

ASSOCIATION BETWEEN DAILY HEMODIALYSIS, ACCESS TO RENAL TRANSPLANTATION AND PATIENT'S SURVIVAL IN FRANCE



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INTRODUCTION AND OBJECTIVES

End Stage Renal Disease (ESRD) is a chronic progressive disease and a major public health concern due to the dramatically increased number of patients these last decades. Hemodialysis (HD) 3 times a week is the dominant practice dispensed by nephrologists [1]. In recent years, several studies have investigated the development of new HD regimens. It has been showed that the increased weekly frequency of dialysis sessions would be the most physiological regimen to reproduce the functional role of kidneys [2]. Indeed, Daily Hemodialysis (DHD) has been developed to enhance patient's quality of life and blood purification. However, its effect on survival remains controversial [3] and the association between DHD and the access to renal transplantation never evaluated.

Objectives: The aim of this study was to analyze the association between DHD and survival then renal transplantation, in patients receiving DHD compared with matched ones treated by HD 3x/week.

METHODS

Data were extracted from the Renal Epidemiology and Information Network (REIN) registry.

Inclusion criteria:

- Age \geq 18 years
- Starting a DHD in a French region participating to REIN between 2003 and 2012
- Duration on DHD \geq 30 days
- Matching 1 patient on DHD to 3 patients on HD 3x/week

Matching procedure:

- By sex, age (± 2 years), year of dialysis initiation (± 2 years), dialysis facility and the logit of a propensity score (± 0.05)
- HD 3x/week issued from the same dialysis units

Statistical analysis:

Cause-specific hazard ratios were calculated using a non-parametric Cox model for survival outcome. Fine and Gray model to take into account the mortality risk before renal transplantation was applied to study renal transplantation outcome.

RESULTS

- 575 patients on DHD matched to 1696 patients on HD 3x/week.
- DHD mean age: 60.3 ± 17.3 years; HD 3x/week mean age: 60.5 ± 17.2 years.

1. Survival

At the endpoint (31/12/2013):

- 827/2271 death (36,4%)
 - **DHD:** 275 (48%) death; mean duration on diaysis: 4.3 ± 2.7 years
 - **HD 3x/week:** 552 (32,5%) death; mean duration on diaysis : 4.7 ± 2.6 years

Factor associated with an increased risk to die:

- DHD: ($HR_{adjusted} = 1.58$; 95%CI: 1.4-1.8)

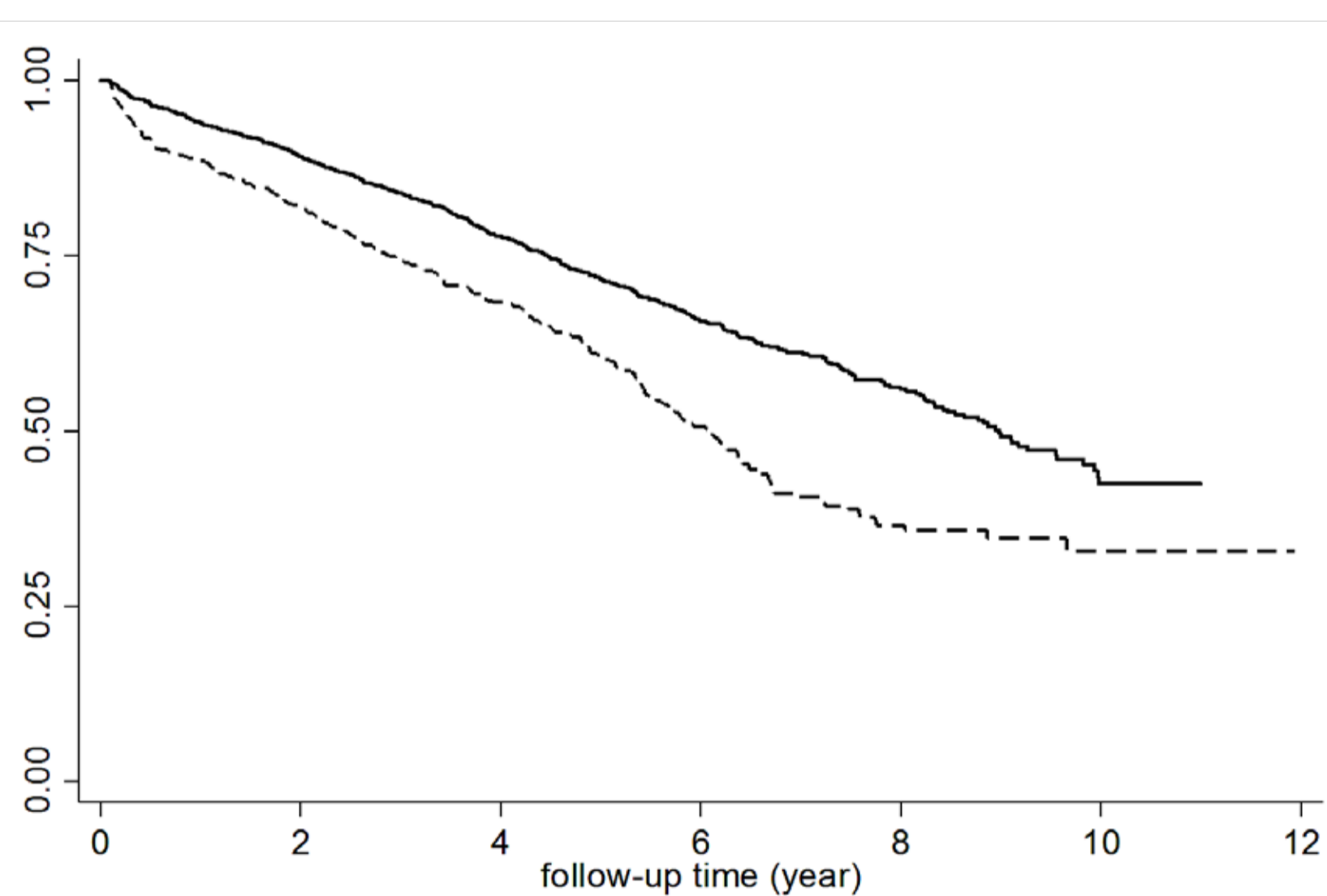


Figure 1. Kaplan Meier survival curves by treatment group: DHD (dotted line) and conventional thrice-weekly HD (solid line)

- Probability to die after 2 years (Figure 1):
 - 20% for DHD
 - 10% for HD 3x/week

2. Placement on the renal transplant waiting list

At the endpoint (31/12/2013):

- After the exclusion of patients ≥ 80 years ($n=232$)
- **774/2039** (38%) waitlisted: $n=176$ on DHD; $n=598$ on HD 3x/week
- 616/2039 (30.2%) death before waitlisting

Factor associated with lower waitlisting :

- DHD: ($SHR_{unadjusted} = 0.83$; 95%CI: 0.71-0.99)

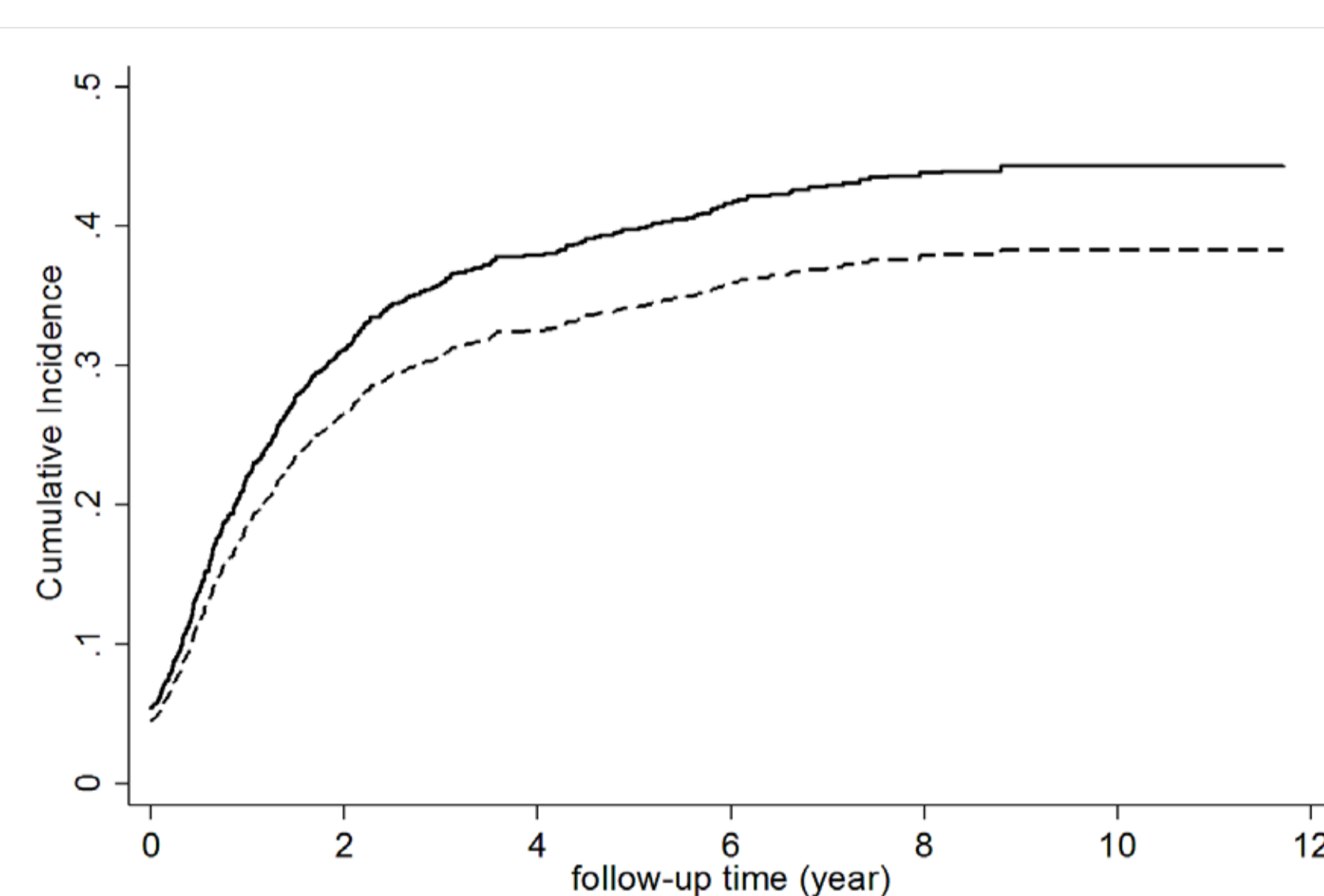


Figure 2. Comparative Cumulative Incidence Function (CIF) for waitlisting by treatment group

3. Access to renal transplantation after waitlisting

At 31/12/2013:

After the exclusion of patients receiving a graft from living donors ($n=28$)

- **435/746** (58.3%) transplanted: $n=88$ on DHD; $n=347$ on HD 3x/week
- 45/476 (6%) death before transplantation

Factor associated with lower access to renal transplantation :

- DHD: ($SHR_{adjusted} = 0.18$; 95%CI: 0.04-0.67)

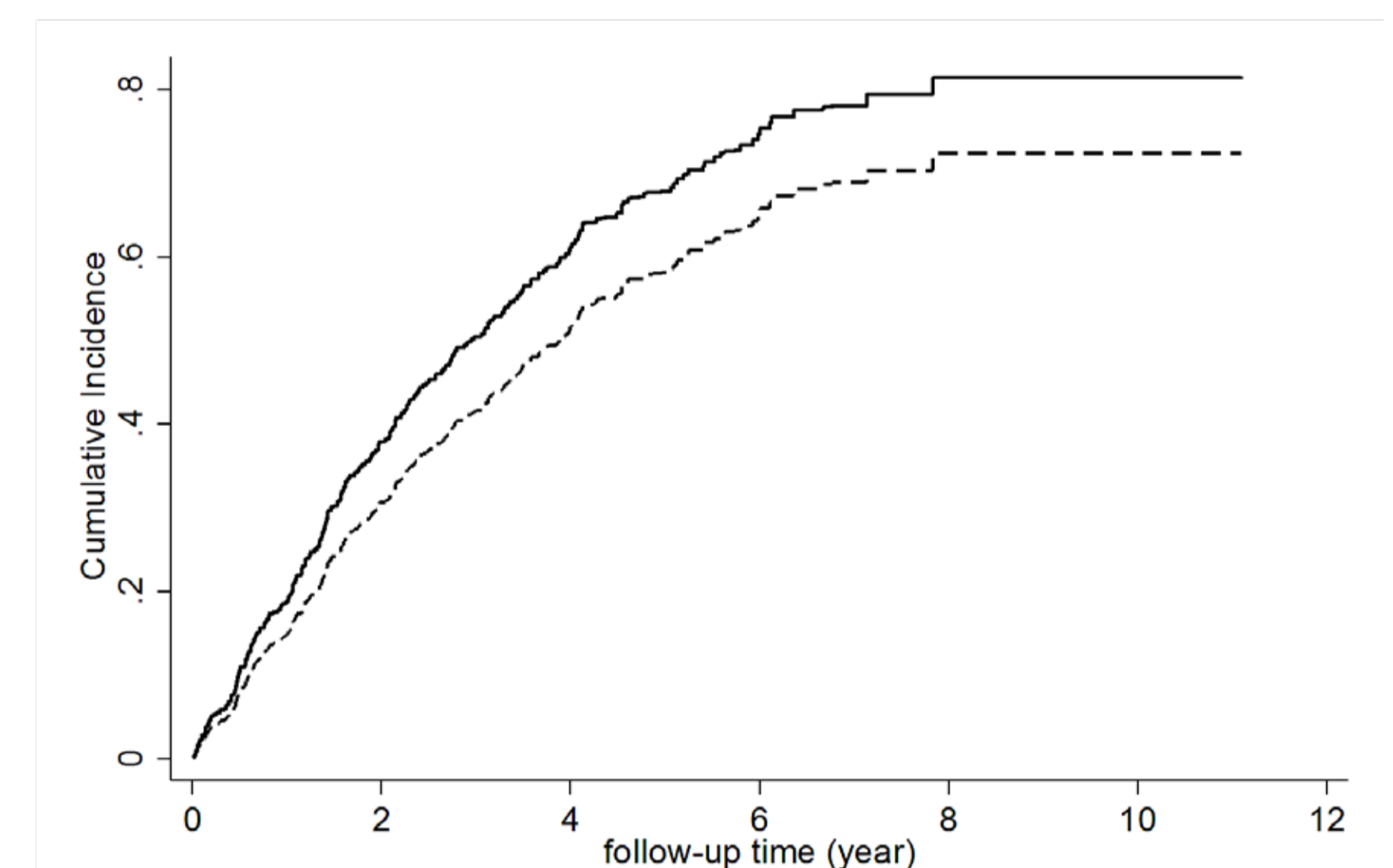


Figure 3. Comparative CIF for renal transplantation by treatment group

- Probability of being renal transplanted after 2 years (Figure 3):
 - 25% for DHD
 - 35% for HD 3x/week

CONCLUSIONS

In conclusion, our study shows that in France, after the matching procedure and adjustment to age and all major comorbidities, DHD is associated with lower chance of renal transplantation after being waitlisted and remains associated with a higher risk of death. French patients on DHD presented various profiles because DHD is addressed both to young who access to renal transplantation and to old in bad clinical conditions. We hypothesize that DHD indications in France might be different than in other countries and this might explain the difference in terms of mortality. The absence of recommendations didn't allow us to determine why a patient is addressed to DHD or to conventional HD but with the development of new machines at home, might modify the negative association between DHD and survival.

References

- [1] Cambi V, Savazzi G, Arisi L, Bignardi L, Bruschi G, Rossi E, Migone L. Short Dialysis Schedules (SDS): Finally Ready to Become a Routine ? Proc Eur Dial Transpl Ass: 11:112-20, 1975
- [2] Bonomini V, Mioli V, Albertazzi A, Scolari P. Daily-dialysis programme: indications and results. Nephrol Dial Transplant:13(11):2774-7, 1998.
- [3] Suri RS, Lindsay RM, Bieber BA, et al. A multivariate cohort study of in-center daily hemodialysis and patient survival. *Kidney Int.* 2013; 83: 300-307.

