

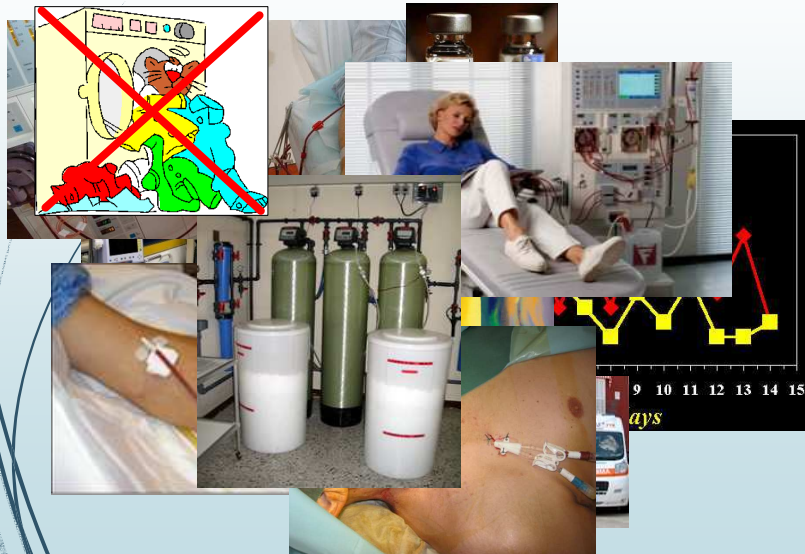
La scelta del trattamento sostitutivo artificiale:

Pro-emodialisi

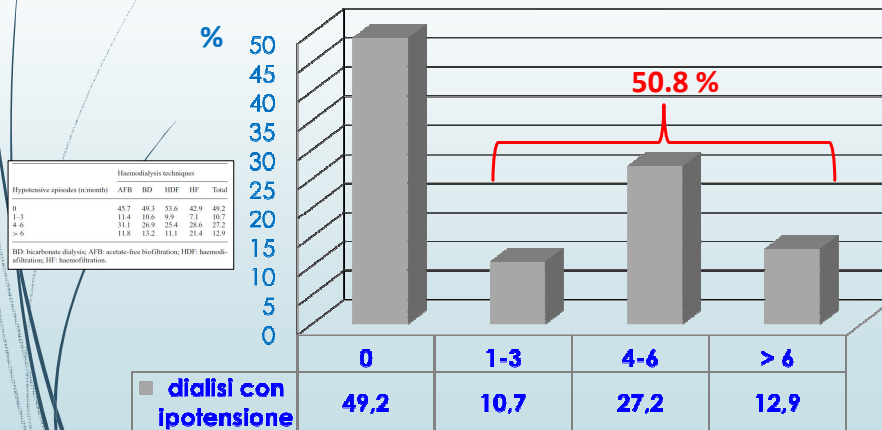
G. Martina

Cuneo, 25 gennaio 2014

Vantaggi della emodialisi nel paziente diabetico ?



Diabetics on dialysis in Italy: a nationwide epidemiological study



Modificato da: Panzetta G. et al. Nephrol Dial Transplant (2008) 23: 3988–3995

Theoretically, peritoneal dialysis (PD) has some advantages, such as hemodynamic stability and volume regulation, compared with hemodialysis (HD), which leads to PD preference for patients with cardiovascular comorbidity and diabetes.....

Chang J.H. 2013

..ma è sicuramente vero
nel paziente diabetico...
?

Potenziati svantaggi
dialisi peritoneale nel
con diabete mellito

Continuo assorbimento

- iperglicemia
- iperlipidemia

Advances in Peritoneal Dialysis, Vol. 22, 2006

Irum Shahab, Ramesh Khanna, Karl D. Nolph

Peritoneal Dialysis or
Hemodialysis? A Dilemma
for the Nephrologist

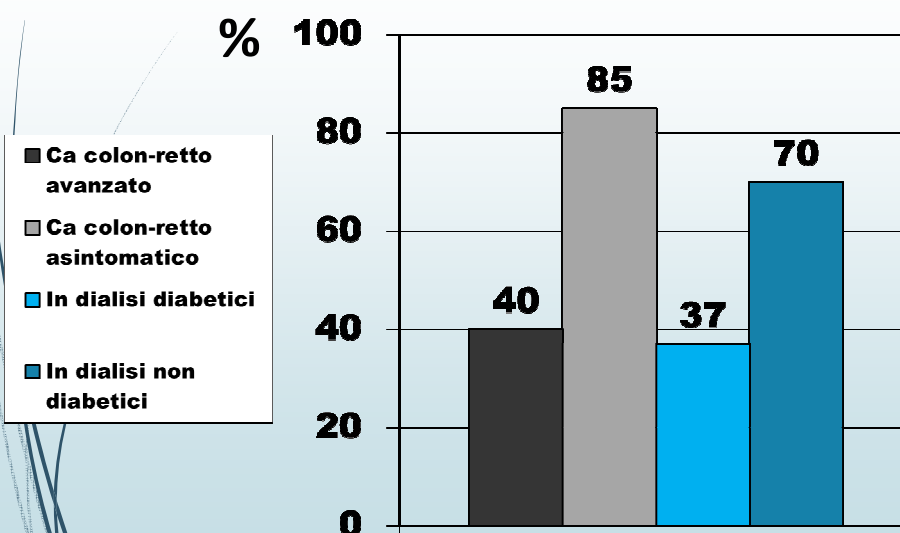
informazione

permeabilità peritoneale per
prodotti di degradazione del
amplifica questi aspetti negativi

➤ **Valutazioni
epidemiologiche**

➤ **Studi clinici**

Sopravvivenze a 5 anni a confronto

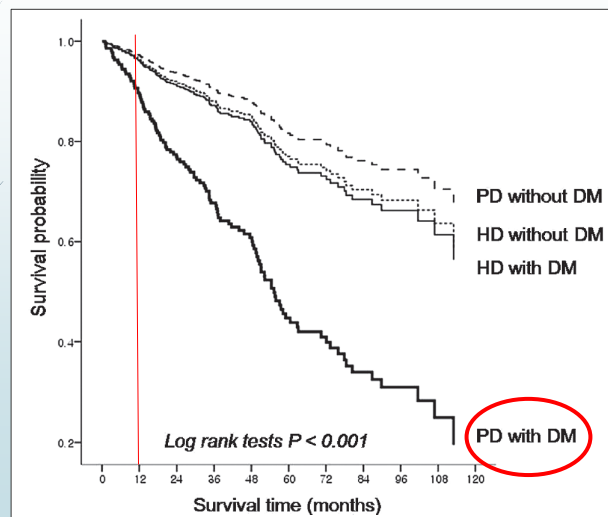


Patient and Physician Predictors of Peritoneal Dialysis Technique Failure: a Population Based, Retrospective Cohort Study

Variable	Parameter estimate	Adjusted hazard ratio	95% confidence interval	p Value
Age (every 1-year ↑)	0.04837	1.050	1.045–1.054	<0.0001
Sex male	−0.06344	0.939	0.855–1.031	0.1844
Coronary artery disease	0.23132	1.260	1.128–1.408	<0.0001
Congestive heart failure	0.45445	1.575	1.412–1.757	<0.0001
Diabetes mellitus	0.36610	1.442	1.311–1.586	<0.0001
Neighborhood education level ≤high school	0.08636	1.090	0.709–1.675	0.6936
Rural residence	0.15378	1.166	0.978–1.391	0.0874
Distance from center (every 1-km ↑)	−0.0001297	1.000	0.999–1.001	0.7866
Hemodialysis before peritoneal dialysis	0.06229	1.064	0.932–1.215	0.3572
Late referral	0.23488	1.265	1.138–1.406	<0.0001
Year (every 1-year ↑)	−0.04399	0.957	0.939–0.975	<0.0001

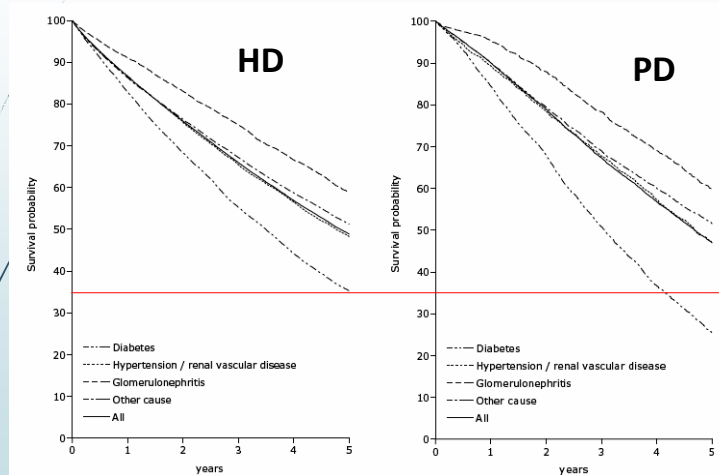
Chidambaram M. et al. *Perit Dial Int* 2011; 31:565-573

Hemodialysis leads to better survival in patients with diabetes or high comorbidity, compared to peritoneal dialysis.



Chang G.J. et al. *Tohoku J Exp Med.* 2013; 229: 271-277

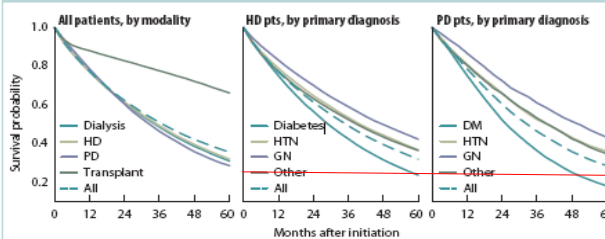
The 2007 ERA-EDTA Registry Annual Report - a Précis



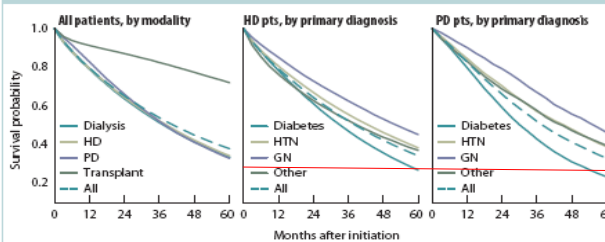
Stel V.S. et al. NDT Plus (2009) 2: 514–521

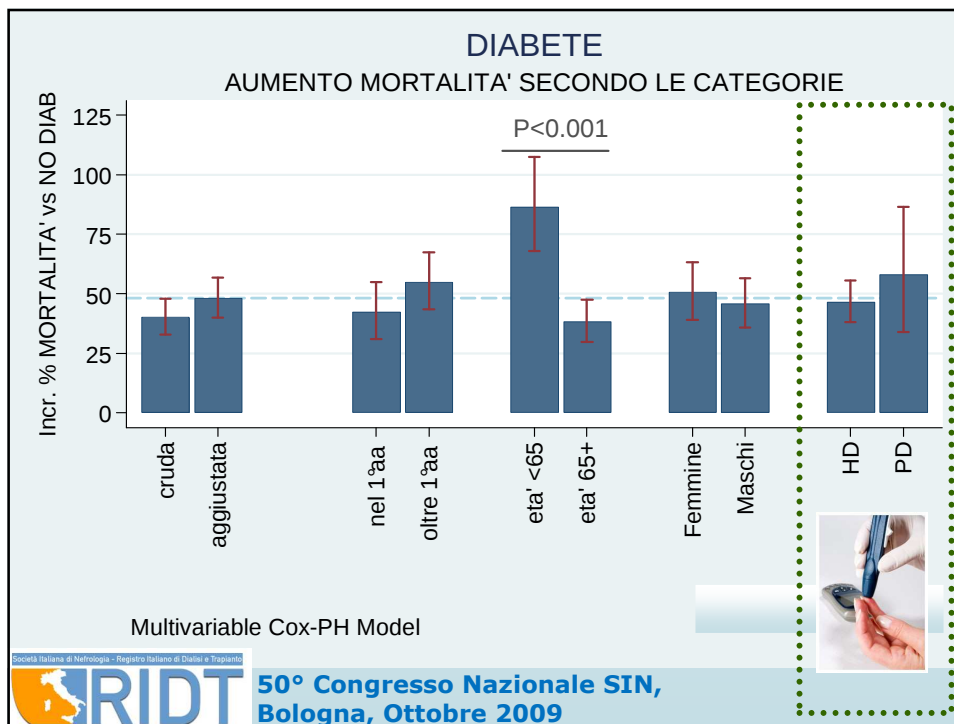
UNITED STATES RENAL DATA SYSTEM

(6.4) Adjusted survival: 1988–1992 incident patients



(6.5) Adjusted survival: 1993–1997 incident patients





**Importanti differenze
esistono quando si
stratificano i pazienti
diabetici in dialisi:**

- Condizioni di nutrizione
- Sesso
- Età
- Presenza di fattori comorbidi

Risk factors for mortality in diabetic peritoneal dialysis

Variable	Risk ratio (95% CI)	P-value
Age (per year)	1.07 (1.04–1.11)	<0.0001
Female gender	1.21 (0.91–1.59)	>0.05
Diabetes	1.08 (0.80–1.49)	>0.05
Cardiovascular disease	1.71 (1.25–2.36)	<0.001
Protein-energy wasting	1.53 (1.14–2.09)	<0.005
Serum albumin (per 1 g/L)	0.94 (0.88–0.99)	<0.05
RRF (per 1 mL/min)	0.84 (0.71–0.99)	<0.05
D/P Cr	0.98 (0.80–1.20)	>0.05

Abbreviations: CI, confidence interval; RRF, residual renal function; D/P Cr, dialysate to plasma creatinine concentration ratio at 4 h of dwell.

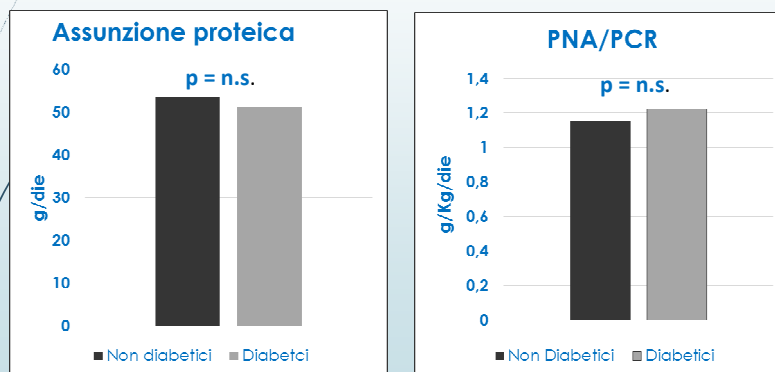
Chung S.H. et al. Nephrol Dial. Transplant. 2010; 25: 3742–48

HYPOPROTEINEMIA IN PATIENTS WITH DIABETES UNDERGOING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS IS ATTRIBUTABLE TO HIGH PERMEABILITY OF PERITONEAL MEMBRANE

Patient Characteristics and Blood Chemistry Data ^a for Patients With and Without Diabetes (DM) on Continuous Ambulatory Peritoneal Dialysis			
	Non DM	DM	p Value
Number	232	47	
Age	47.8±0.8	53.3±1.8	0.0038
Sex (male:female)	100:132	20:27	
Duration of PD (years)	3.7±0.2	2.7±0.3	0.0342
Peritonitis (episodes/patient-year)	1.15±0.12	1.30±0.22	0.6353
Plasma total protein (g/dL)	6.5±0.1	5.9±0.1	<0.0001
Plasma albumin (g/dL)	3.5±0.1	2.9±0.1	<0.0001
Plasma glucose (mg/dL)	99±1	146±11	<0.0001

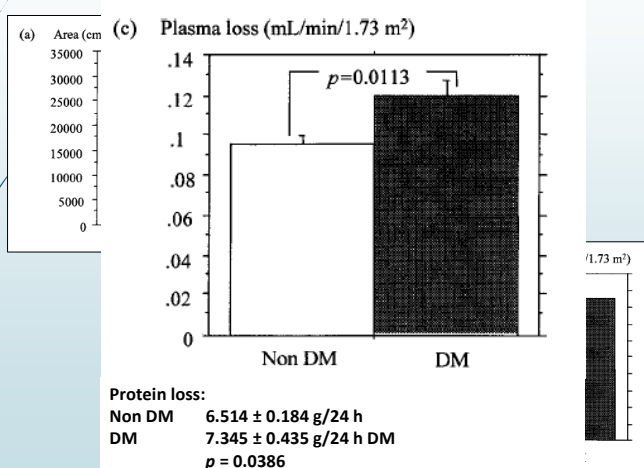
Modificato da: Nakamoto H. et al. Perit Dial Int 2003; 23: S72–S78

HYPOPROTEINEMIA IN PATIENTS WITH DIABETES UNDERGOING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS IS ATTRIBUTABLE TO HIGH PERMEABILITY OF PERITONEAL MEMBRANE



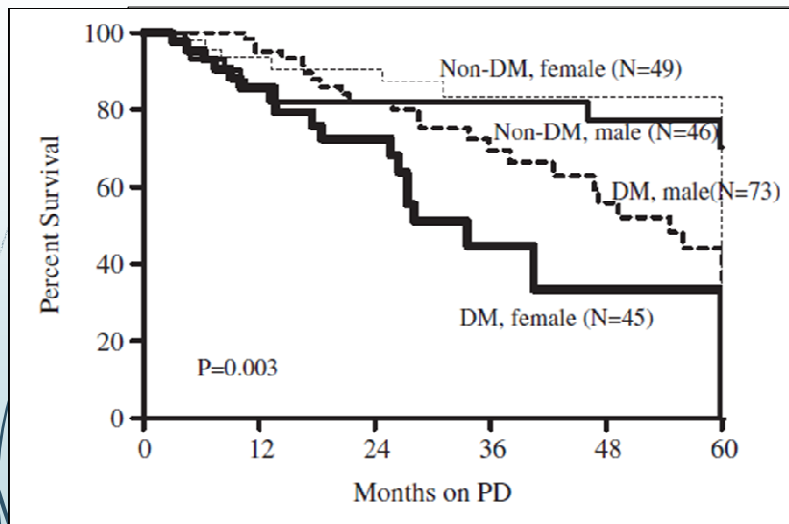
Modificato da: Nakamoto H. et al. Perit Dial Int 2003; 23: S72-S78

HYPOPROTEINEMIA IN PATIENTS WITH DIABETES UNDERGOING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS IS ATTRIBUTABLE TO HIGH PERMEABILITY OF PERITONEAL MEMBRANE



Nakamoto H. et al. Perit Dial Int 2003; 23: S72-S78

Risk factors for mortality in diabetic peritoneal dialysis

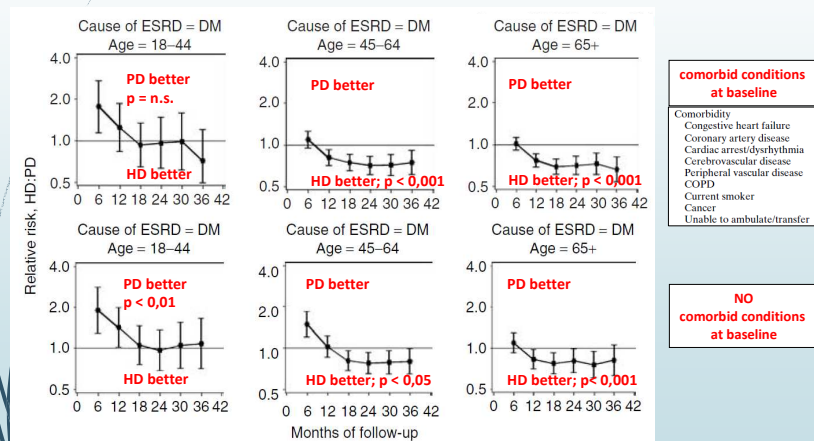


Chung S.H. et al. Nephrol Dial. Transplant. 2010; 25: 3742-48

**Importanti differenze
esistono quando si
stratificano i pazienti
diabetici in dialisi:**

- Condizioni di nutrizione
- Sesso
- **Età**
- **Presenza di fattori comorbidi**

The differential impact of risk factors on mortality in hemodialysis and peritoneal dialysis



Modificato da: Vonesh E.F. et al. Kidney International 2004; 66: 2389-2401

Hemodialysis and peritoneal dialysis are associated with similar outcomes for end-stage renal disease treatment in Canada

Table 3. Adjusted HRs (PD:HD) under a PHs model results by type of patient and age^a

Patient type	Age	HR ITT (95% CI)	HR AT (95% CI)
Non-DM	18-44	0.75 (0.57-0.99)*	0.70 (0.53-0.93)*
	45-64	0.90 (0.79-1.01) ^{NS}	0.85 (0.75-0.96)*
	65+	1.05 (0.98-1.12) ^{NS}	1.04 (0.97-1.11) ^{NS}
DM	18-44	0.99 (0.81-1.23) ^{NS}	0.91 (0.74-1.12) ^{NS}
	45-64	1.11 (1.02-1.22)*	1.20 (1.09-1.31)**
	65+	1.19 (1.11-1.29)**	1.26 (1.16-1.36)**

^aNS, not significant (P > 0.05).

*P-value < 0.05, **P-value < 0.001.

Yeates K. Et al. Nephrol Dial Transplant (2012) 27: 3568-3575

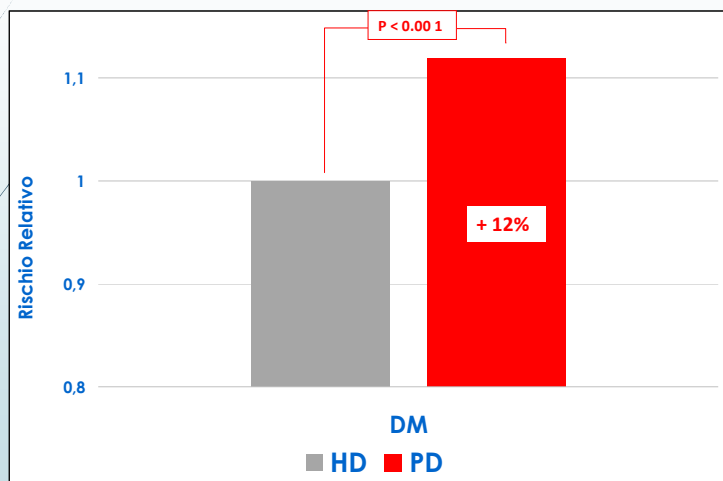
Fallimento della metodica dialitica e Morbilità

Patient and Physician Predictors of Peritoneal Dialysis Technique Failure: a Population Based, Retrospective Cohort Study

Risk Factors for Peritoneal Dialysis (PD) Technique Failure

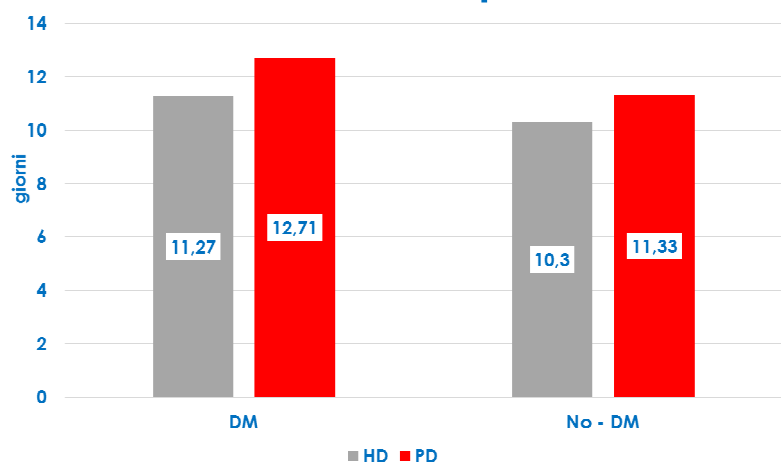
Variable	Parameter estimate	Adjusted hazard ratio	95% confidence interval	p Value
Age (every 1-year ↑)	0.01753	1.018	1.014–1.022	<0.0001
Sex male	−0.03642	0.964	0.862–1.079	0.5256
Coronary artery disease	0.01689	1.017	0.874–1.184	0.8276
Congestive heart failure	−0.03979	0.961	0.831–1.11	0.5915
Diabetes mellitus	0.27763	1.320	1.177–1.480	<0.0001
Neighborhood education level ≤high school	1.07335	2.925	1.755–4.877	<0.0001
Rural residence	−0.08949	0.914	0.740–1.129	0.4058
Distance from center (every 1-km ↑)	−0.0005514	0.999	0.998–1.001	0.3070
Hemodialysis before PD	0.21277	1.237	1.058–1.446	0.0076
Late referral	−0.08106	0.922	0.804–1.057	0.2456
Year (1-year ↑)	−0.00140	0.999	0.977–1.021	0.9016

Rischio di ricovero ospedaliero nei pazienti diabetici statunitensi: emodialisi vs dialisi peritoneale



Modificato da: Habach G. et al. J. Am. Soc. Nephrol. 1995; 5:1940-1948

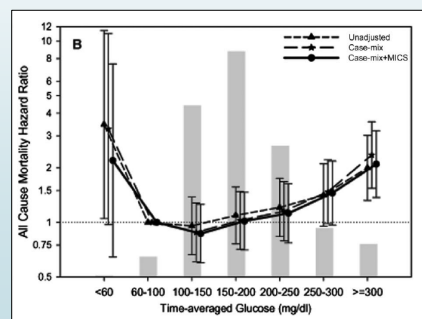
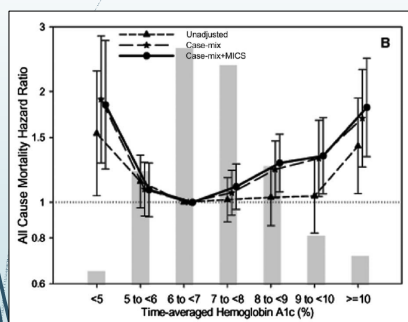
Durata ricovero ospedaliero



Modificato da: Habach G. et al. J. Am. Soc. Nephrol. 1995; 5:1940-1948

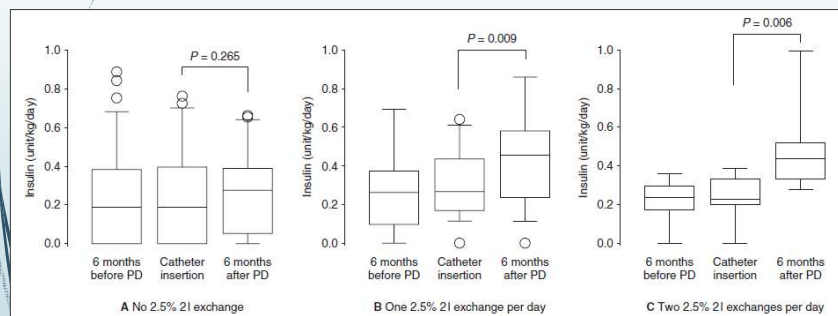
Quali sono le cause della prognosi peggiore nei diabetici in dialisi peritoneale ?

Glycemic Control and Survival in Peritoneal Dialysis Patients with Diabetes Mellitus



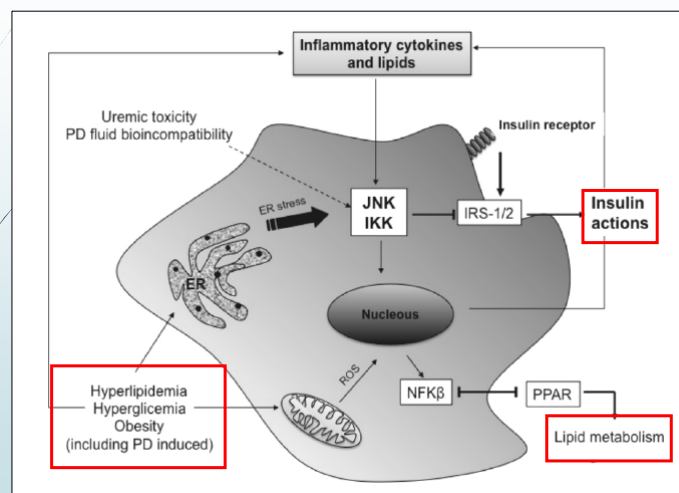
Duong U. et al. Clin J Am Soc Nephrol 6: 1041-1048, 2011.

Increased subcutaneous insulin requirements in diabetic patients recently commenced on peritoneal dialysis



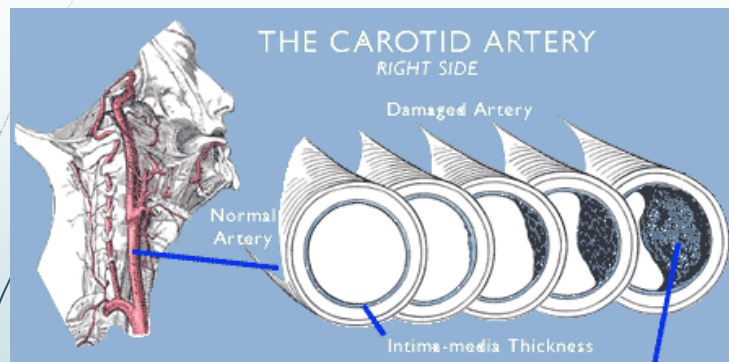
Szeto C. et al. Nephrol Dial Transplant (2007) 22: 1697–1702

Insulin resistance and glucose homeostasis in peritoneal dialysis



Fortes P.D. et al. Perit Dial Int 2009; 29(S2):S145–S148

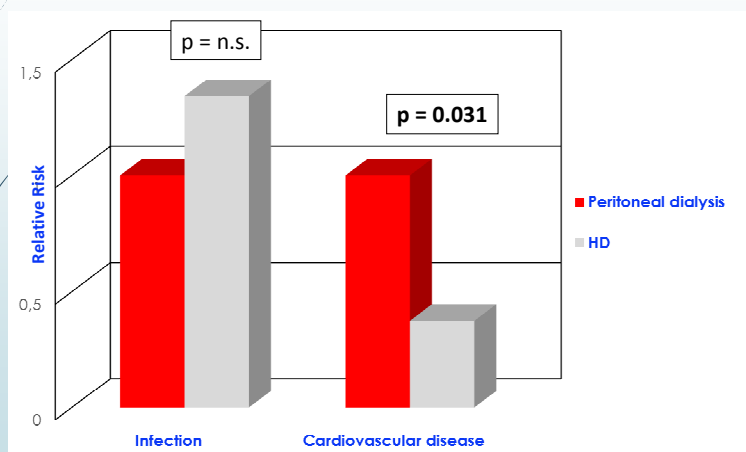
Pazienti in dialisi peritoneale: ispessimento intimale carotideo



	DM	No-DM				
Mean CIMT (mm)	0.60±0.08	0.54±0.03	<0.001	0.62±0.08	0.58±0.07	0.05

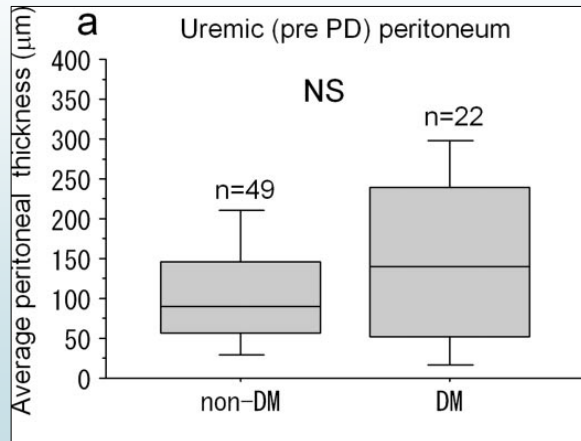
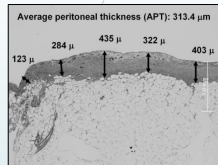
Prasad N. et al. Perit Dial Int 2009; 29(S2):S96–S101

RISCHIO RELATIVO DI MORTE Dialisi peritoneale vs emodialisi Pazienti diabetici



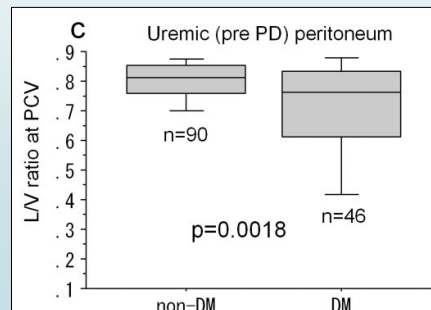
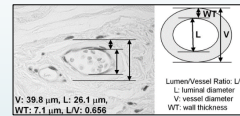
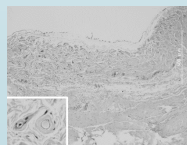
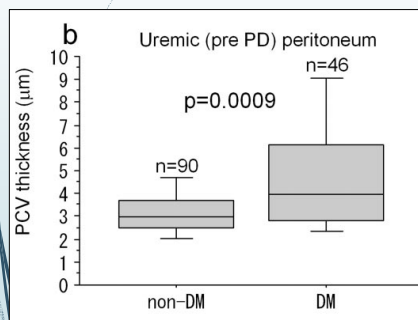
Modificato da: Lee C. et al. Perit Dial Int 2009; 29:182–190

Impact of Uremia, Diabetes, and Peritoneal Dialysis Itself on the Pathogenesis of Peritoneal Sclerosis: A Quantitative Study of Peritoneal Membrane Morphology



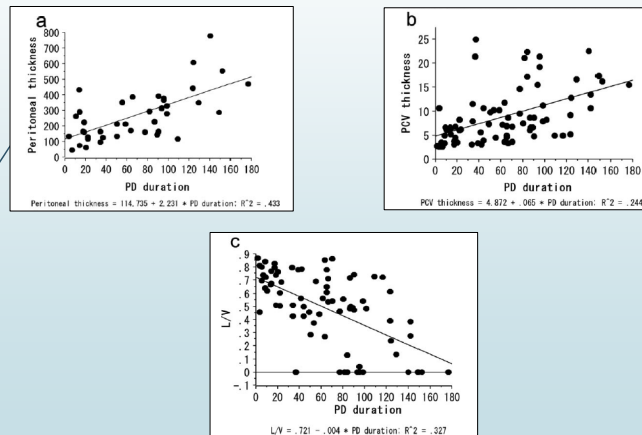
Honda K. et al. Clin J Am Soc Nephrol 3: 720-728, 2008

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Impact of Uremia, Diabetes, and Peritoneal Dialysis Itself on the Pathogenesis of Peritoneal Sclerosis: A Quantitative Study of Peritoneal Membrane Morphology



Honda K. Et Al. Clin J Am Soc Nephrol 3: 720-728, 2008

Cosa dicono le linee guida ?

- **Kidney Disease Outcomes Quality Initiative (K/DOQI – U.S.A.):** No recommendation.
- **UK Renal Association (United Kingdom):** No recommendation.
- **Canadian Society of Nephrology (Canada):** No recommendation.
- **ISPD Guidelines:** No recommendation.
- **European Best Practice Guidelines (Europe):** The type of dialysis method that should be favoured as first therapy is unsettled at present.
- **CARI Guidelines (Australia):** With loss of RRF, **PD may lead to worse outcomes than HD** (Level III evidence). **Haemodialysis is associated with improved long-term survival** (Level III evidence)

CONCLUSIONI

L'emodialisi è più indicata della dialisi peritoneale nei paziente diabetici ?

Molto probabilmente
Sì.....

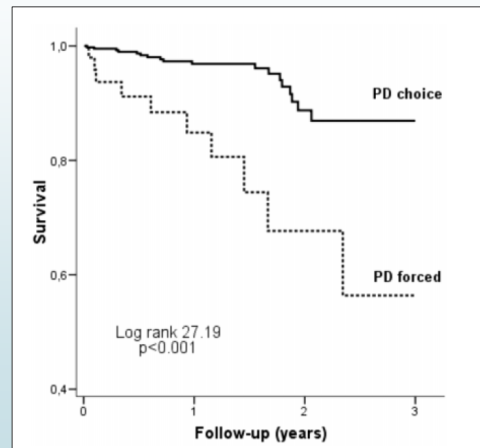
ma.....

..... Corretti confronti fra Emodialisi e Dialisi peritoneale richiedono la attenta stratificazione dei pazienti

E.F. Vonesh

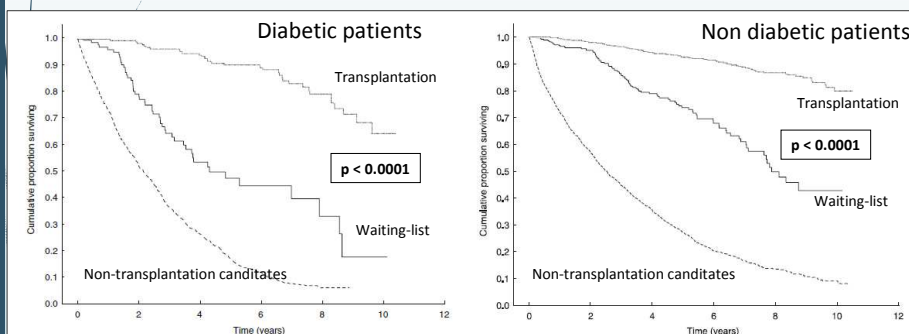
Kidney Int. 2004; 66: 2389–2401

Concordare con il paziente la strategia dialitica più opportuna



PREVIOUS COMORBIDITY AND LACK OF PATIENT FREE CHOICE OF TECHNIQUE
PREDICT EARLY MORTALITY IN PERITONEAL DIALYSIS
Portolés J. Et al. Perit Dial Int 2009; 29:150-157

Il trapianto è sempre la scelta migliore !!



Improved survival rate in patients with diabetes and end-stage renal disease in Denmark
V. R. Sørensen et al. Diabetologia (2007) 50:922-929

Peritoneal dialysis *versus* haemodialysis (adult)

Date written: November 2008
Final submission: March 2009
Author: Melissa Stanley

The CARL Guidelines

No recommendations possible based on Level I or II evidence

- Renal programs should include an integrated PD/HD program where therapies are not competitive...



Peritoneal dialysis *versus* haemodialysis (adult)

Date written: November 2008
Final submission: March 2009
Author: Melissa Stanley

The CARL Guidelines

No recommendations possible based on Level I or II evidence

-but rather complementary (Opinion)



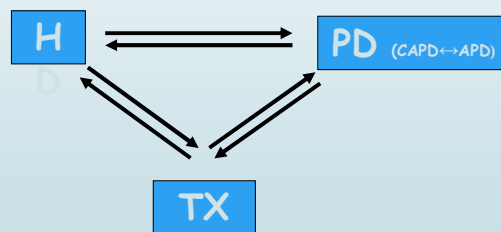
Peritoneal dialysis *versus* haemodialysis (adult)

Date written: November 2008
Final submission: March 2009
Author: Melissa Stanley

The CARL Guidelines

No recommendations possible based on Level I or II evidence

- A timely transfer from PD to HD may improve patient survival (Level IV evidence)



Grazie per l'attenzione