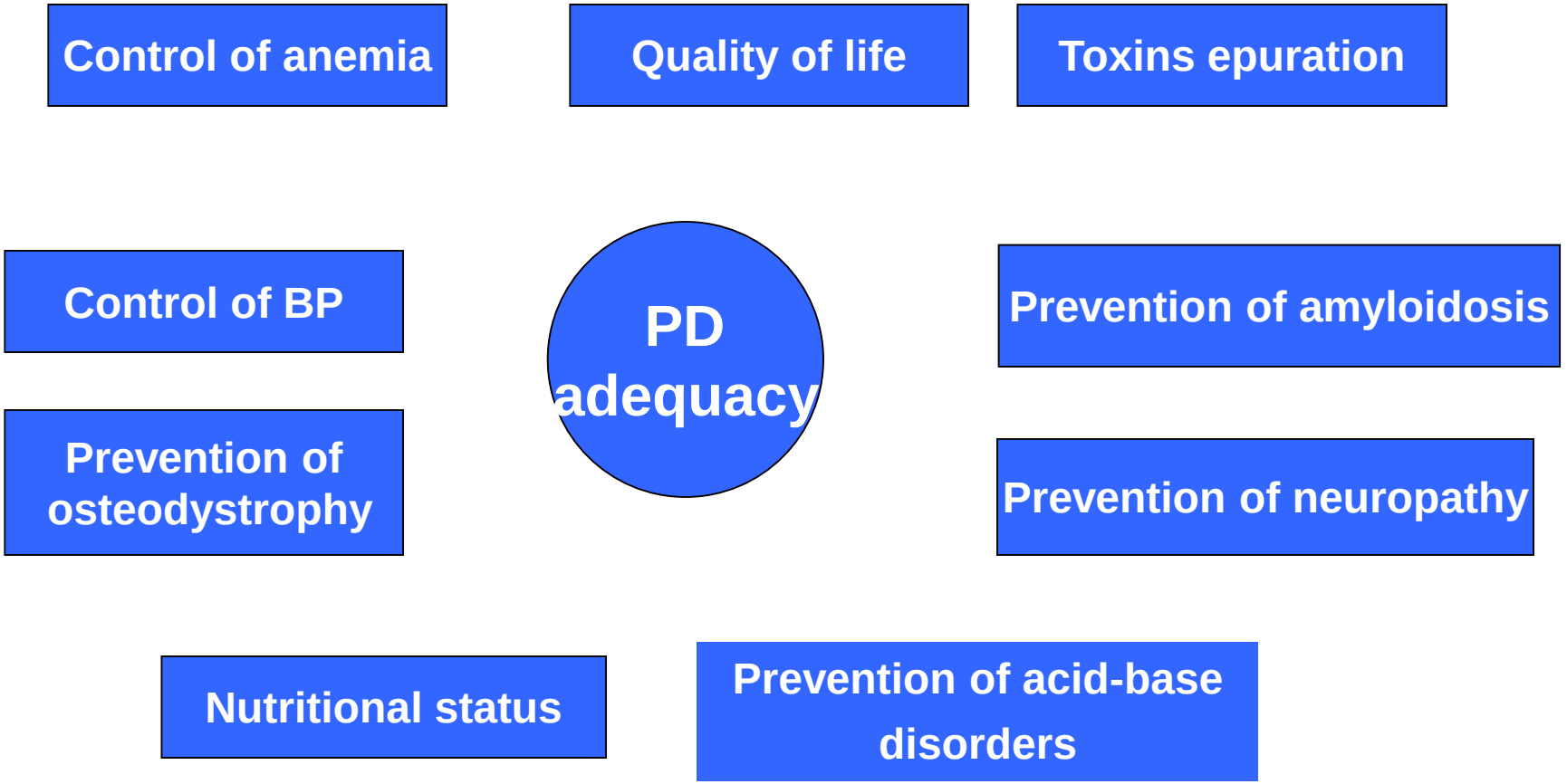
2. Perte UF / Dialyse inadéquate

Que se passe-t-il en DP au long cours ?

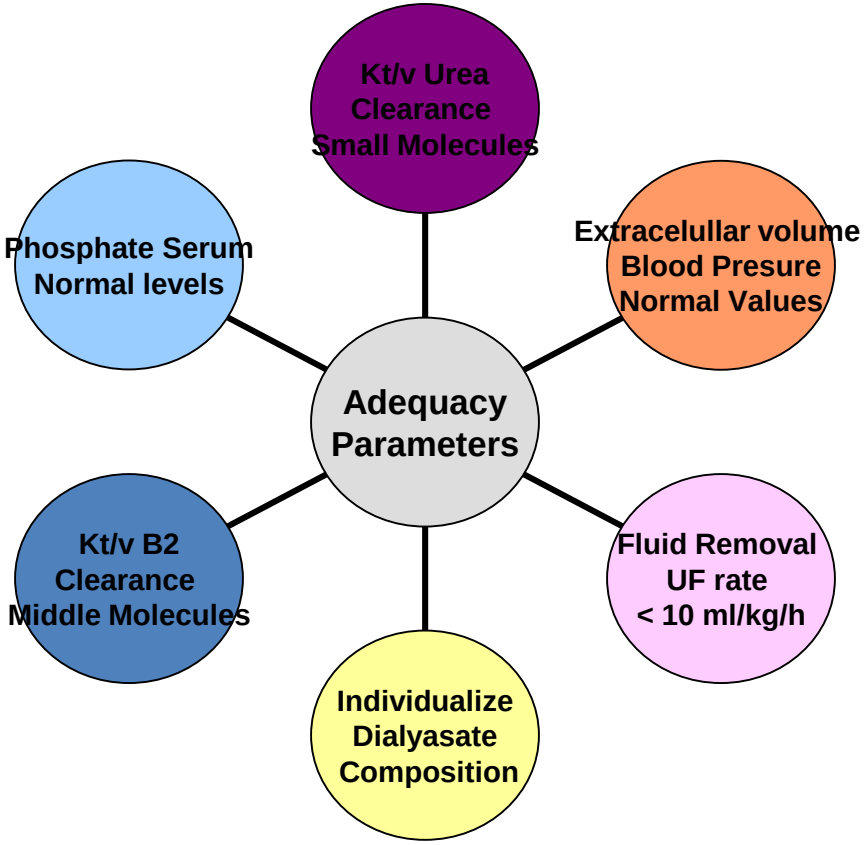


Factor VIII staining

Williams JD et al. JASN 13 : 470-9, 2002
Mateijsen et al. PDI 19, 1999



Adapted from PY Durand


Kt/v Urea
Clearance
Small Molecules
Phosphate Serum
Normal levels
Extracelullar volume
Blood Presure
Normal Values
Adequacy
Parameters
Kt/v B2
Clearance
Middle Molecules
Fluid Removal
UF rate
< 10 ml/kg/h
Individualize
Dialyasate
Composition

3. Cause infectieuse

L'infection péritonéale : germes et …. conséquences

Organisme	Ablation KT (%)	Décès (%)
Staph aureus	9.3	2.7
Coag neg staph	2.9	0.7
Pseudomonas	43.8	6.3
E coli	5.0	1.7
Multi-organism	30.8	7.6
Fungi	100	29.2
Total	**9.8**	**2.2**

Kim et al Perit Dial Int 2004

3. Cause infectieuse

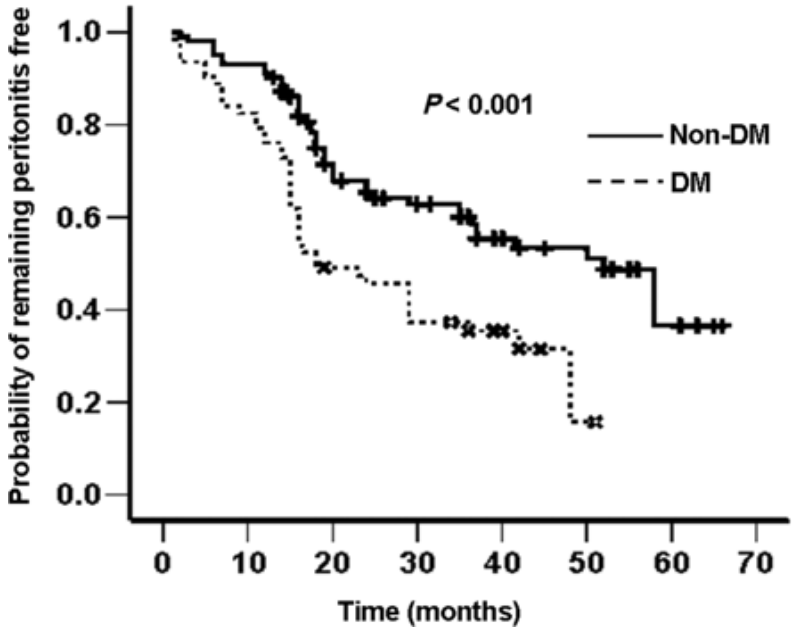
L'infection péritonéale : facteurs de risque

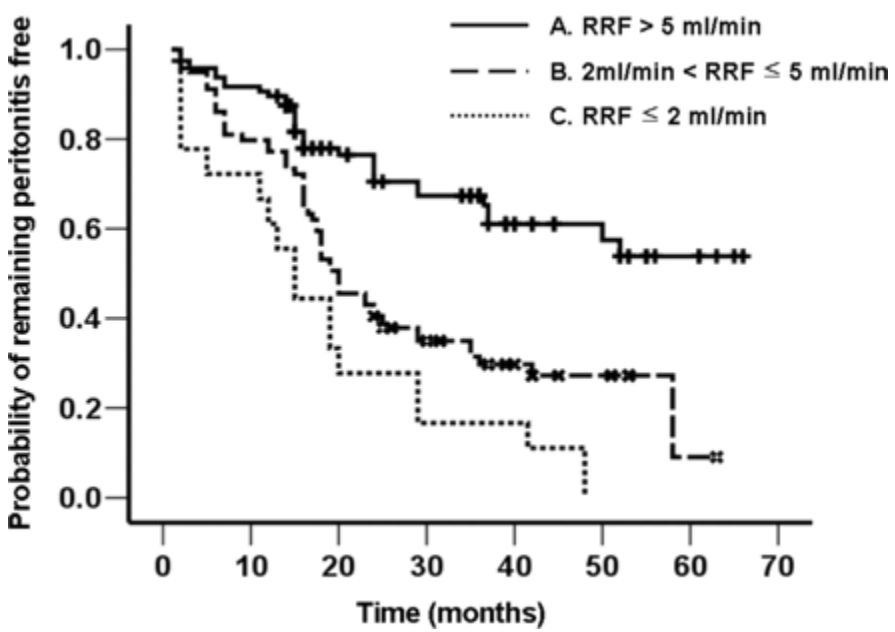
- Aucun dans certaines séries — ***Schachter M et al ISN 2009***
- Dépression — ***Troidle et al Am J Kidney Dis 2003***
- Changement sociaux
- Sous-dialyse – hypoalbuminémie — ***Chow et al Perit Dial Int 2005***
- Fragilité chez personnes âgées
- Diabète — ***Chow et al Perit Dial Int 2005*** ***Han et al Nephrol Dial Transplant 2007***

- Augmentation pression intra-péritonéale — ***Dejardin et al Nephrol Dial Transplant 2005***

3. Cause infectieuse

L'infection péritonéale : facteurs de risque

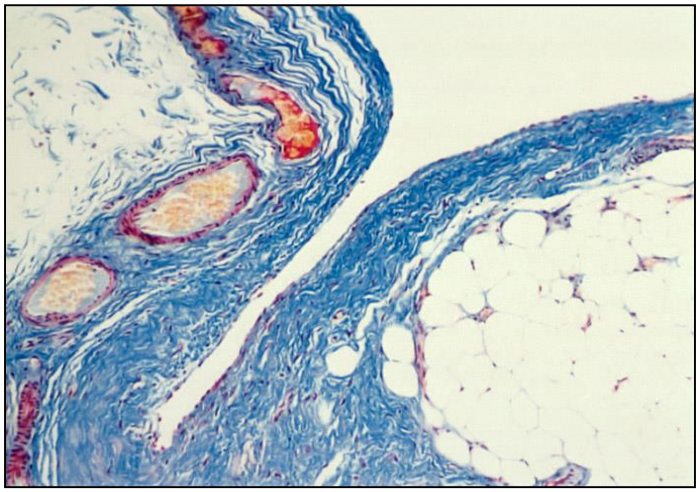


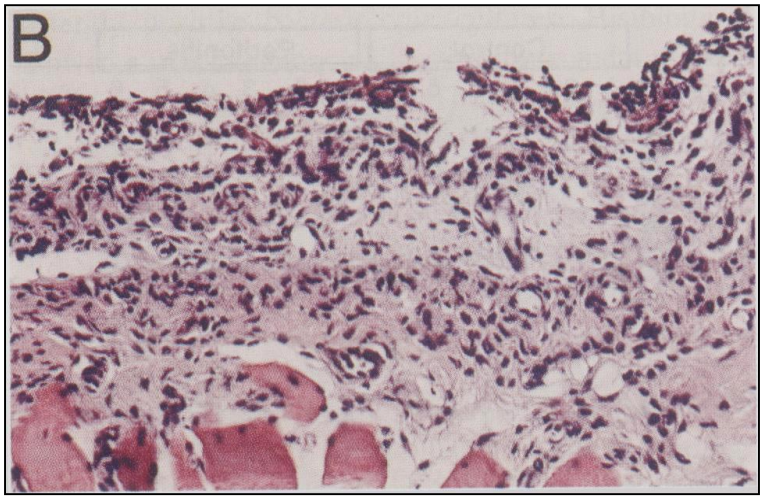


Han et al Nephrol Dial Transplant 2007

3. Cause infectieuse

L'infection péritonéale contribue à la survenue d'altérations fonctionnelles et structurelles de la membrane

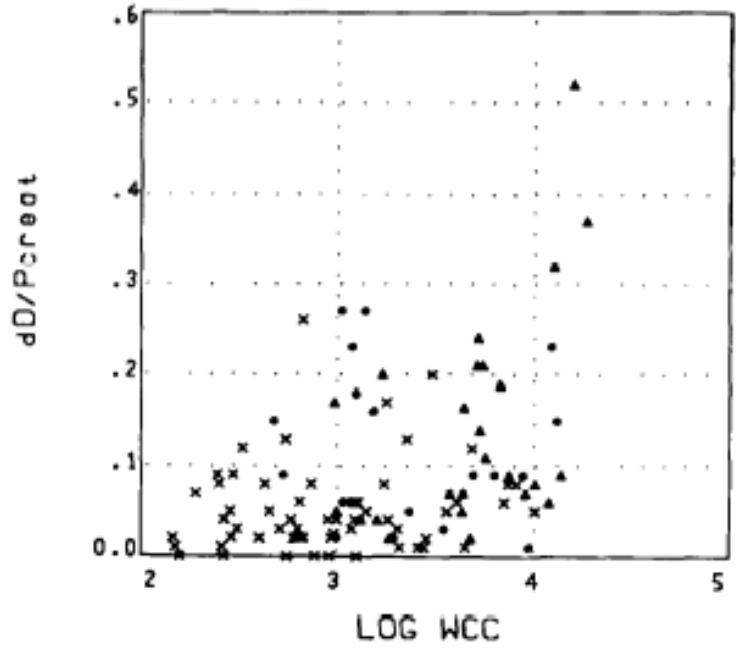


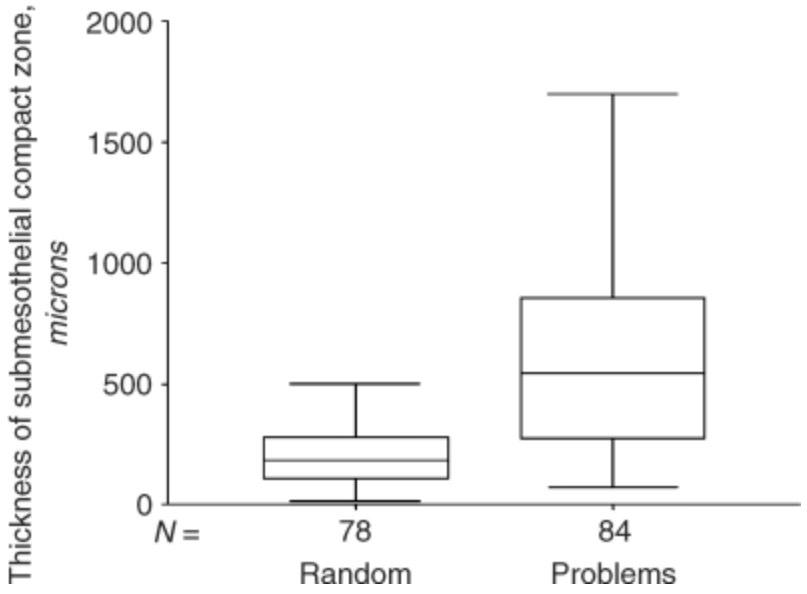


Combet et al J Am Soc Nephrol 2000

3. Cause infectieuse

L'infection péritonéale contribue à la survenue d'altérations fonctionnelles et structurelles de la membrane





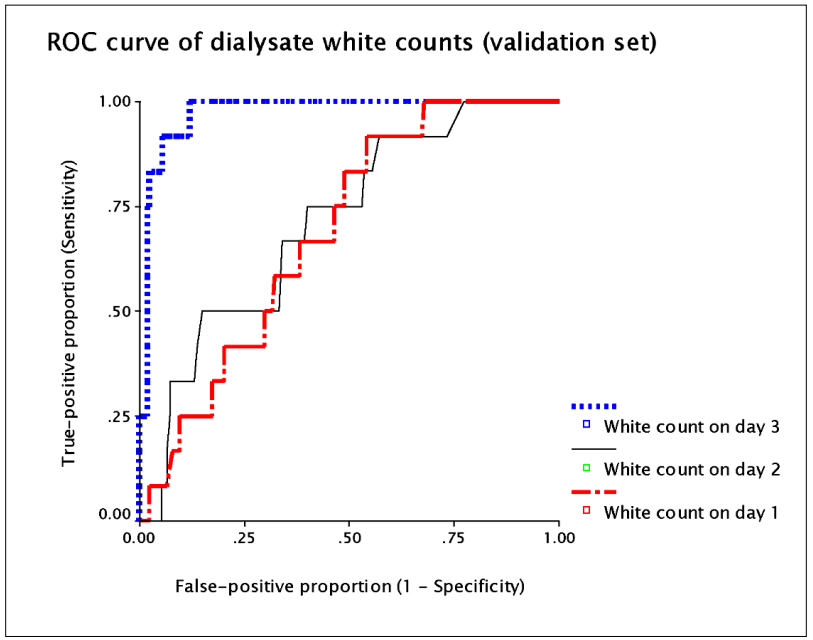
Davies et al Nephrol Dial Transplant 1996

Williams et al Kidney Int 2003

3. Cause infectieuse

L'infection péritonéale : indication d'ablation du cathéter

«Dialysate Cell Count > 1000/µl at day 3 has a strong predictive power of untowards outcome»



Chow et al cJASN 2006

3. Cause infectieuse

L’infection péritonéale : indications d’ablation du cathéter

Péritonite réfractaire
Péritonite relapsante
Infection tunnel ou orifice sortie récidivants
Péritonite fungique

Péritonite avec multiples germes entériques
Péritonite à mycobactérie

3. Cause infectieuse

L'infection péritonéale : arrêt dialyse péritonéale

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INTRAPERITONEAL UROKINASE AND ORAL RIFAMPICIN FOR PERSISTING ASYMPTOMATIC DIALYSATE INFECTION FOLLOWING ACUTE COAGULASE-NEGATIVE STAPHYLOCOCCUS PERITONITIS

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Service de Néphrologie, Cliniques Universitaires St Luc, Université Catholique de Louvain, Brussels, Belgium

3. Cause infectieuse

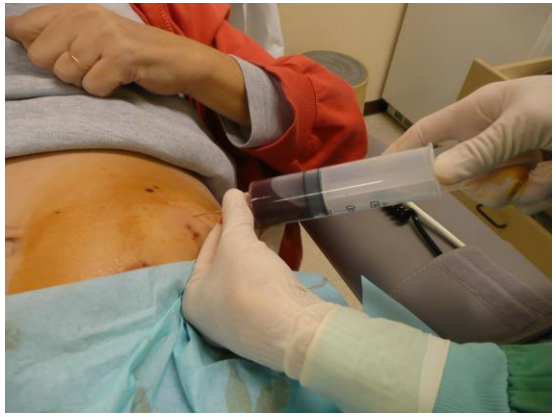
L’infection péritonéale : arrêt dialyse péritonéale

Patient récidiviste

Péritonite avec multiples germes entériques

4. Péritonite sclérosante encapsulante

Complication rare mais dramatique de la DP
Obstruction intestinale persistante, intermittente or récurrente
(nausée – vomissements – douleur abdominale),
ascites (souvent hémorragique)
± syndrome inflammatoire
Signes radiologiques et macroscopiques :
épaississements péritonéal, sclérose, calcifications et encapsulation (“cocoon”)



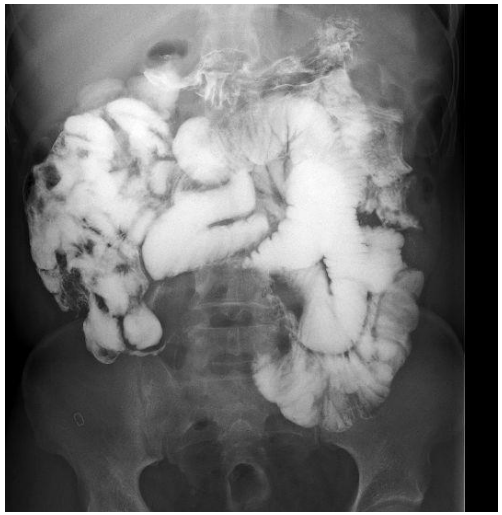
4. Péritonite sclérosante encapsulante

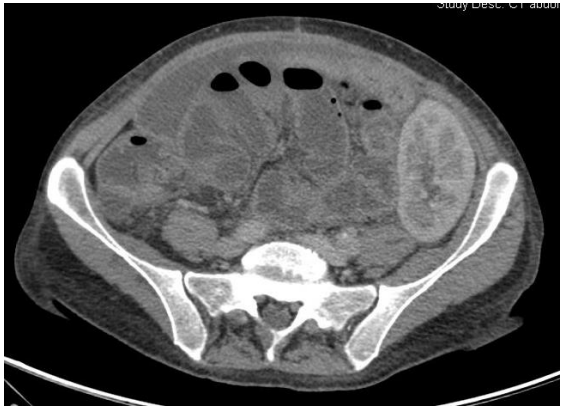
Anomalies cliniques principales chez 46 patients avec EPS diagnostiquées en Ecosse 2000-2007

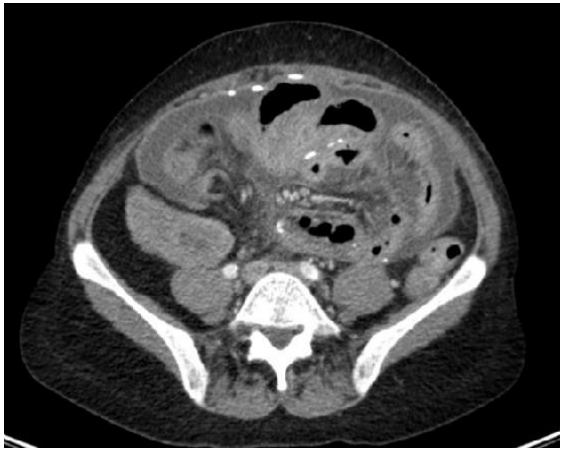
Clinical Features *(Most cases had >1)*	N
Abdominal Pain	30
Vomiting	28
Weight Loss	24
Ascites	15
Elevated Inflammatory Markers	14
Bowel Obstruction	11
Hypoalbuminaemia	10
Unexplained Anaemia	10
Bloody Ascites/Dialysate	4
Abdominal Mass	4
Diarrhoea	4

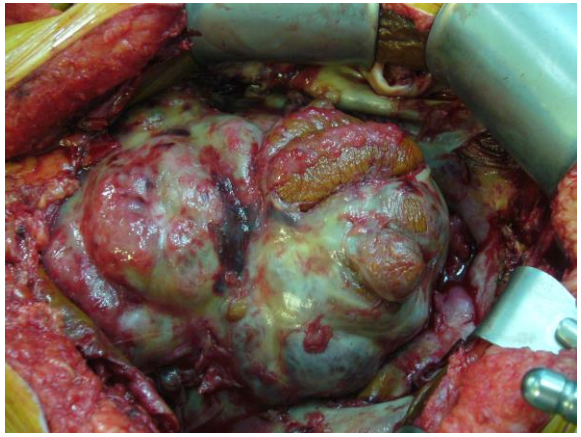
Brown MC et al cJASN 2009

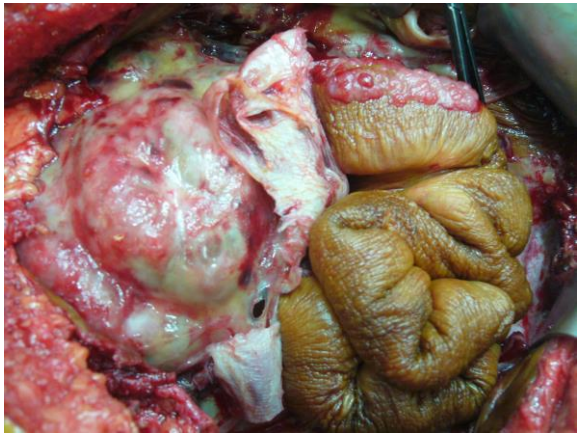
4. Péritonite sclérosante encapsulante

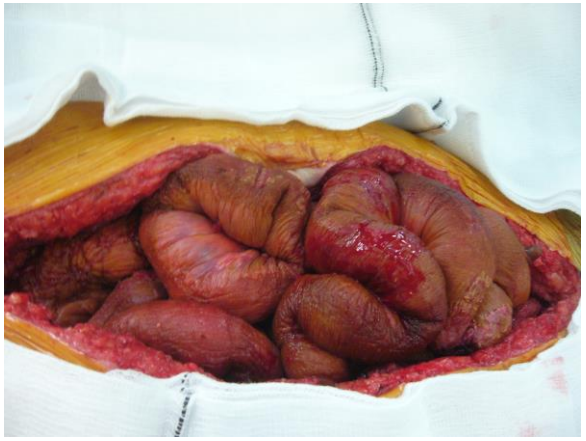




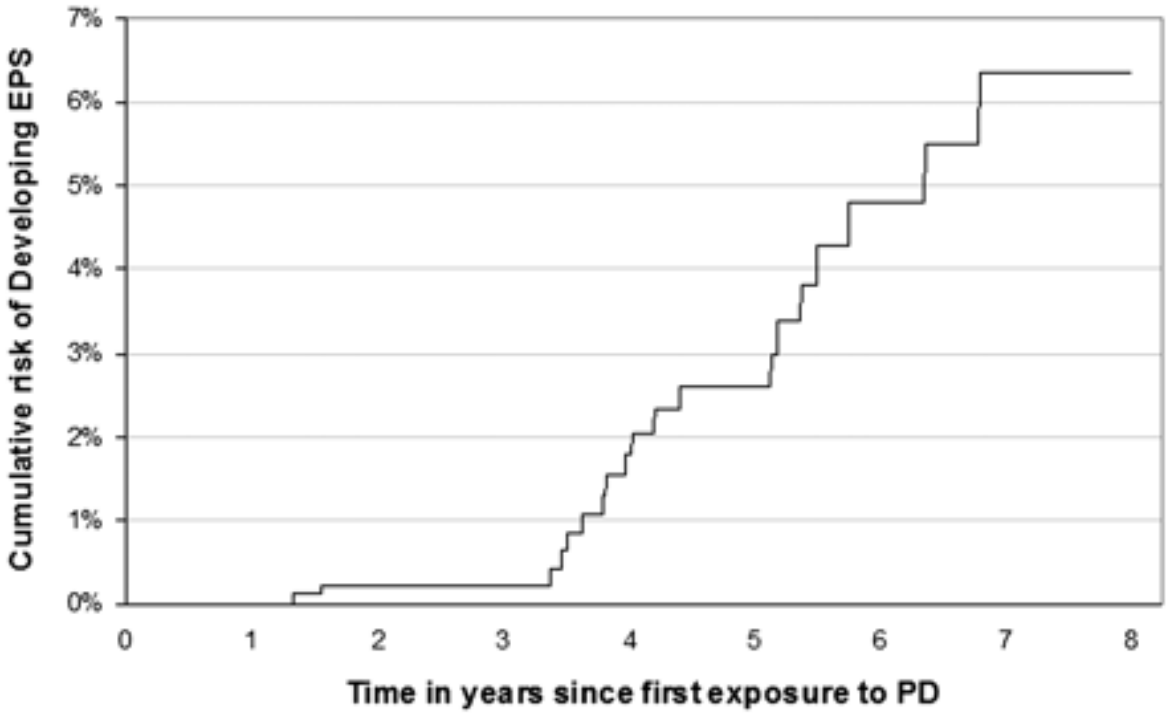






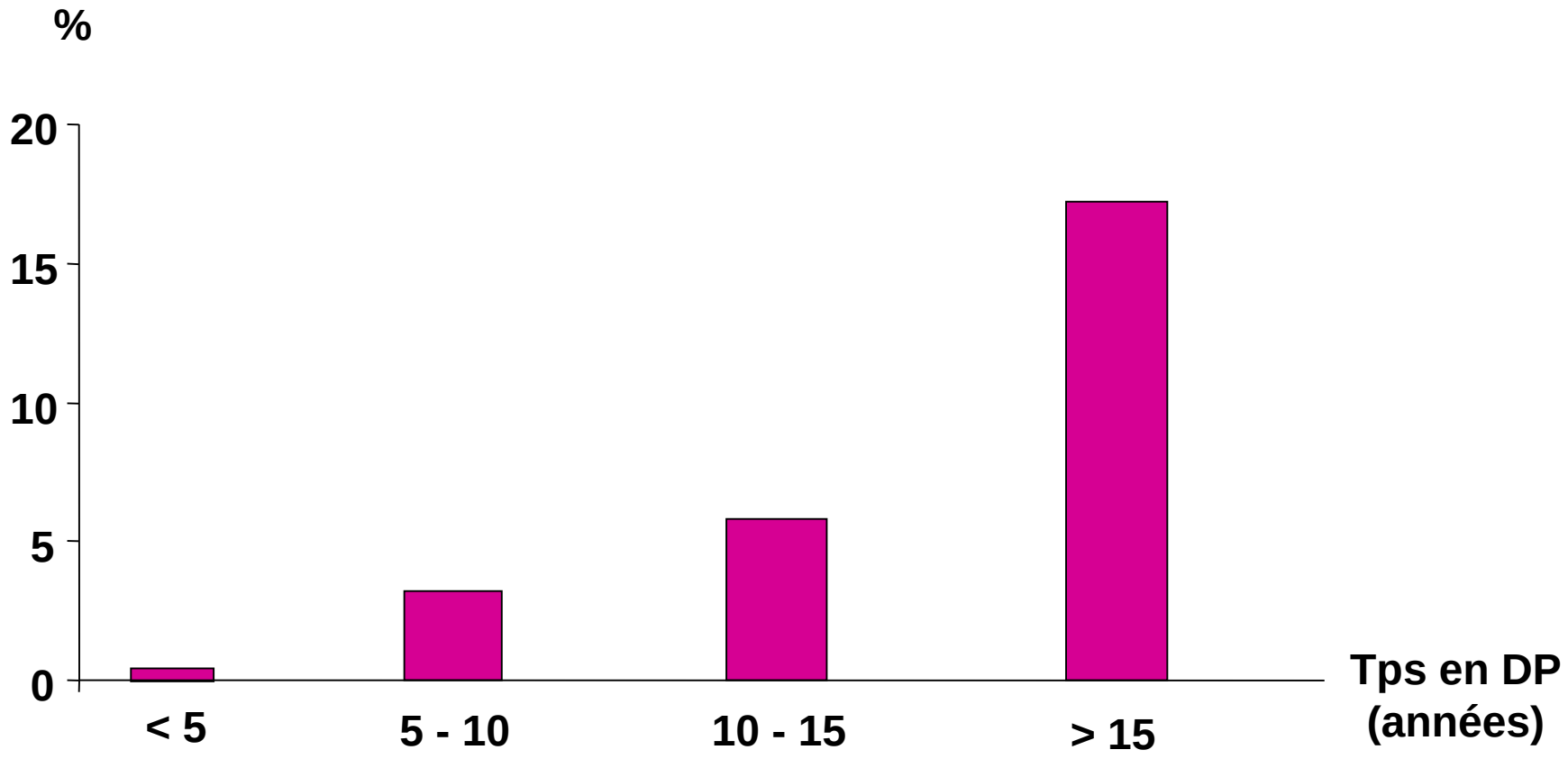


4. Péritonite sclérosante encapsulante

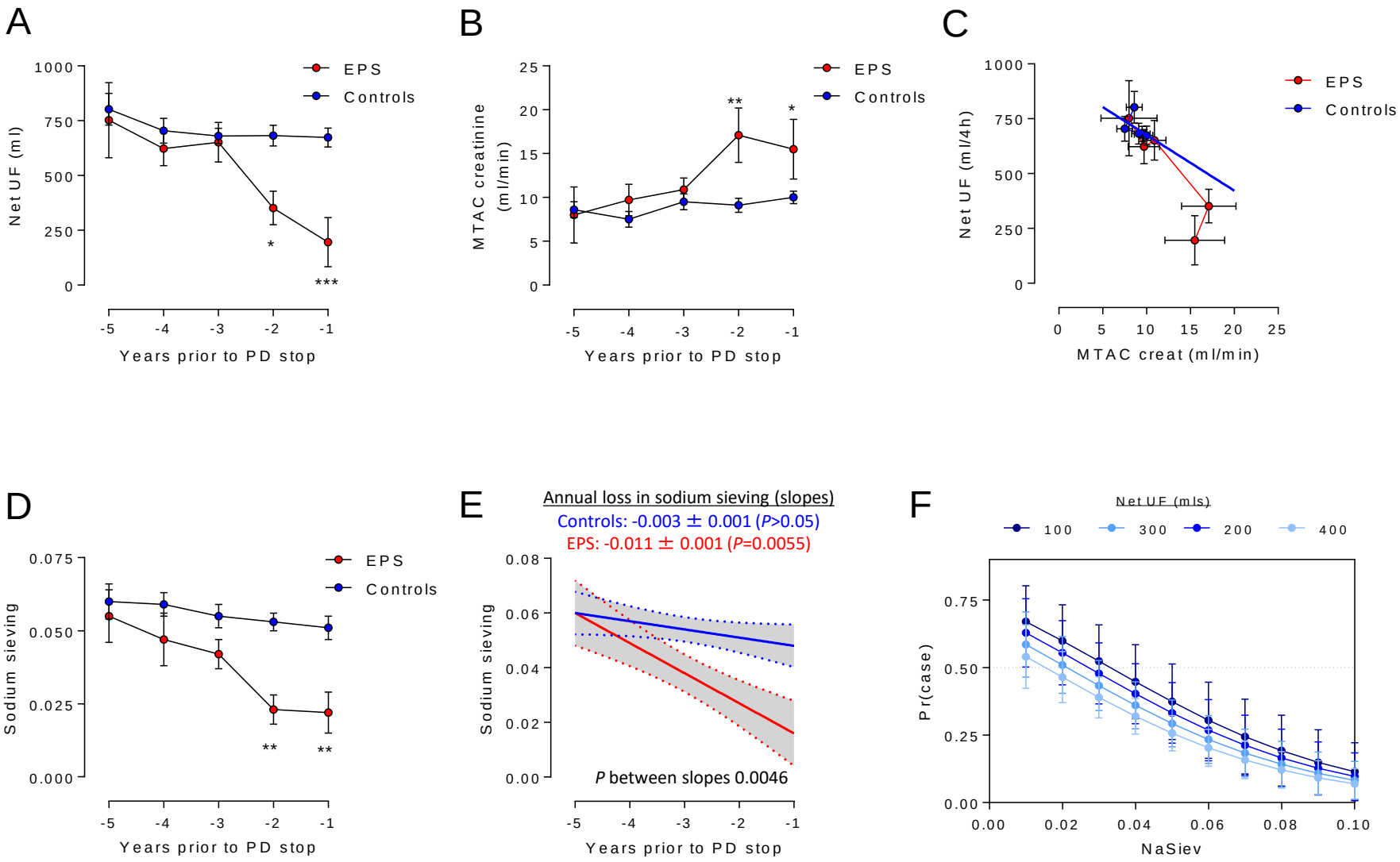


Brown MC et al cJASN 2009

4. Péritonite sclérosante encapsulante



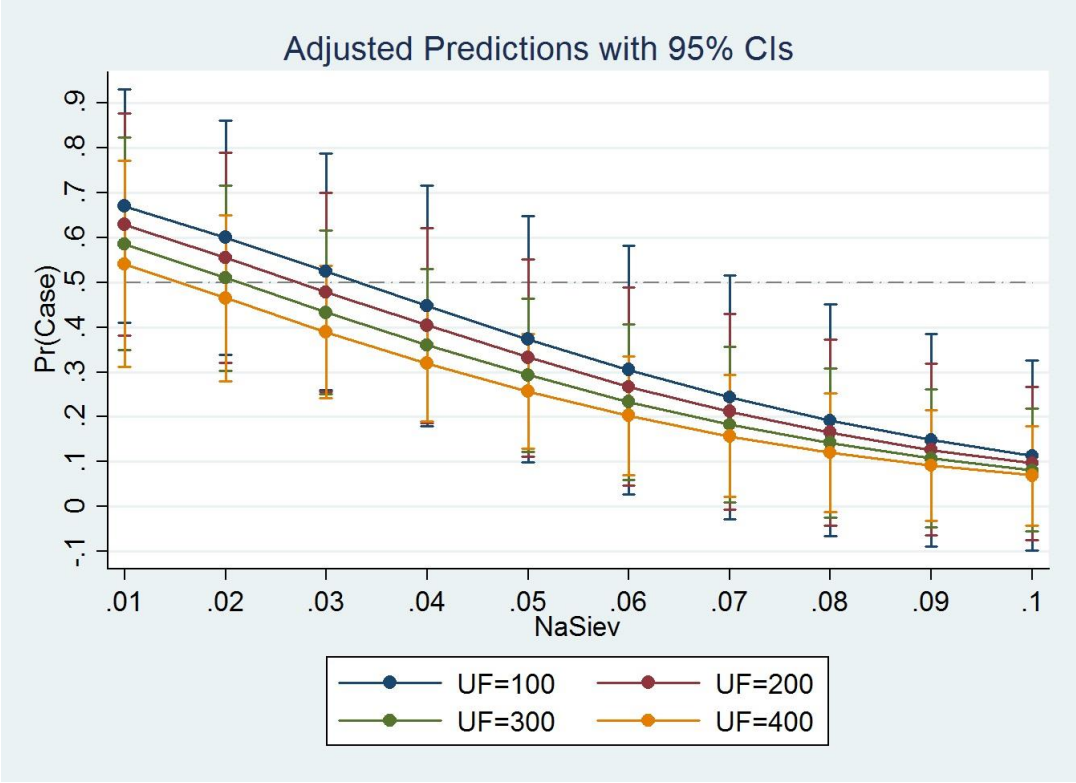
Chin & Yeun Am J Kidney Dis 2006



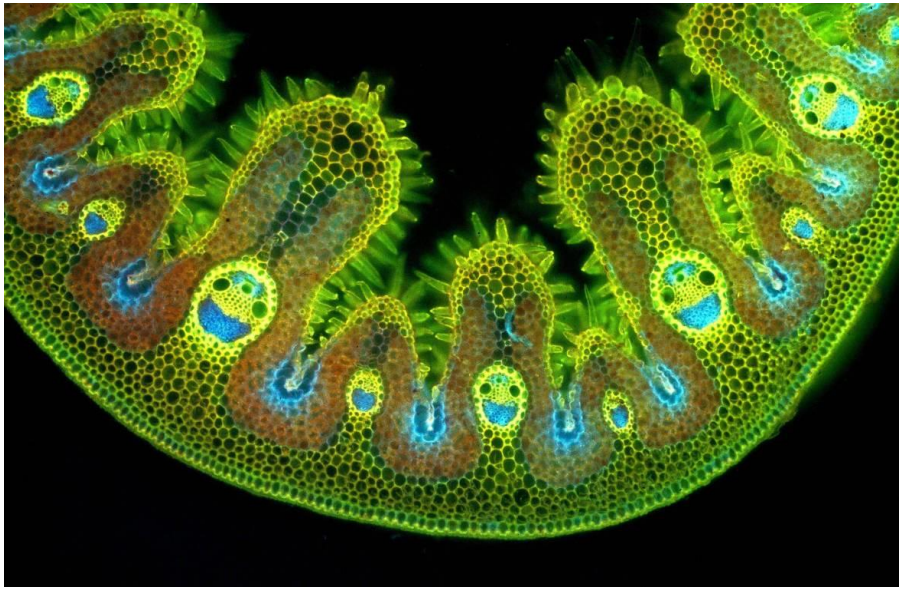
Morelle J et al J Am Soc Nephrol 2015

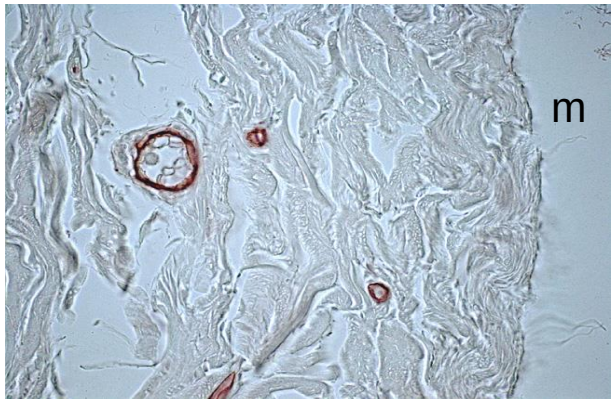
A low sodium sieving predicts an increased risk of EPS in long-term PD patients

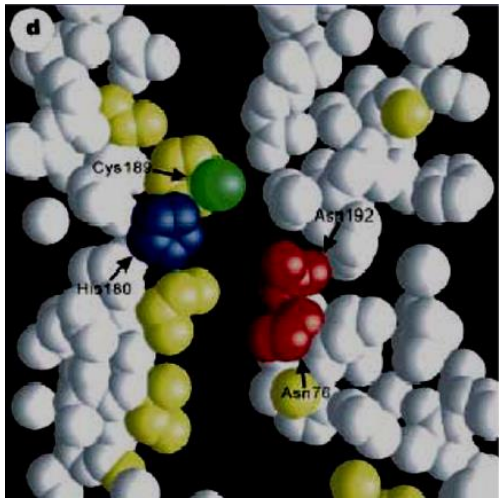
Logistic regression	Coeff.	St. Err.	z	P>|z|	[95% CI]
Na sieving	-30.6	13.1	-2.33	0.020	[-56.3; -4.9]
Net UF	-.002	.001	-1.75	0.081	[-.0038; .0002]

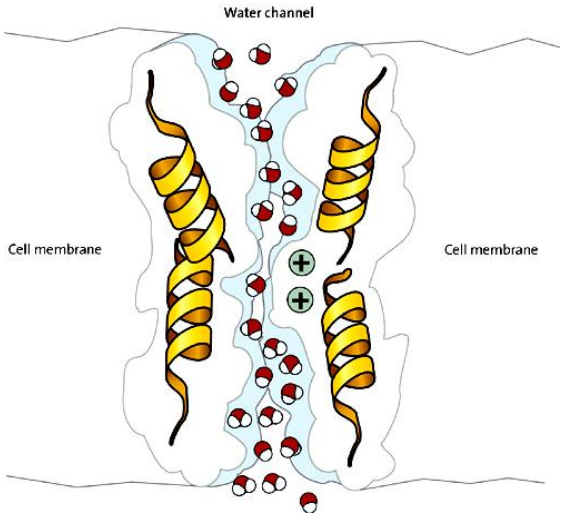


Perte fonctions des aquaporines ?

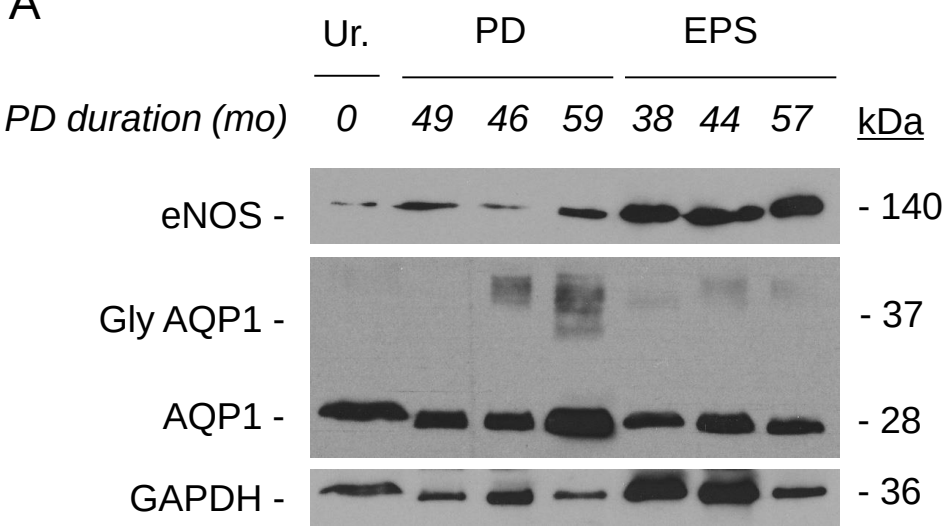


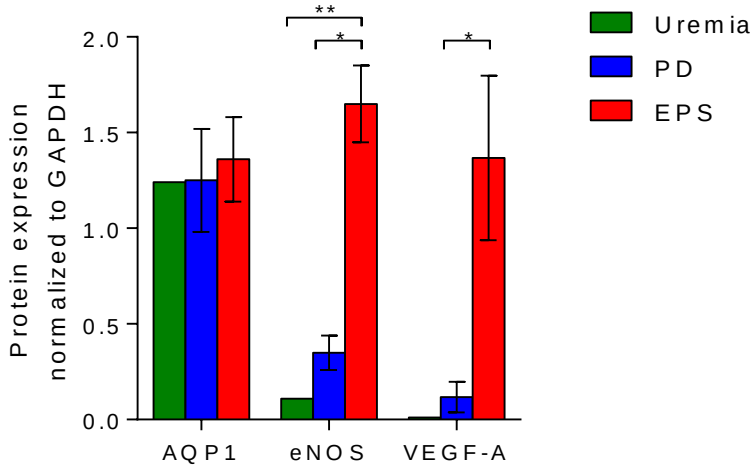




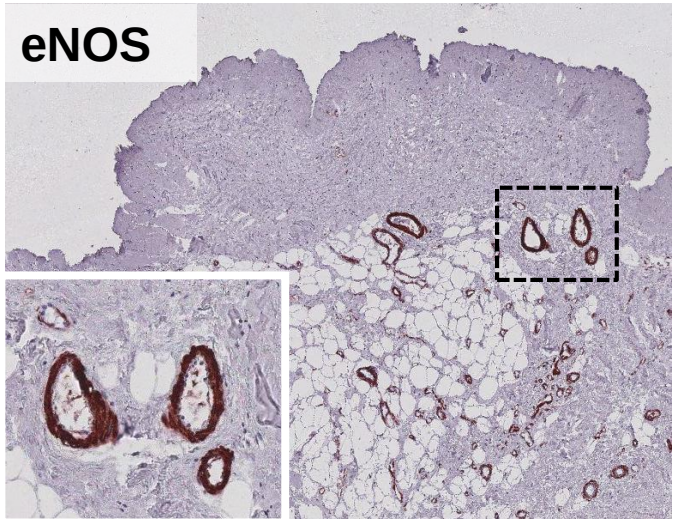


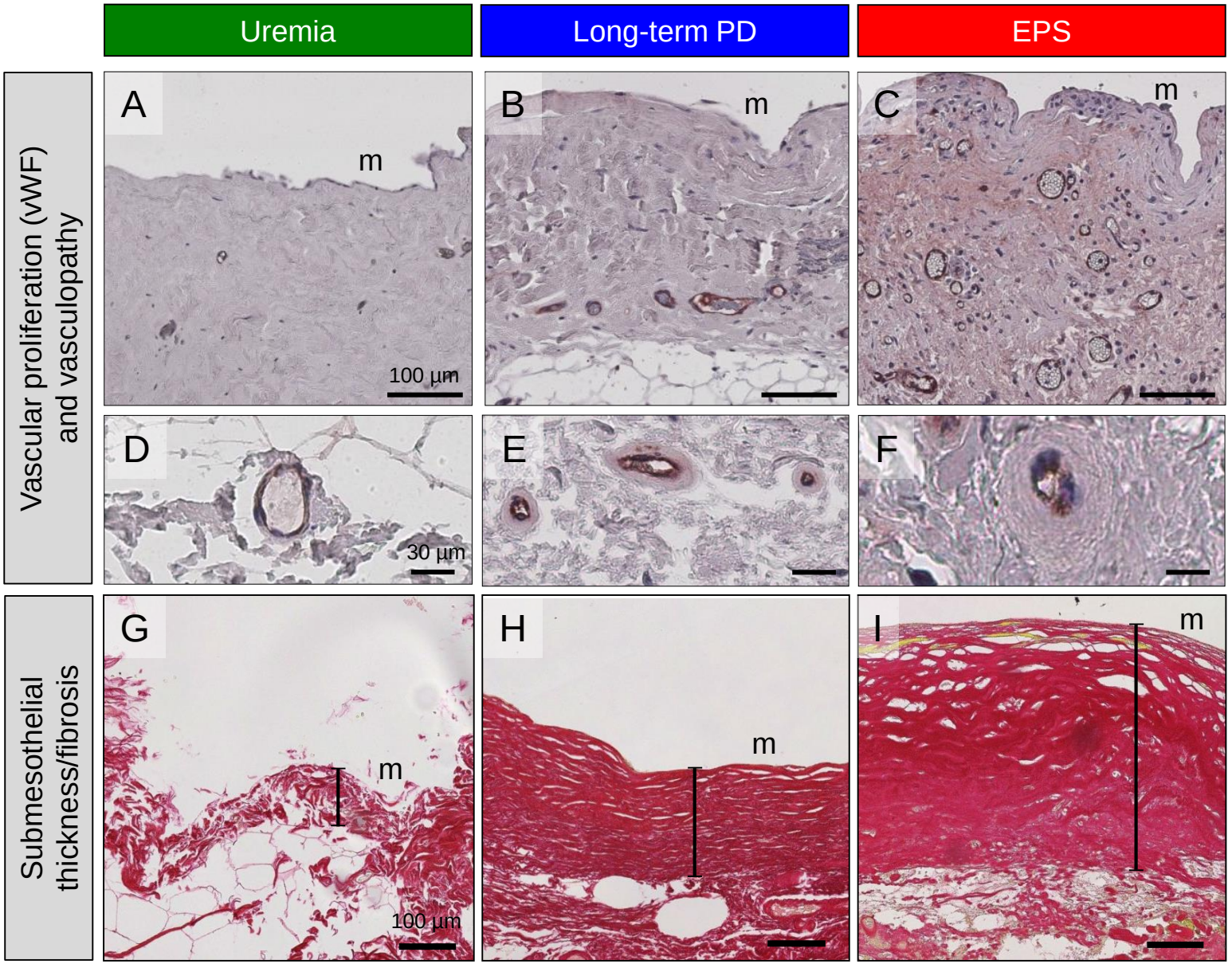
A

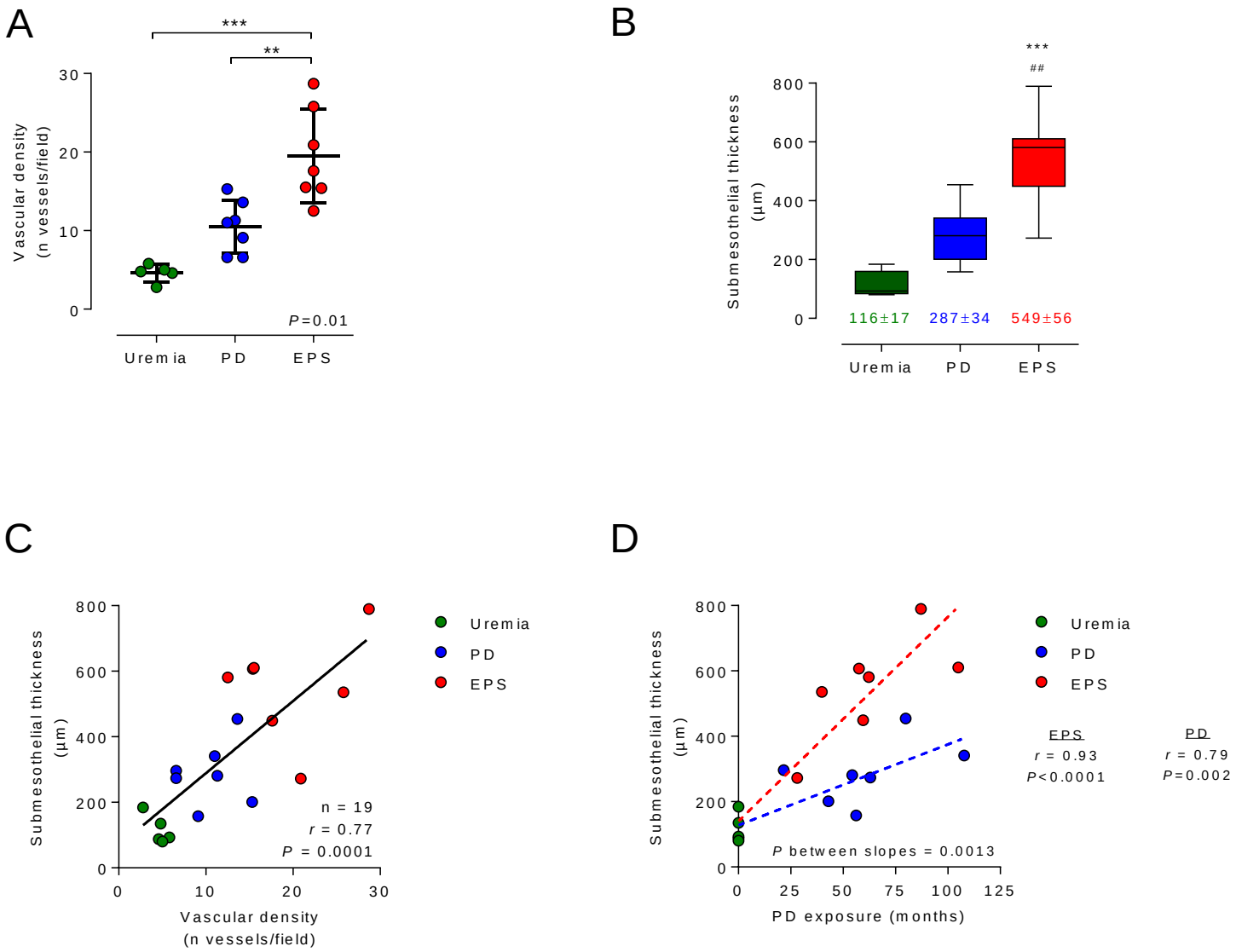

Ur.
PD
EPS
PD duration (mo)
0
49
46
59
38
44
57
kDa
eNOS -
- 140
Gly AQP1 -
- 37
AQP1 -
- 28
GAPDH -
- 36

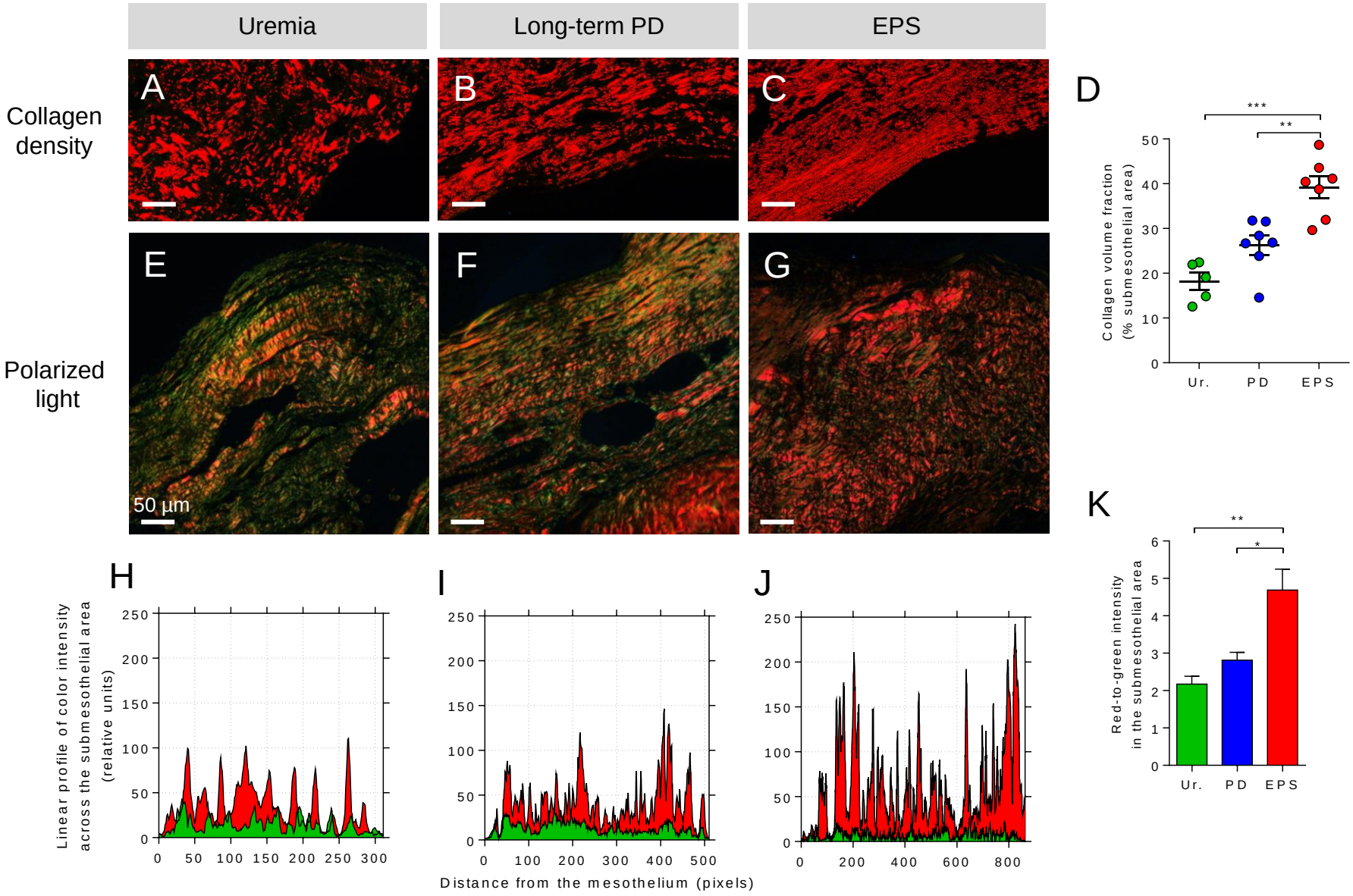

Protein expression normalized to GAPDH
2.0
1.5
1.0
0.5
0.0
**
*
*
AQP1
eNOS
VEGF-A
Uremia
PD
EPS

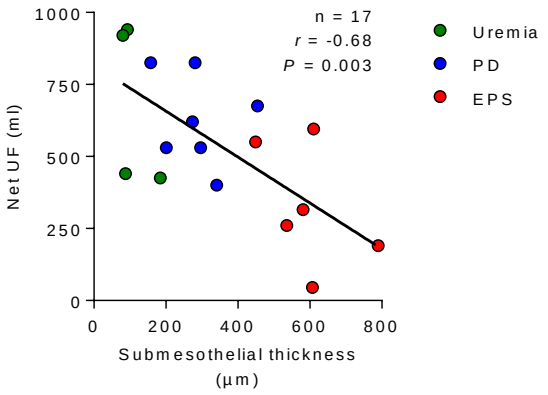
B

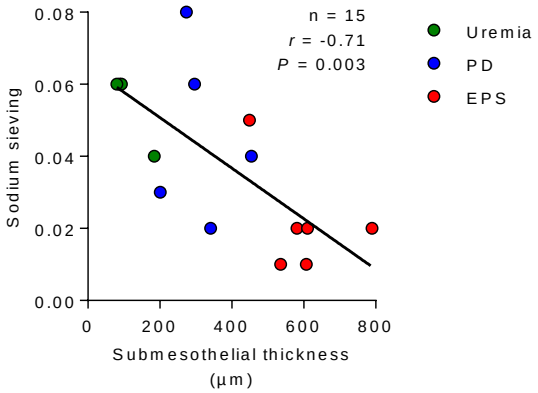

eNOS

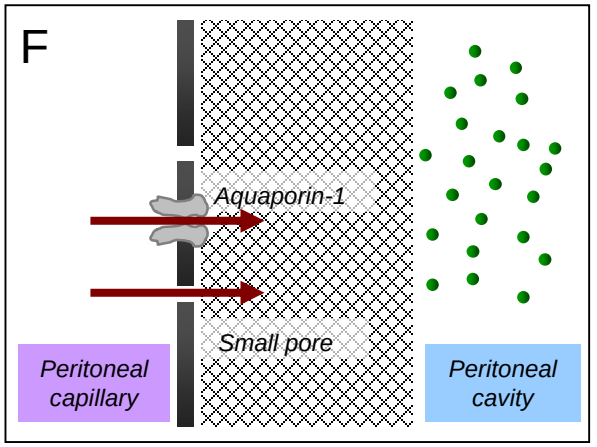

Uremia
Long-term PD
EPS
Vascular proliferation (vWF) and vasculopathy
Submesothelial thickness/fibrosis
A
B
C
D
E
F
G
H
I
m
100 µm
30 µm

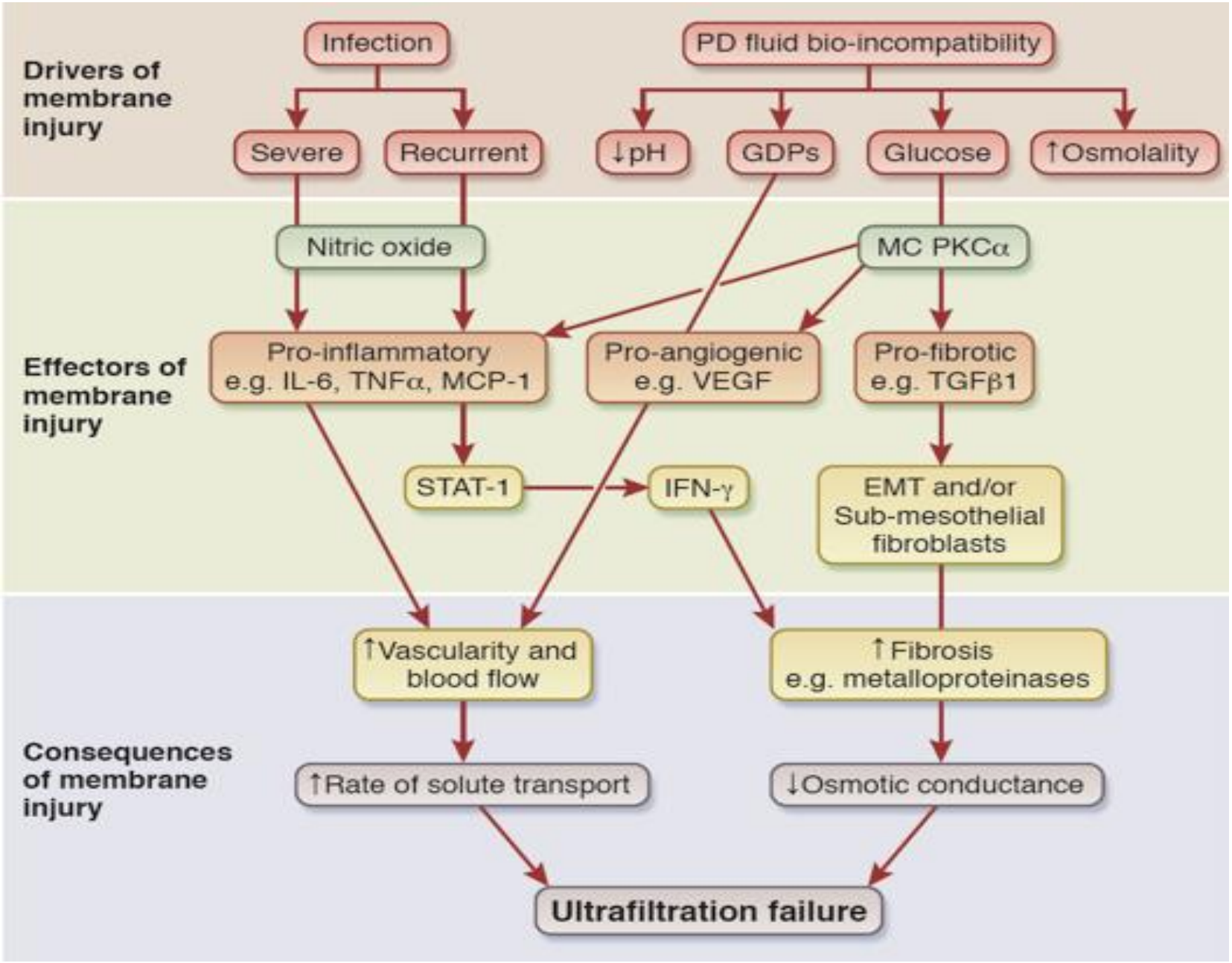

A
***
**
Vascular density
(n vessels/field)
30
20
10
0
P=0.01
Uremia
PD
EPS
B
***
##
Submesothelial thickness
(µm)
800
600
400
200
0
116±17
287±34
549±56
Uremia
PD
EPS
C
Submesothelial thickness
(µm)
800
600
400
200
0
n = 19
r = 0.77
P = 0.0001
0
10
20
30
Vascular density
(n vessels/field)
Uremia
PD
EPS
D
Submesothelial thickness
(µm)
800
600
400
200
0
P between slopes = 0.0013
0
25
50
75
100
125
PD exposure (months)
Uremia
PD
EPS
EPS
r = 0.93
P<0.0001
PD
r = 0.79
P=0.002


Uremia
Long-term PD
EPS
Collagen density
Polarized light
A
B
C
D
E
F
G
50 µm
Collagen volume fraction (% submesothelial area)
***
**
Ur.
PD
EPS
K
Red-to-green intensity in the submesothelial area
**
*
H
I
J
Linear profile of color intensity across the submesothelial area (relative units)
Distance from the mesothelium (pixels)


n = 17
r = -0.68
P = 0.003
Uremia
PD
EPS
Net UF (ml)
1000
750
500
250
0
0
200
400
600
800
Submesothelial thickness
(µm)


n = 15
r = -0.71
P = 0.003
Uremia
PD
EPS
Sodium sieving
0.08
0.06
0.04
0.02
0.00
0
200
400
600
800
Submesothelial thickness
(µm)


F
Aquaporin-1
Small pore
Peritoneal capillary
Peritoneal cavity



Davies, S. KI, 2016

Recommendations EDTA

Patients on PD should be informed about the option of HD when they suffer from any the following clinical conditions:

- Incapacity to maintain fluid balance
- Relapsing or persistent peritonitis
- Incapacity to control uraemic symptoms or to maintain a good nutritional state
- Changes in lifestyle circumstances
- Declining residual renal function
- Intra-abdominal surgery
- Sclerosing peritonitis

Covic et al NDT Plus 2010; 3 : 225

Quand s'effectue le transfert ?

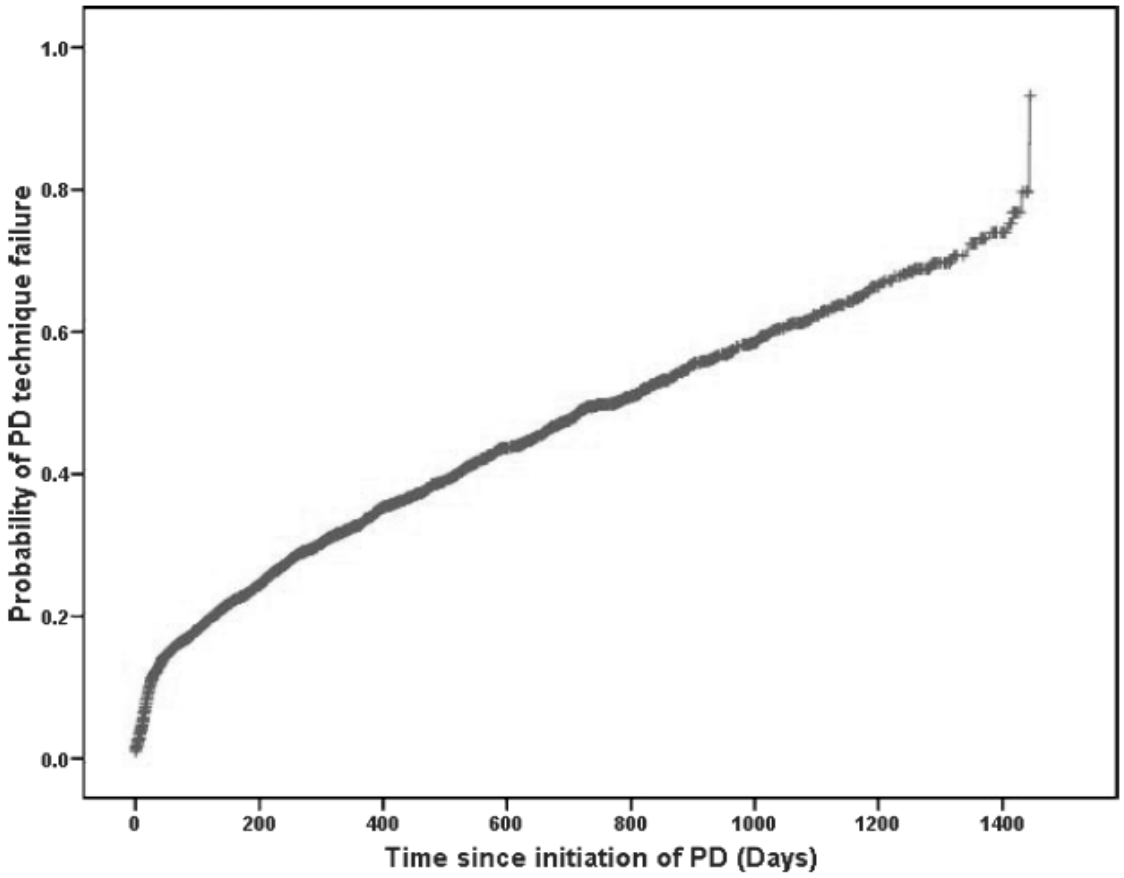


Fig. 2. The Kaplan–Meier curve for probability of peritoneal dialysis (PD) technique failure after the initiation of PD. Survival until 31 December 2004, death, transplantation or loss to follow-up with functioning PD were considered to be censored observations.

Tangri et al, NDT, 2009

The transition from PD to HD is difficult for patients

- Fear (of unknown)

- Anxiety

- Loss of autonomy / Independence

- Feeling unwell

- Change reluctance and strong preference for status-quo

- New access

- Changes in care team

- Travel is more complex

HEMOPHOBIA

What might contribute to an optimal vs suboptimal transition ?

Delayed recognition by the treatment team

Reluctance of the patients

The reason for the switch off PD : predictable vs unpredictable

Predictable vs unpredictable PD to HD transitions

Predictable (25 %)

- Inadequate dialysis (15 %)
- Unable to manage self-care (7 %)
- Patient preference (3 %)
- Planned transfers (< 1 %)

Unpredictable (75 %)

- PD-related infection (46 %)
- PD catheter-related problems (4 %)
- Dialysate leak (7 %)
- EPS (< 1 %)
- Abdominal surgery (13 %)
- Other/unspecified (< 5 %)
- Patient preference
- Planned transfers

Lan et al Perit Dial Int 2015 ; 35 : 306-15

Quand s'effectue le transfert ?

Causes of Peritoneal Dialysis Failure by Type of Hemodialysis (HD) Initiation

Cause	HD starts Unplanned (*N*=37)	HD starts Planned (*N*=23)
Peritonitis	20	1
Dialysis inadequacy	2	11
Ultrafiltration failure	4	3
Catheter dysfunction	2	1
Abdominal wall complication	4	1
Miscellaneous	6	5

6 unplanned *vs* 14 planned

Boissinot L et al Perit Dial Int 2013

Quand s'effectue le transfert ?

Table 6
Outcome on Dialysis by Type of Hemodialysis (HD) Initiation

Variable	HD starts Unplanned (*N*=37)	HD starts Planned (*N*=23)	*p* Value
Vascular access at 2 months			<0.01
Temporary catheter	7	0	
Tunneled catheter	14	7	
Arteriovenous fistula	7	16	
Missing data	9	—	
HD facility at 2 months			<0.01
Self-care HD	0	6	
In-center HD	28	17	
Missing data	9	0	
Death on HD	9	0	<0.01

Boissinot L et al. PDI 2013

Devenir après le transfert ?

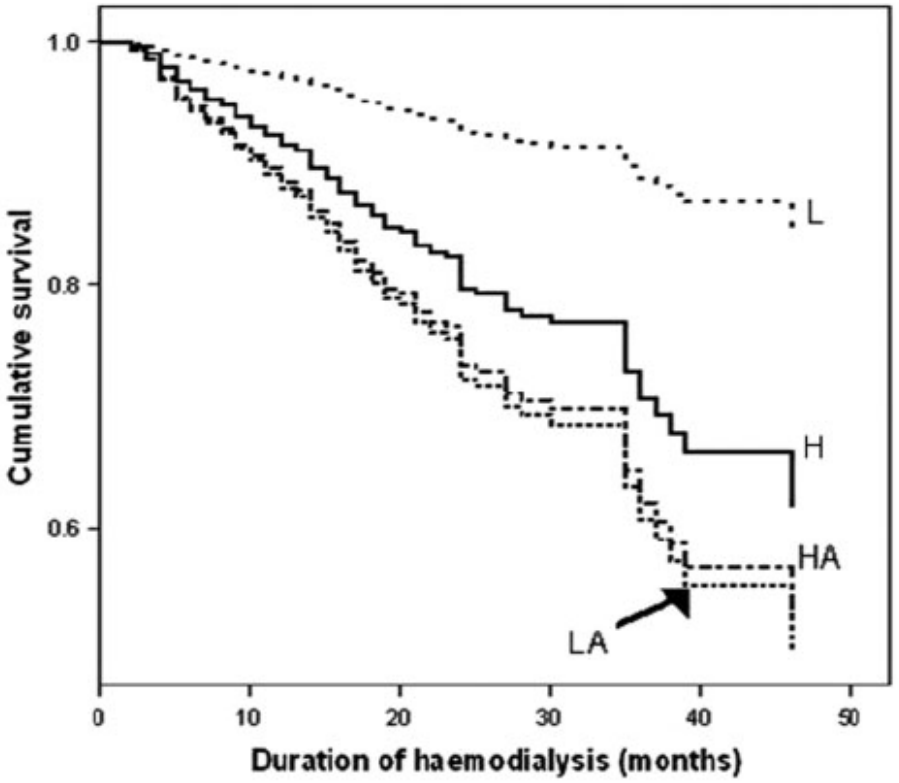


Fig. 3. Multivariate Cox-adjusted survival curves for each of the four peritoneal transport groups following transfer to haemodialysis. There was no significant difference in survival amongst transport groups compared with the reference group of low average transporter group. Abbreviations: H, high transporter; HA, high average transporter; LA, low average transporter; L, low transporter.

Not corrected for CrP, albumin or other markers of inflammation

Wiggins et al, NDT, 2007

Faut-il créer un accès vasculaire ?

Are backup arteriovenous fistulae necessary for patients on continuous ambulatory peritoneal dialysis?

The rationale for backup fistulae for patients on continuous ambulatory peritoneal dialysis (CAPD) is that many will require emergency haemodialysis and, subsequently, permanent haemodialysis. 42% of renal units in the UK have a policy of providing CAPD patients with backup arteriovenous fistulae. We have investigated whether this policy is justified. In our unit, of 176 patients who started CAPD between 1986 and 1989, most (73%) did not require haemodialysis over a median follow-up period of 4 years. Of the 153 backup fistulae created in 114 patients, only 10 were ever used for emergency haemodialysis. 23 other patients required emergency haemodialysis, but when required their fistulae were no longer functioning. The mean fistula patency times among patients in this study compared very favourably with those in other published work. This finding indicates that most fistulae are not available for emergency haemodialysis when required. 94% of fistulae were never used for haemodialysis. Hence it is no longer justifiable to create backup fistulae in CAPD patients.

Beckingham et al, Lancet 1993; 241: 1384

Faut-il créer un accès vasculaire ?

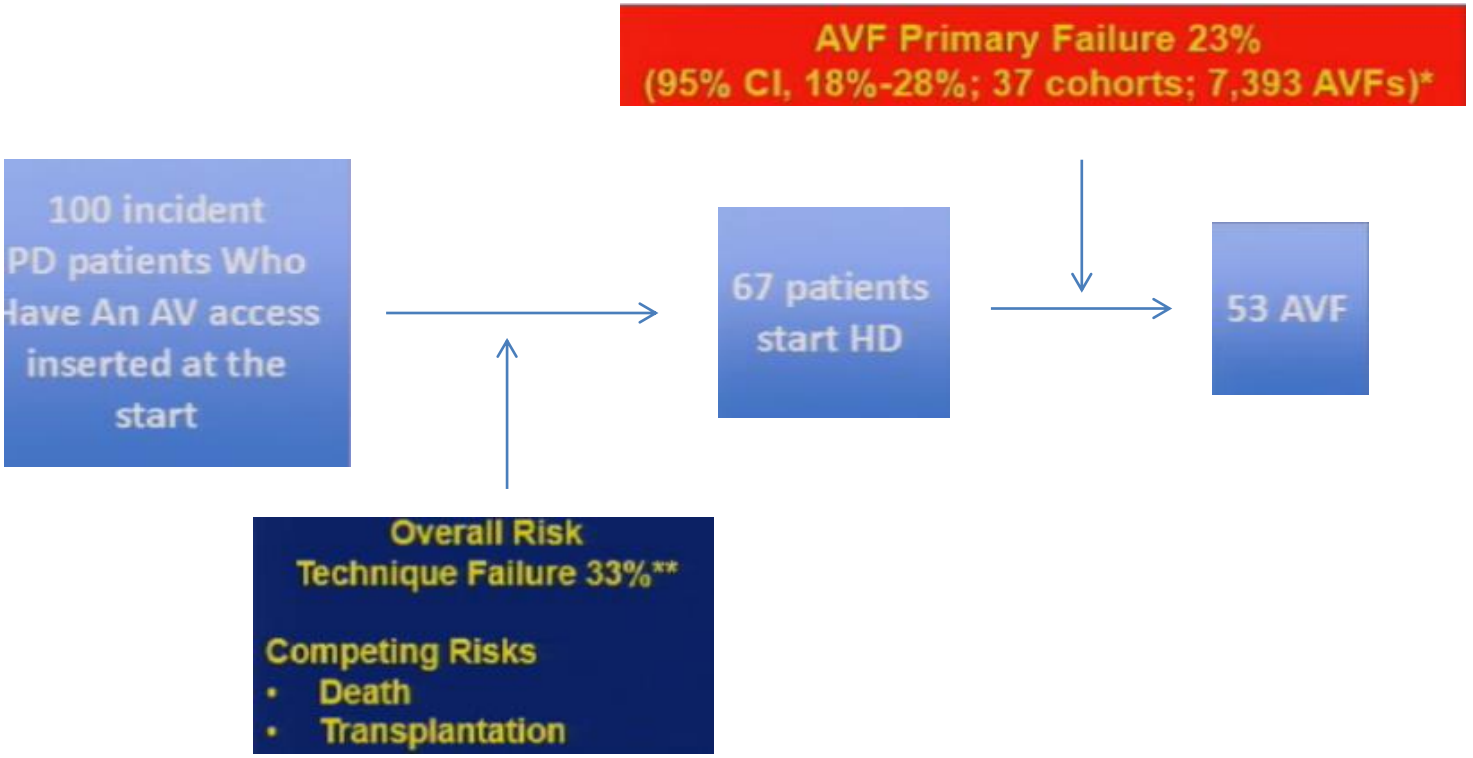
- 176 patients starting CAPD between 1986 et 1989
- 153 «backup FAV» / 114 patients
- FU median 4 yrs

94 % AVF never used

10 AVF used in emergency
23 HD in emergency but AVF non functional

Beckingham et al, Lancet 1993; 241: 1384

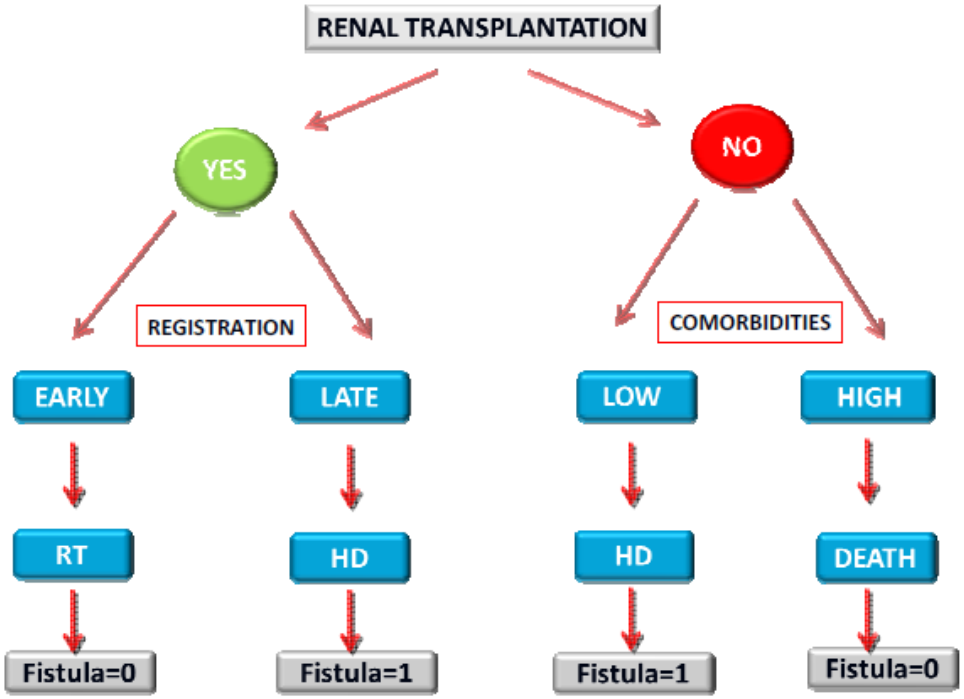
Should ***Every*** Patient at The Start of PD Have a Preemptive "Back-Up" AVF ?



* Al Jaishi *et al* AJKD 2014; 63(3): 464-478
**Perl *et al* CJASN (2012) vol. 7 (7) pp. 1145-1154

Transition DP – HHD

Faut-il créer une FAV chez tous les patients en DP ?



Lobbedez T ; 2ème selfcare dialysis symposium Bruxelles 2014

Integrated Home HD and Home PD in Our Program :

- Training and patient follow-up for PD and home HD by the same team
- Unbiased modality education
- Flexibility for training
- Facilitates transition from "home" to "home"
  - "PD first" "Home HD second" philosophy
  - Patient familiar with team
  - Team familiar with patient
  - Patients familiar with both modalities
  - Common Challenges for both patients

self-care dialysis symposium

In collaboration with RDPLF

6 & 7th June 2018

Cliniques universitaires SAINT-LUC UCL BRUXELLES

Square-Brussels Meeting Centre

www.selfcaredialysis-symposium.be

REGISTRE DP HDD de langue française


Bedankt Merci 謝謝 Gracias ありがとう MERCI
GRAZIE Vielen Dank
THANK YOU THANK YOU THANK YOU
VIELEN DANK GRACIAS MERCI BEDANKT
謝謝 Gracias ありがとう MERCI
THANK YOU THANK YOU THANK YOU
Vielen Dank Bedankt
GRAZIE ありがとう
Merci THANK YOU
謝謝 THANK YOU
VIELEN DANK GRACIAS

Cas cliniques

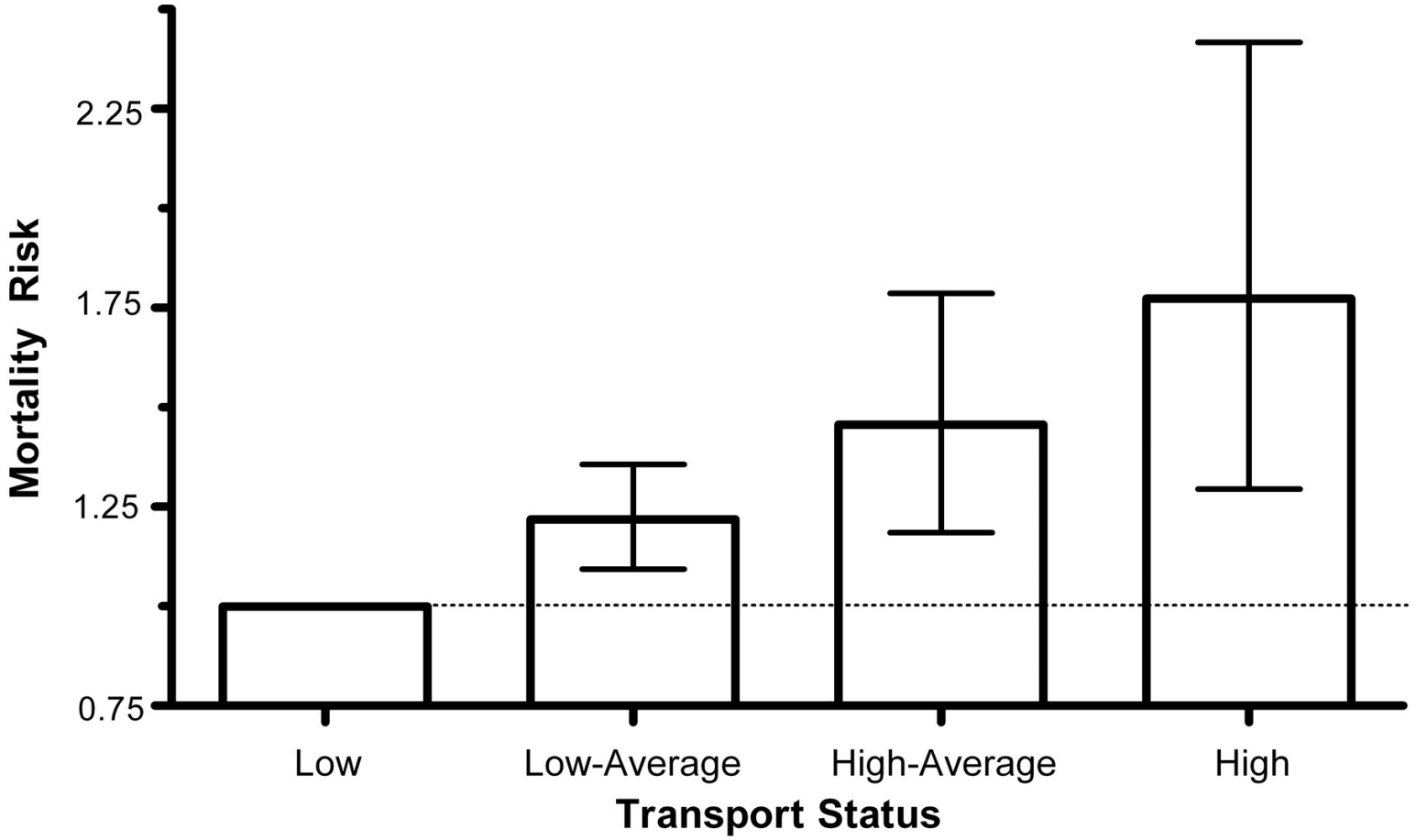
Cas clinique 1

WJ 41 ans - 90 kgs
IRT: cause inconnue – retour greffe – DP pré-greffe pdt 3 ans
Prise en APD

Créat: 17 mg/dl – urée: 230 mg/dl
Hyper P
D/P créat: 0.76

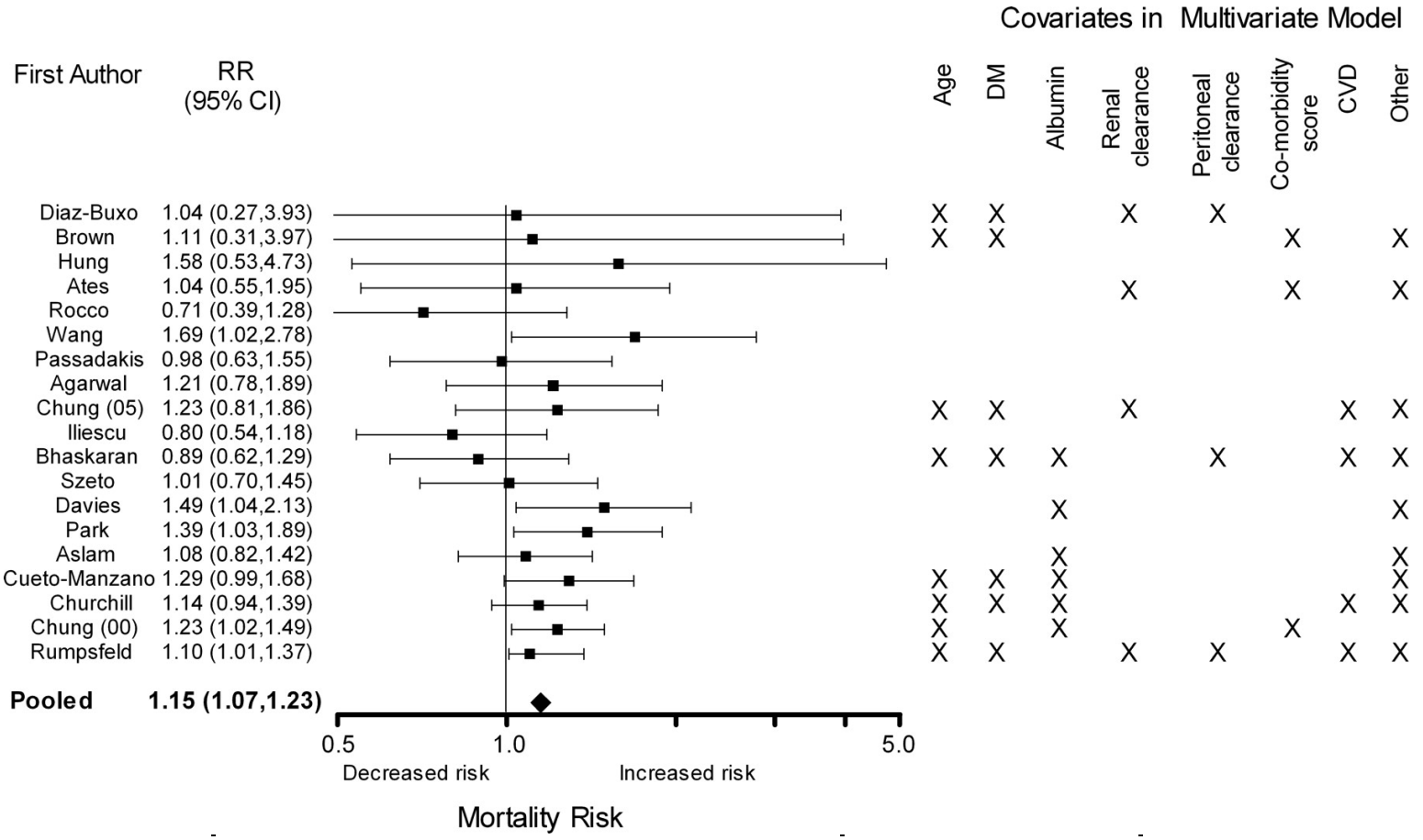
Quel est schéma de dialyse allez-vous proposer ?

RR estimates and 95% CI for peritoneal membrane transport status and mortality in PD patients



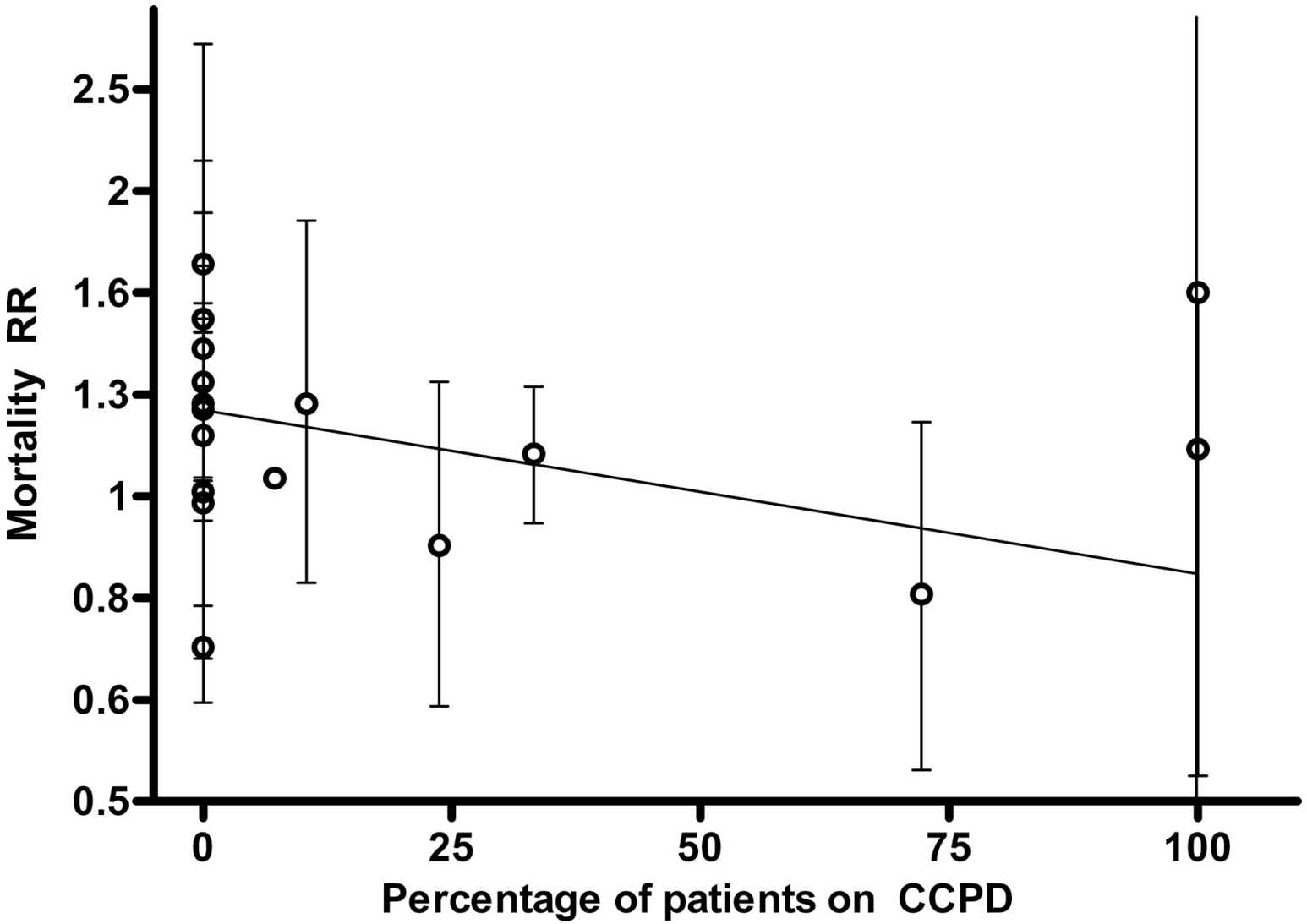
Brimble, K. S. et al. J Am Soc Nephrol 2006;17:2591-2598

Relative risk (RR) estimates and 95% confidence intervals (CI) for the ratio of the creatinine concentration in the dialysate to that in the plasma after a 4-h dwell (D/Pc; per 0.1 increment) and mortality in peritoneal dialysis (PD) patients



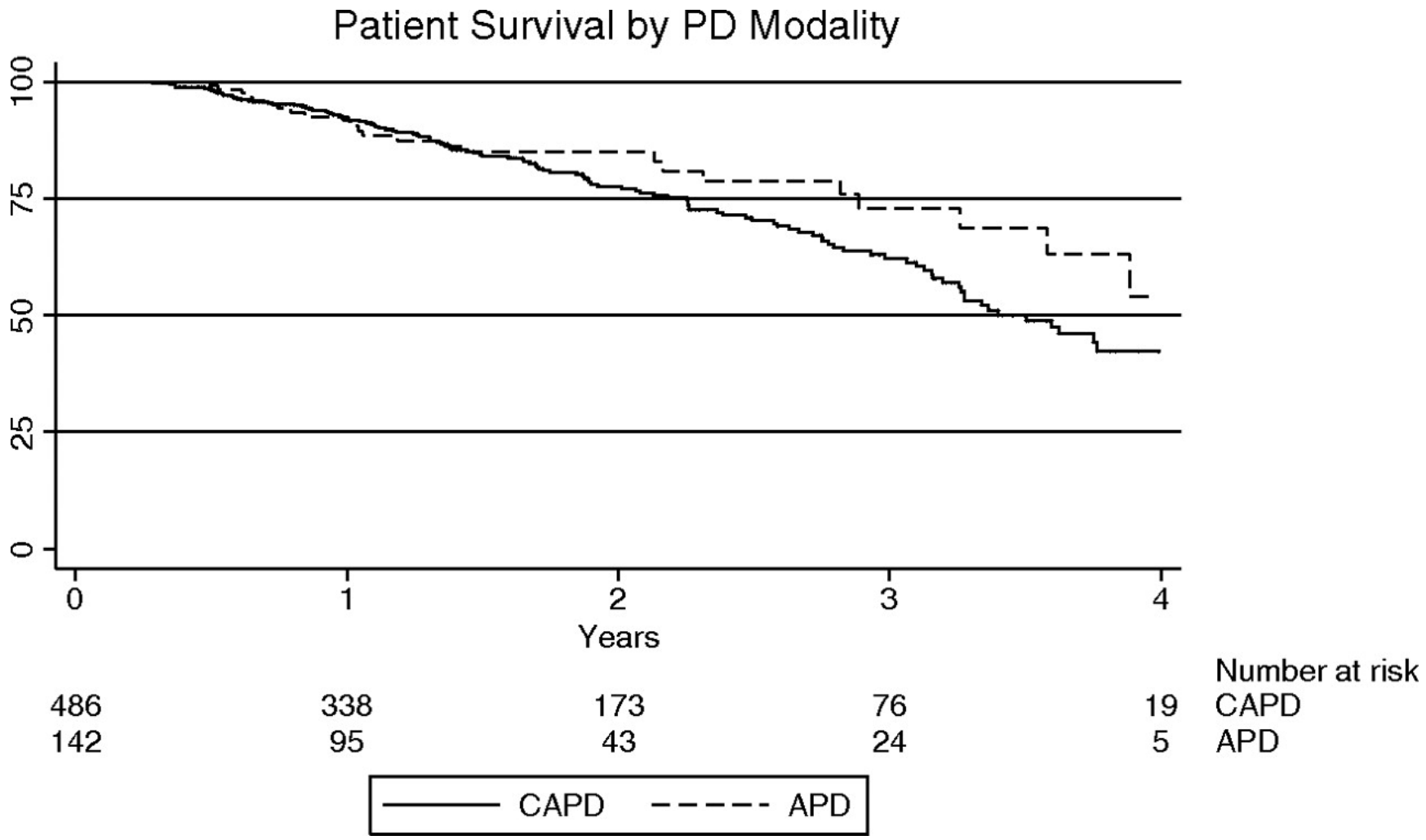
Brimble, K. S. et al. J Am Soc Nephrol 2006;17:2591-2598

RR estimates and 95% CI for individual studies included according to the proportion of patients who were on continuous cycler peritoneal dialysis (CCPD)



Brimble, K. S. et al. J Am Soc Nephrol 2006;17:2591-2598

Kaplan–Meier graph showing patient survival in 628 high transporters treated with APD or CAPD.



Johnson D W et al. Nephrol. Dial. Transplant. 2010;25:1973-1979

Cas clinique 1

Prise en APD : débit urine : 0 ml / 24 H

échange jour 12H00 : 2000 mls icodextrine (10 H)

UF : 300 mls

4 cycles nocturnes de 2500 mls (8H)

stagnation: 1H20

UF: 1800 mls

LOB: 2000 mls dianeal 2.27 % (6H)

UF: 200 mls

Cas clinique 1

KT/V: 1.81

Creat clear: 53.23 L/Wk/1.73

Evolution : pas de modification des paramètres biologiques

Asthénie +++

état général précaire

Quelle est votre attitude ?

Cas clinique 1

Majoration volume jour : 2000 à 2500 ml

Majoration : LOB : 2000 à 2500 ml

Majoration volume/échange : 2500 à 2800 ml/cycle

Pas amélioration !!!! Votre attitude ?

Cas clinique 2

Un patient Africain de 62 ans, diabétique IR, en DPA depuis 3 ans (IRT sur néphropathie diabétique), consulte pour rétention hydro-sodée et diminution de l'UF nocturne.

En DPA : fuite inguino-scrotale bilatérale R/cure chirurgicale selon Shouldice.

PET avec un dialysat hypertonique 3.86 % : hyperperméable (D/P créat : 0.83).
Le patient devient anurique après 18 mois de DP.

PET successifs (après 1 et 2 ans) : D/P créat : 0.91 et 0.83, respectivement.
2 péritonites à Citrobacter freundii : l'évolution est rapidement favorable sous Ciprofloxacine per os.

1 mois après 2ème péritonite, il présente d'importants oedèmes des membres inférieurs qui sont apparus en une semaine, une stase pulmonaire bilatérale, une hypertension artérielle sévère d'apparition récente (180/95 mmHg) et un gain pondéral de 3 kgs (en une semaine). L'examen clinique et la radiographie du thorax excluent un épanchement pleural. Une radiographie de l'abdomen montre un bon positionnement du cathéter de DP.

Cas clinique 2

Le schéma de dialyse comprend :

- 4 cycles nocturnes de 2100 ml de dialysat 2.27 % (temps de stase de 1h30) ; UF : 150 ml
- une poche de jour avec 2000 ml d'icodextrine (stagnation de 13H00) ; UF : 300 ml
- un échange de jour (stagnation de 3H00) avec 2100 ml de dialysat 2.27 % ; UF : 100 ml

Le remplacement du dialysat 2.27 % par du dialysat 3.86 % n'améliore pas significativement l'ultrafiltration. Un nouveau test d'équilibration péritonéale avec un dialysat 3.86 % est réalisé.

Cas clinique 2

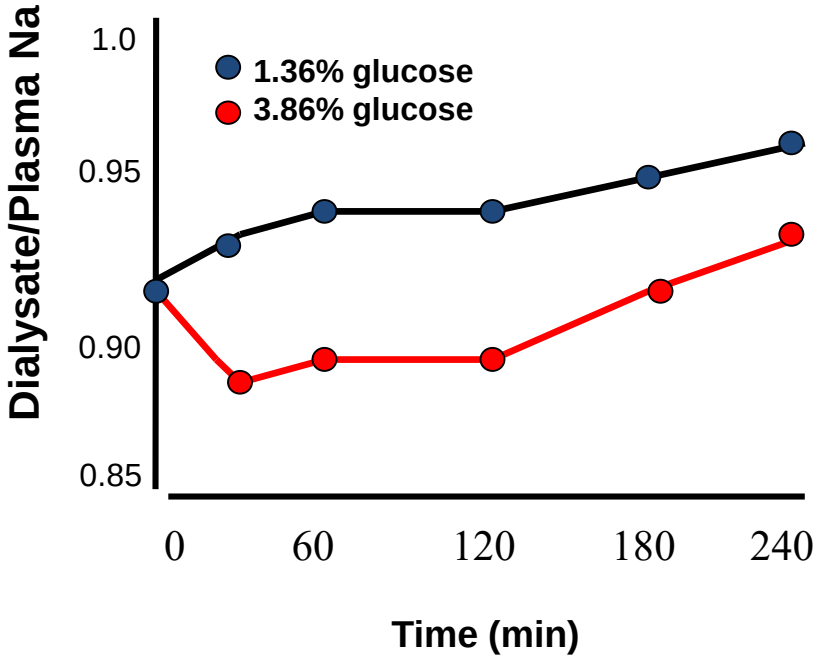
PET n° 3	Temps 0	Temps 30 ‘	Temps 60 ‘	Temps 120 ‘	Temps 240 ‘	Valeur sérique (120 min)
Créatinine (mg/dl)	2.6	5.8	7.4	9.5	12.1	13.5
Glucose (mg/dl)	3210	2220	1790	1300	835	402
Sodium (mmol/L)	125	116	114	115	118	132
UF totale	-	-	-	-	600 ml	-

PET n° 4	Temps 0	Temps 30 ‘	Temps 60 ‘	Temps 120 ‘	Temps 240 ‘	Valeur sérique (120 min)
Créatinine (mg/dl)	3.1	6.0	8.4	10.7	13.1	13.4
Glucose (mg/dl)	3140	2470	1920	1255	660	93
Sodium (mmol/L)	129	128	128	128	129	130
UF totale	-	-	-	-	200 ml	-

Le volume résiduel calculé par PD Adequest lors de ce dernier test est de 411 ml.

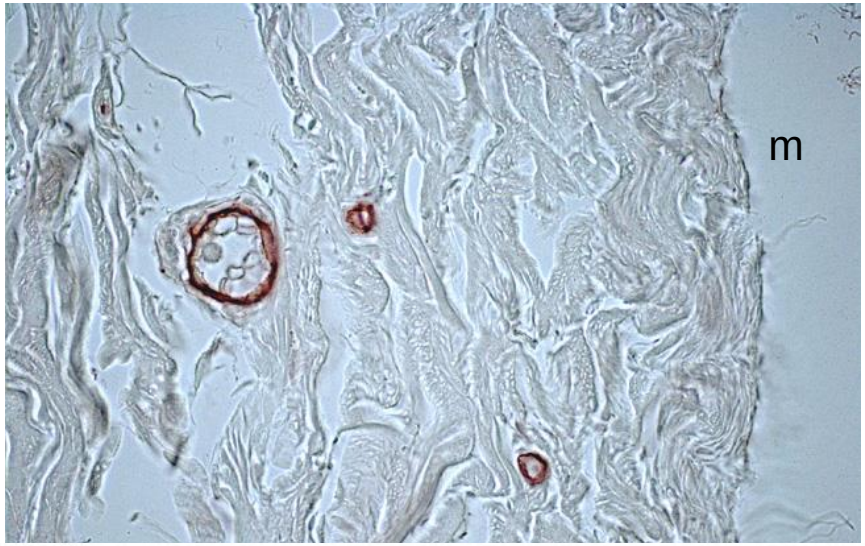
Quelle est la cause de la perte d’ultrafiltration observée chez ce patient ?

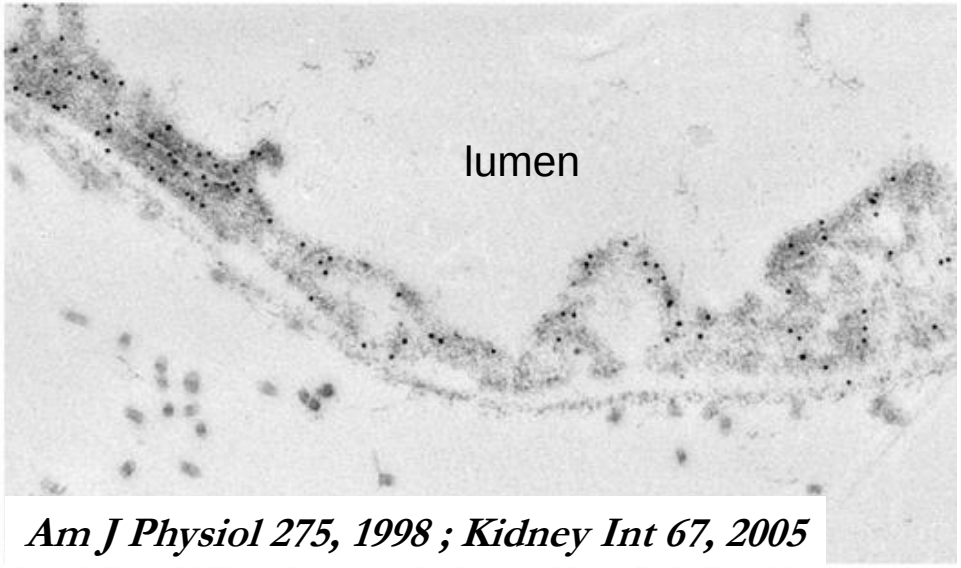
Sodium sieving



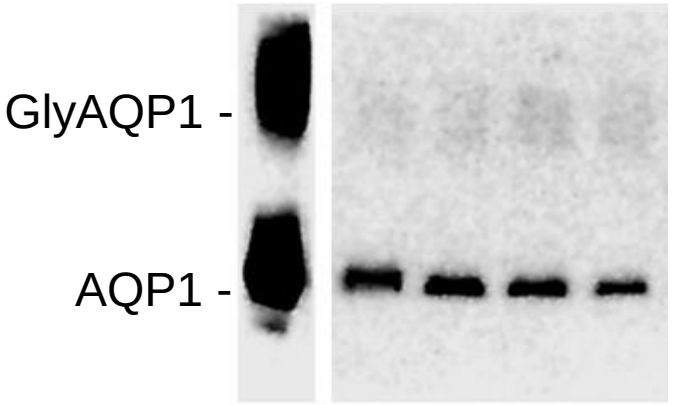
Hypertonic dialysate : sodium sieving

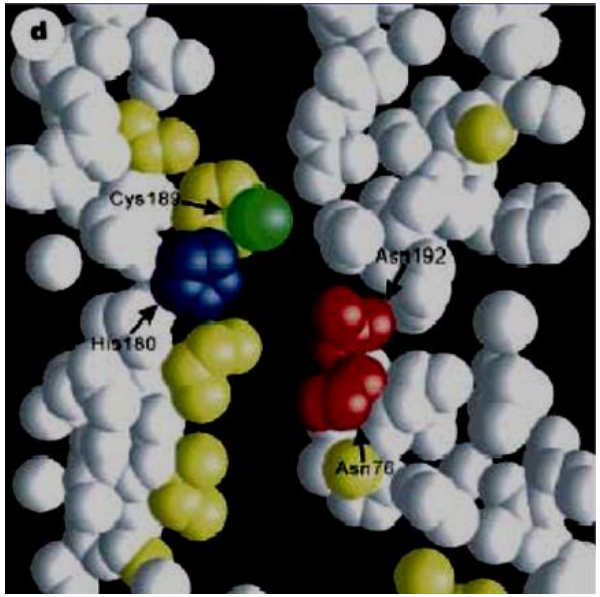
Distribution of Aquaporin-1 in the Endothelium Lining Peritoneal Capillaries





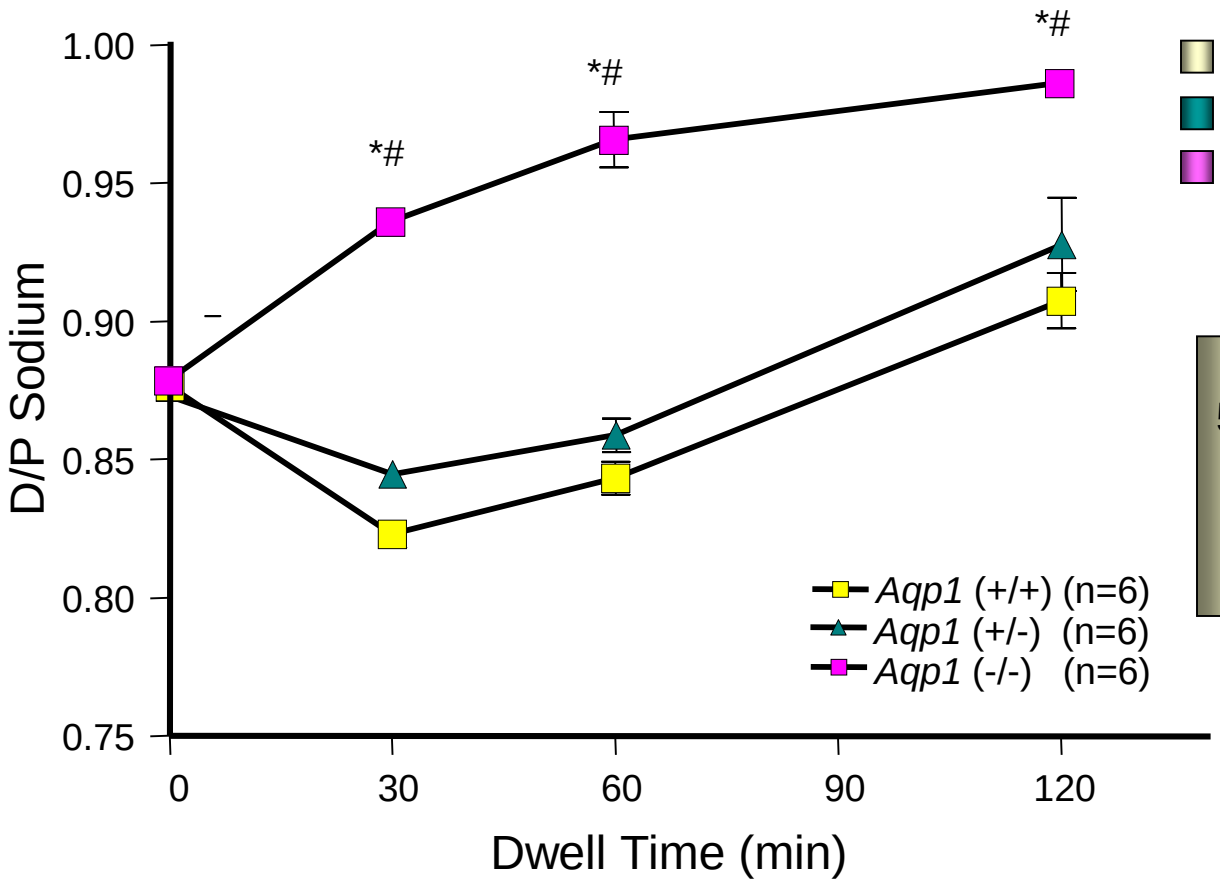
Am J Physiol 275, 1998 ; Kidney Int 67, 2005

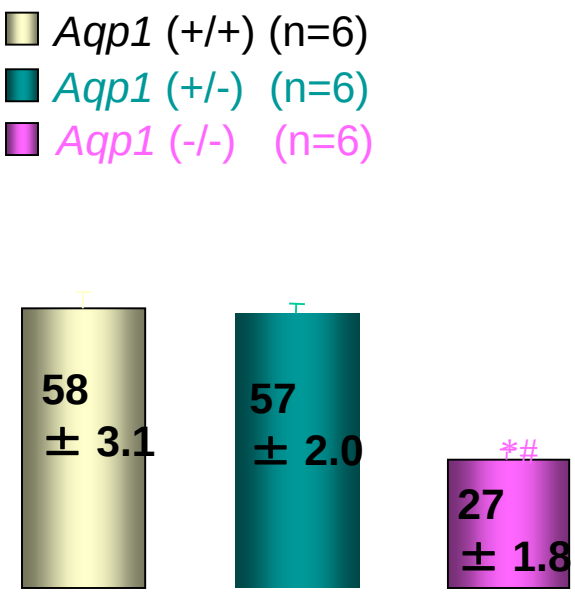




→ **Structure : narrow pore 3.0 Å**
→ **Specificity for water only (no urea, glucose)**
→ **Distribution in endothelium**

Aquaporine-1 : contrepartie moléculaire du pore ultrafin





Ni et al; Kidney Int 2006

Cas clinique 3

Mr BA 73 ans – 76 kgs
IRT : ADPKD
Prise en DPCA : 4 échanges /j : 1 x 1.36 %
2 x 2.27 %
1 x EN

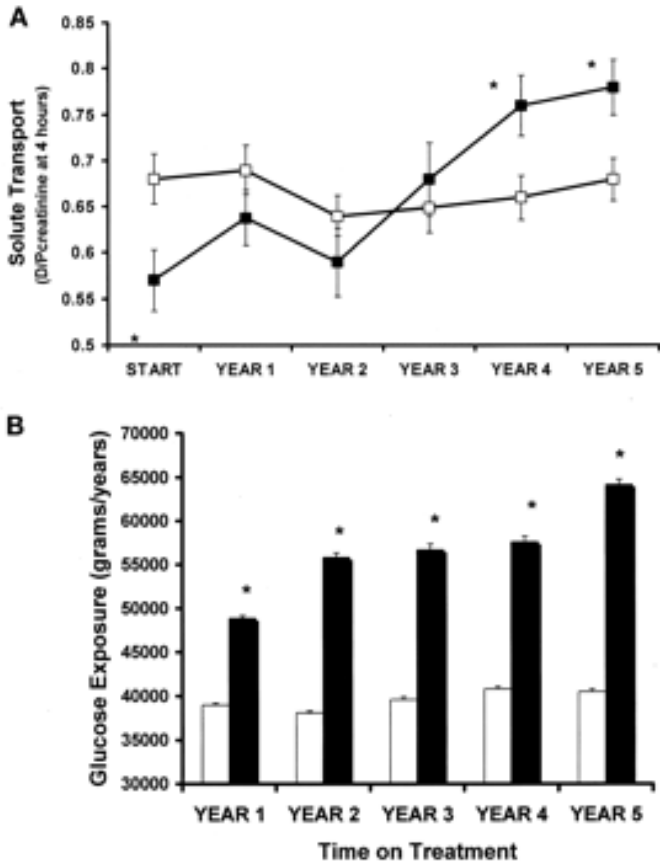
évolution clinique sans particularité ; débit rénal résiduel : > 1000 ml/24 H

D/P créat Tps 0 : 0.73
Tps 1 an : 0.75
Tps 2 ans : 0.79
Tps 4 ans : 0.84

Que pensez-vous ? Risque ?
Changement prescription ?

Quel dialysat ? Minimiser la charge en glucose !

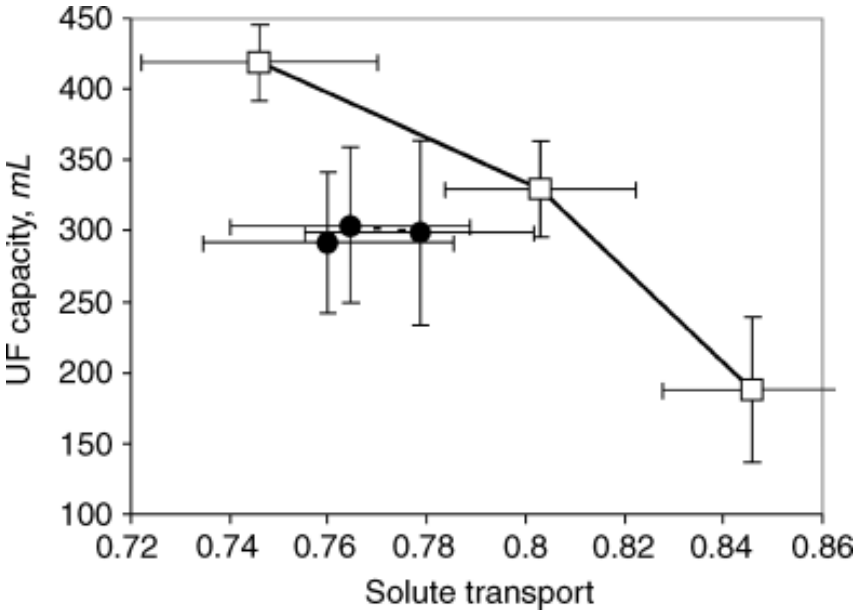
Solute Transport and glucose load



Davies J Am Soc Nephrol 2001

Preservation of the PM (the EAPOS study)

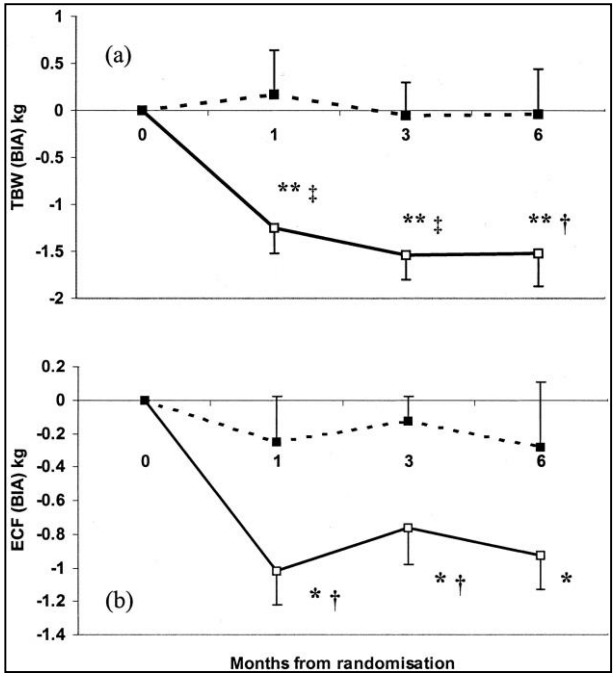
<u>icodextrin vs no icodextrin</u>



Brown et al J Am Soc Nephrol 2003
Davies Kidney Int 2005

Quel dialysat ? Minimiser la charge en glucose !

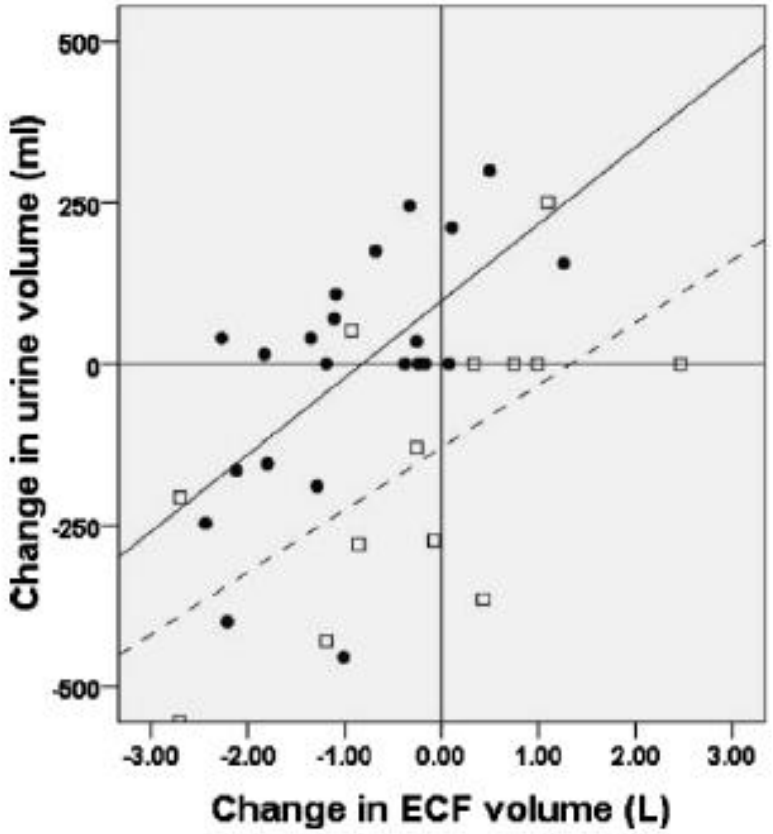
Fluid control: icodextrin vs glucose based dialysates



Davies J Am Soc Nephrol 2003

Points of consideration

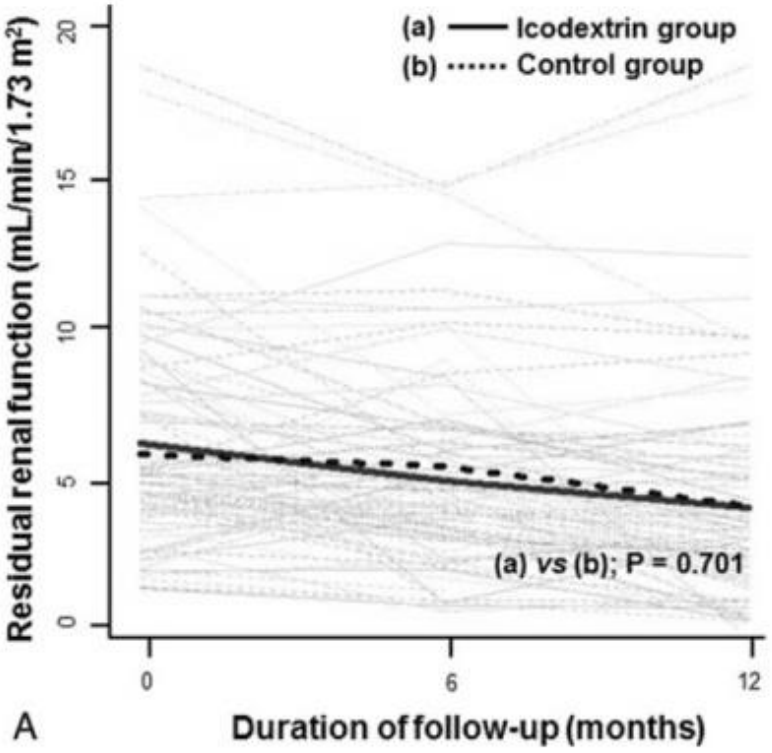
Icodextrin and preservation of residual renal function

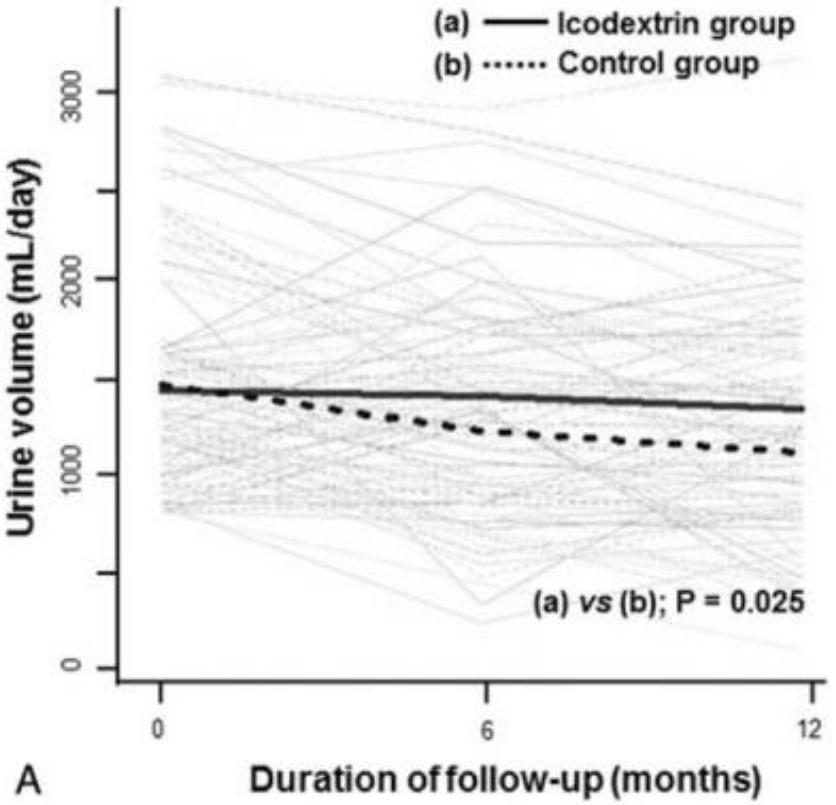


Davies SJ et al Nephrol Dial Transplant 2008 ; 23 : 2982-2988

Points of consideration

Icodextrin and preservation of residual renal function





Chang TI et al Medicine (Baltimore) 2016 Mar; 95(13): e2991

Cas clinique 4

Mme NA 36 ans – 56 kgs
IRT : LED
Prise en DPCA : 4 échanges /j : 3 x 1.36 %
1 x EN

Après 1 mois de DP

Vous êtes de garde ! Que faites –vous ?

A. Continuer DP est très risqué !
B. Complication en DP ? Politique du service : transfert en HD !
C. Vous avez la réponse !

Cas clinique 4

Mme NA 36 ans – 56 kgs
IRT : LED
Prise en DPCA : 4 échanges /j : 3 x 1.36 %
1 x EN

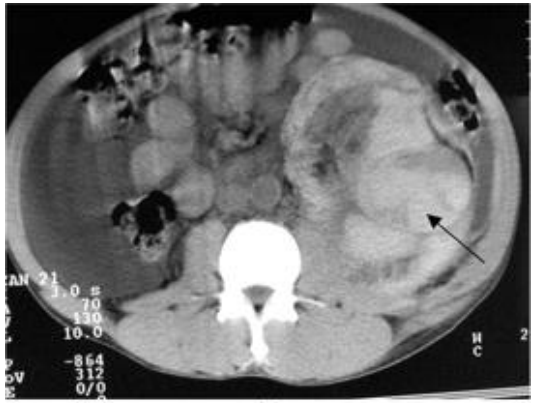
Après 1 mois de DP

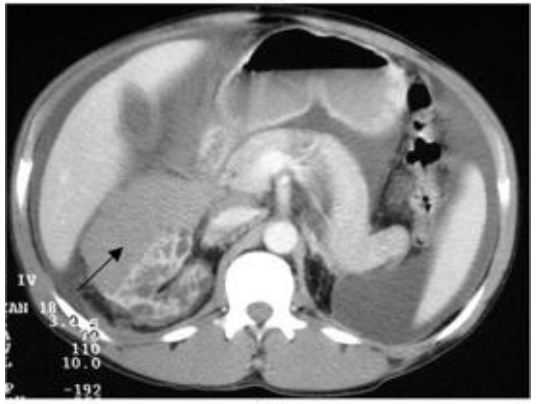
Het: 0.3 %

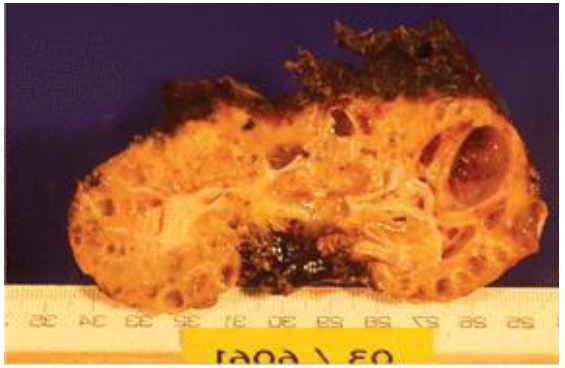
<u>Causes of haemorrhagic dialysates</u>

- menses-ovulation (retrograde uterine bleeding)
- Endometriosis of peritoneal cavity
- intra-abdominal « catastrophe »

Haemorrhagic dialysate

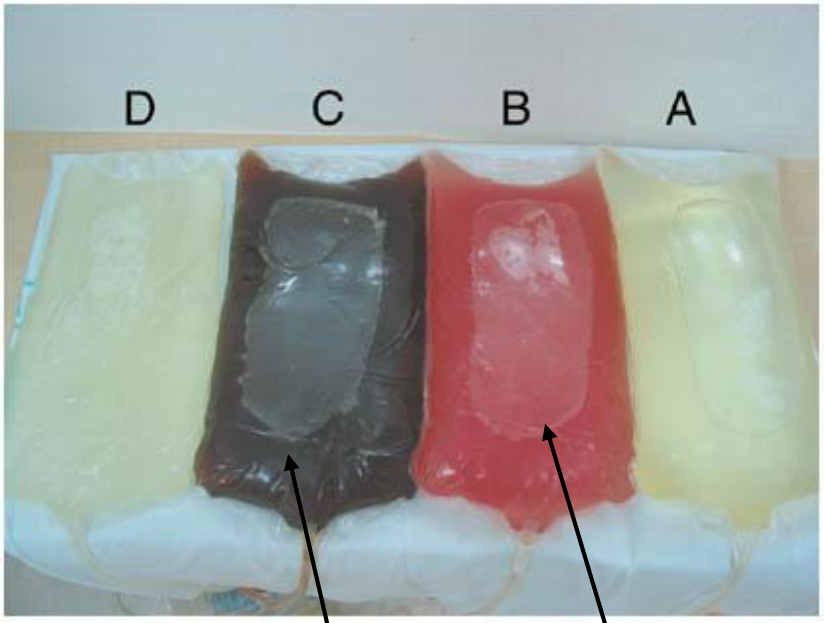

(a)


(b)


(a)


(b)

Borras et al NDT 2006



Artificial bloody PD effluent

Coca-cola PD effluent : rhabdomyolysis

Lai et al Kidney Int 2006

Cas clinique 5

Mme MA 78 ans – 54 kgs
IRT : NAS
Prise en DPCA : 4 échanges /j : 1 x 1.36 %
2 x 2.27 %
1 x EN
évolution clinique sans particularité ; débit rénal résiduel : > 1000 ml/24 H

Infection urinaire basse ; MT : R/ciproxine500 mg 2x/j pdt 10 jrs

2 sem plus tard : admise avec une péritonite sévère !

Que pensez-vous ? Votre attitude ?

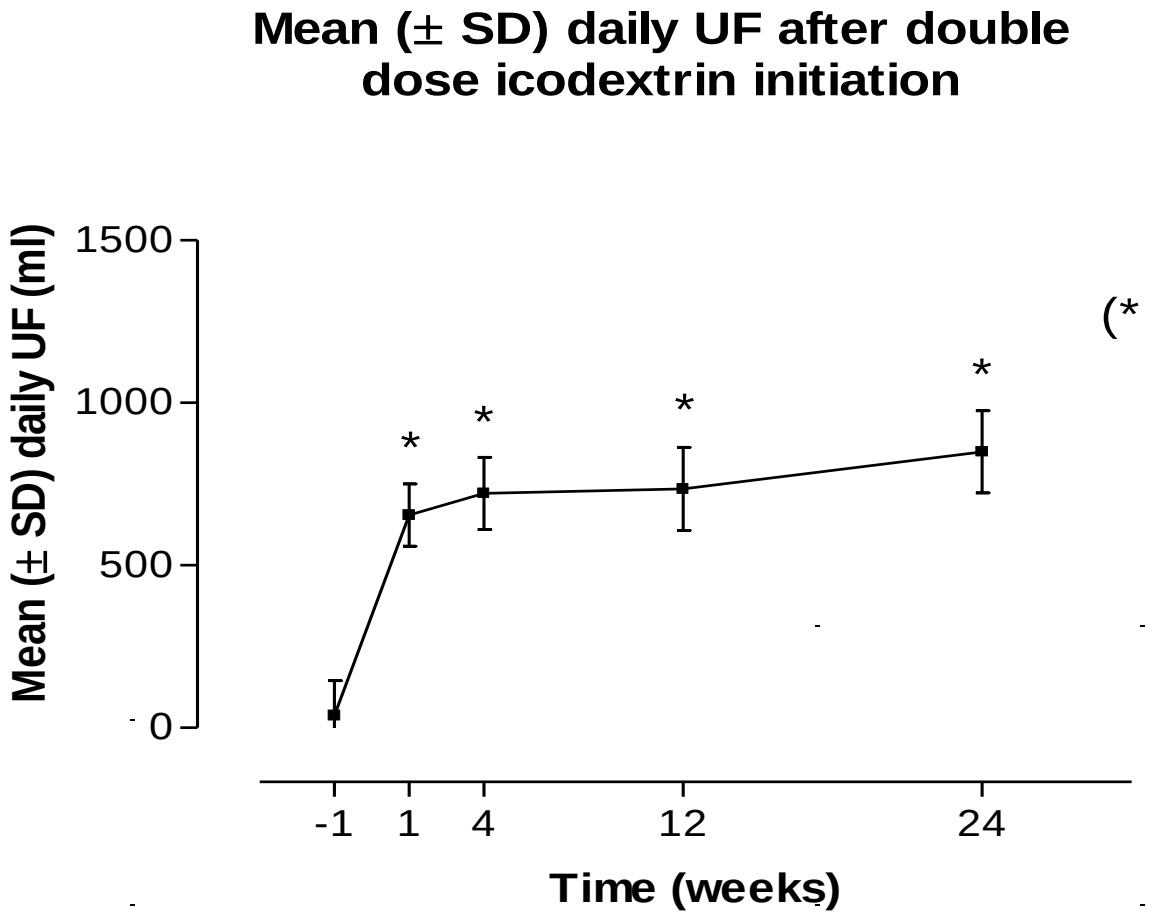
Cas clinique 5

Mme MA 78 ans – 54 kgs – péritonite mycotique !!!
Arrêt DP – shift en HD : très mal tolérée
Reprise DP

UFF !!!
PET : D/P creat 0.78 avant péritonite à 0.48 maintenant
Abolition sodium sieving !!!!

Que proposez-vous ?

Cas clinique 5 : Double dose icodextrine !



(* p<0.01)

Cas clinique 5 : Double dose icodextrine !

Permet d'augmenter l'efficacité de l'UF
Pas de toxicité clinique

Natrémies :
134.6 ± 3.2 mmol/l at baseline → 130,4 ± 2.4 mmol/l at 6 months (p = < 0.01).
Cette réduction de la natrémie était asymptomatique chez tout les patients.

Pas d'augmentation des métabolites de l'ico

Augmente la survie de la technique de DP chez des patients présentant une hypervolémie résistante au traitement (au moins 6 mois chez tous les patients et jusqu'à une moyenne de 15.8 (15 – 63) mois chez 4 patients

Ballout et al Perit Dial Int 2011

DIDO study

Design & Objectives

Efficacy and safety of a Double Icodextrin Dose in elderly incident CAPD patients on incremental Peritoneal Dialysis therapy

(ClinicalTrials.gov Identifier:NCT01944852)

- UCL, Keyrus, Société Francophone de Dialyse, RDPLF
- CEC Baxter global

Cas clinique 6

45 y.o. male on CAPD for one month
ESRD secondary to diabetic nephropathy
Seen at the outpatient clinic for

- -1 hr 3.86 % mini-PET
- - IPP measurement

The patient is doing well except for moderate fluid overload
Weight : 86 kgs Height : 178 cm

Cas clinique 6

Results of the mini-PET

- UF : 190 mls
- D/P creat : 0.656
- Dip in dialysate Na : 4 mmol

IPP determination

- Empty cavity : 16 cm H2O
- After 250 mls : 18 cm H2O

Cas clinique 6

IPP determination procedure was stopped ; no technical problems to explain those values

Clinical and paraclinical investigations disclosed the clue to that abnormal IPP, leading to subsequent resolution of the abnormality

Cas clinique 6

Results of the *second* mini-PET

UF : 210 mls

D/P creat : 0.651

Dip in dialysate Na : 6 mmol

Second IPP determination

Empty cavity : 5.5 cm H2O

After 250 mls : 13.5 cm H2O

After 1000 mls : 16.5 cm H2O

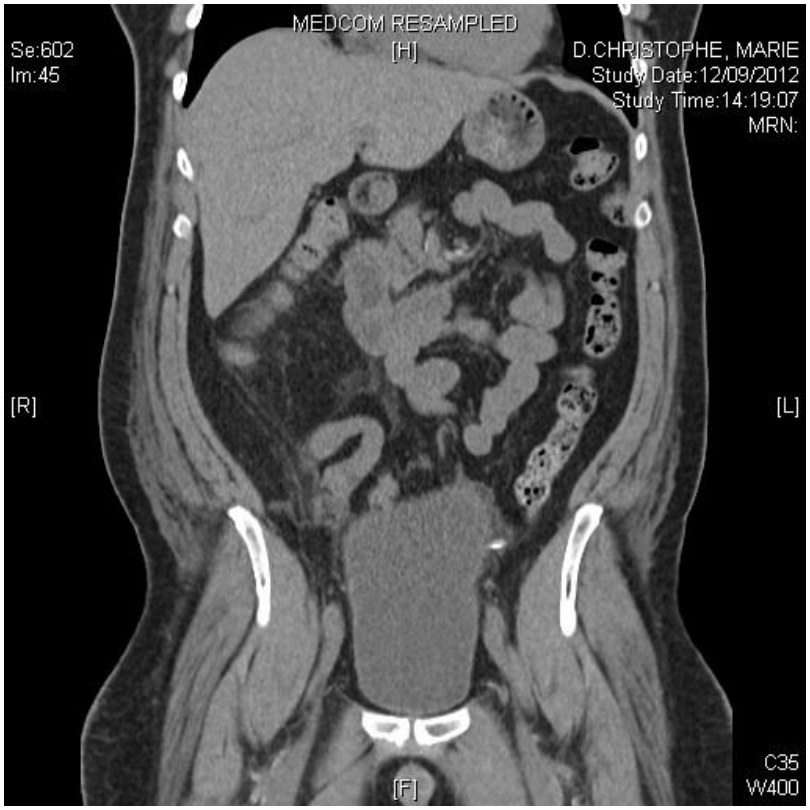
After 1500 mls : 18 cm H2O

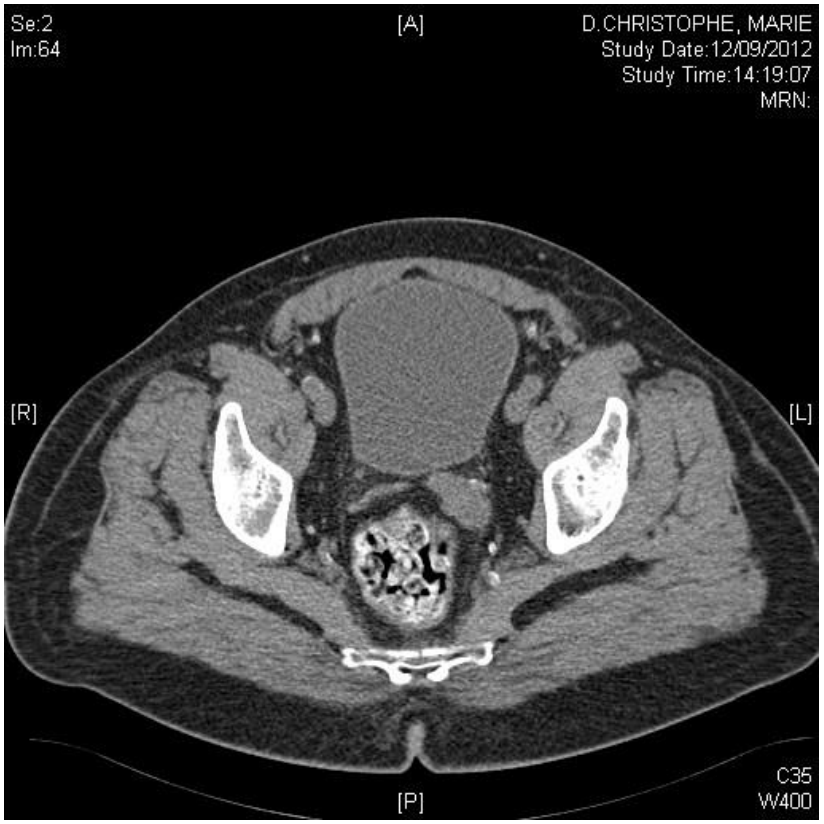
Cas clinique 6

What was the cause of the observed abnormalities ?

What was the diagnostic procedure ?

Cas clinique 6





Cas clinique 7

Francesco:
Abdominal pain and cloudy dialysate

	D0	D2	D6	D9	D14
Abdominal pain	+++	+	-	-	-
WBC (/µl)	3440	650	140	430	640
PMN (%)	85	66	31	54	65
Culture	+	+	+	+	+
	Acinetobacter johnsonii (ciprofloxacin-sensitive)				

Vancomycin
Gentamycin

Ciprofloxacin
Fungal prophylaxis with fluconazole

Why did WBC increase in the peritoneal dialysate?

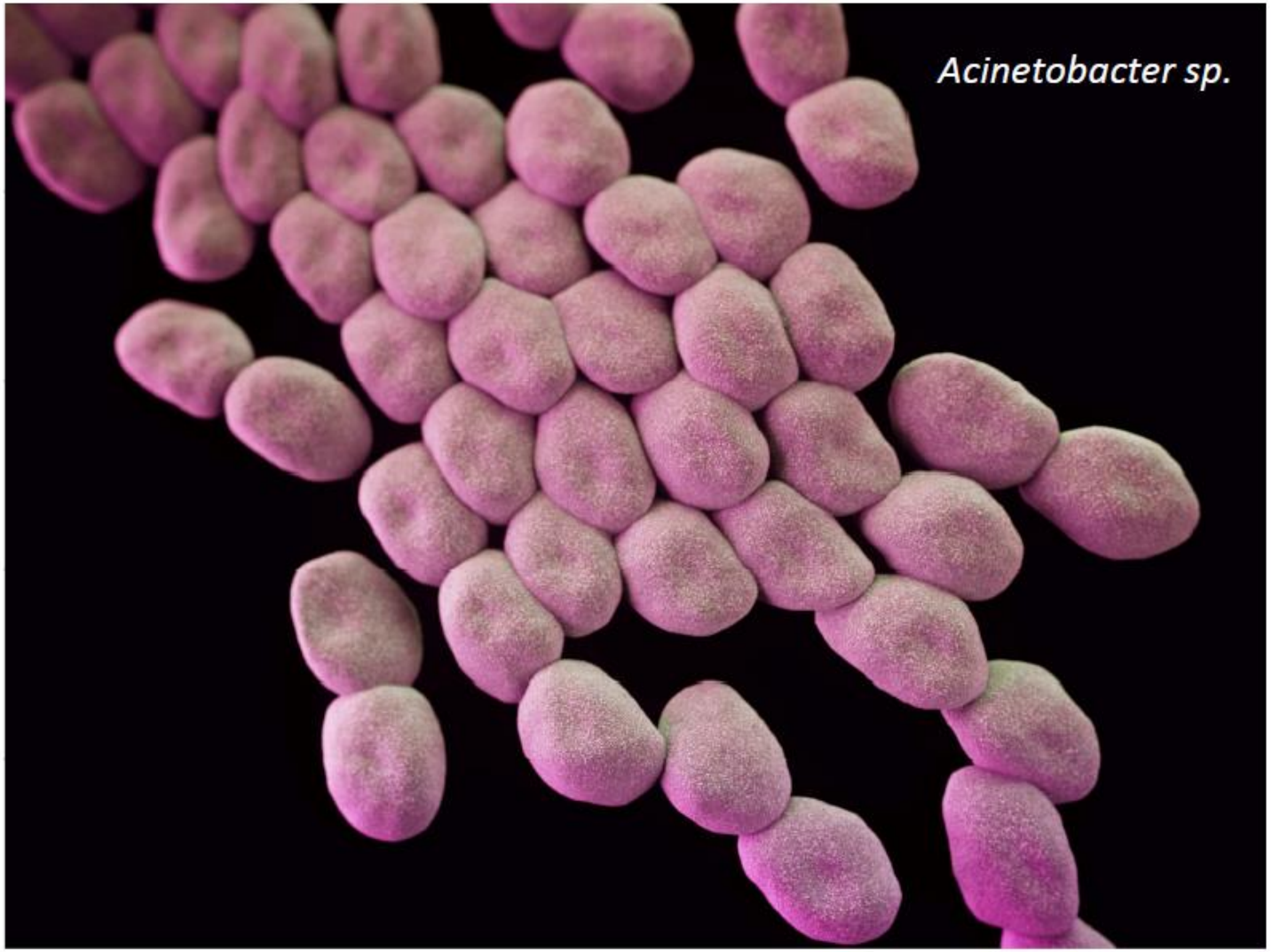
Cas clinique 7

Why did WBC increase in the peritoneal dialysate?

Which ONE of the following statements is MOST correct?

A. It is unlikely to be fungal because of the prophylaxis with fluconazole
B. The most likely cause is that the patient stopped taking his antibiotic
C. The causative organism bacame resistant to the antibiotic
D. The icodextrin has led to a chemical peritonitis via contamination with peptidoglycans
E. The blood levels of ciprofloxacin became subtherapeutic

Cas clinique 7



Cas clinique 7

Cas clinique 7