

## Une application Shiny pour prédire dynamiquement la survie patient-greffon d'un patient transplanté rénal : vers une décision médicale plus partagée

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6 juillet 2018

Contexte

Matériels et  
Méthodes

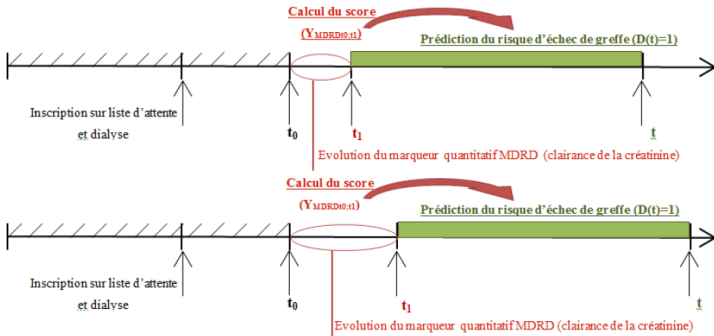
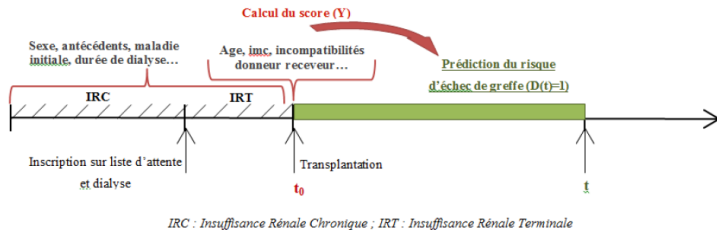
Résultats

Discussion

- Maladies chroniques
- Transplantation rénale : traitement privilégié de l'insuffisance rénale terminale
- Médecine 4P : Prédicative, Préventive, Participative et Personnalisée

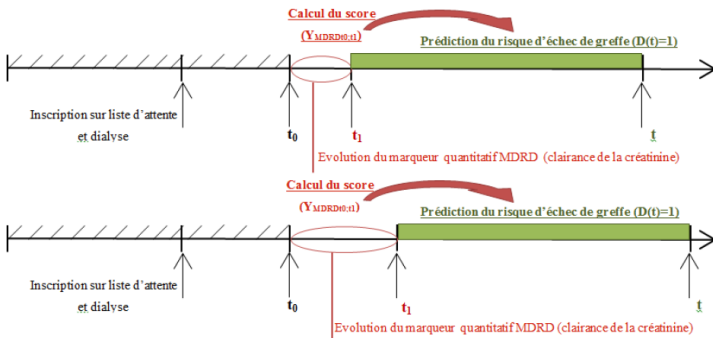
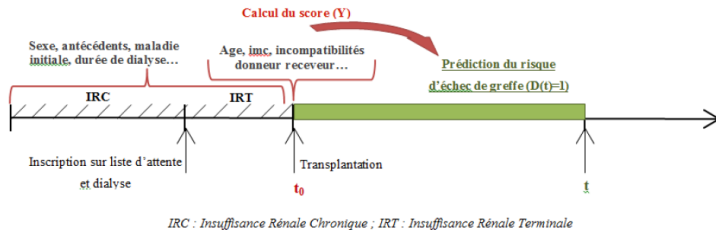
# Score pronostique

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- Matériels et Méthodes
- Résultats
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- La créatininémie (SCr) reflète l'état de fonctionnement du greffon.
- Modélisation conjointe de la survenue d'un échec de greffe et de l'évolution des mesures de SCr
- Echec de greffe : 1<sup>er</sup> évènement à survenir (retour en dialyse, retransplantation, décès)

Eur J Epidemiol  
DOI 10.1007/s10654-016-0121-2

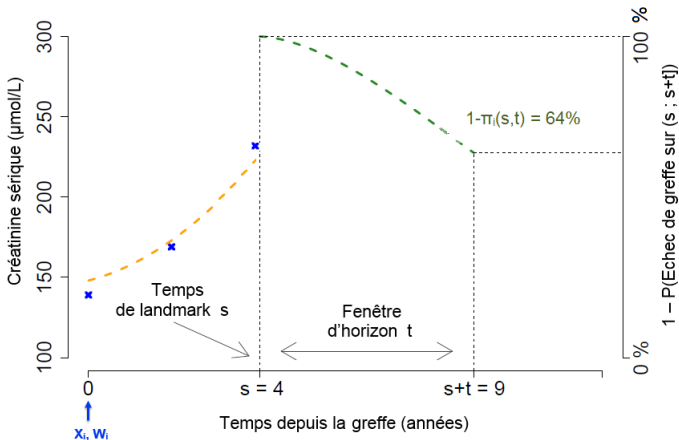


CLINICAL EPIDEMIOLOGY

## **A joint model for longitudinal and time-to-event data to better assess the specific role of donor and recipient factors on long-term kidney transplantation outcomes**

Marie-Cécile Fournier<sup>1,2</sup> · Yohann Foucher<sup>1</sup> · Paul Blanche<sup>3</sup> · Fanny Buron<sup>4</sup> ·  
Magali Giral<sup>2,5</sup> · Etienne Dantan<sup>1</sup>

- $s$  : temps de landmark **visites annuelles**
- $t$  : fenêtre d'horizon **5 ans : vision à moyen terme**
- $\pi_i(s, t)$  : probabilité d'avoir un échec de greffe entre  $s$  et  $s+t$  pour l'individu  $i$



<https://shiny.idbc.fr/DynPG/>

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## Dynamic predictions in renal transplant patients

- English  
 Français

## Year of transplantation

29/06/2018

## Transplantation rank

Choose

## Recipient age at transplantation (years)

## Recipient gender

- Female  
 Male

## Cardiovascular history

- No  
 Yes

## Diabetes history

- No  
 Yes

## Anti-HLA immunization of class I

- No  
 Yes

## Donor age (years)

## Donor gender

- Female  
 Male

## Donor type

- Living donor  
 Cerebrovascular death  
 Other cause of death

## Acute rejection in the first year post transplantation

- No  
 Yes

## 3-month serum creatinine (μmol/l)

## 6-month serum creatinine (μmol/l)

## 12-month post transplantation visit

Add a visit

## Date

29/06/2018

## Serum creatinine (μmol/l)

Please complete all fields



## Dynamic predictions in renal transplant patients

- English  
 Français

## Year of transplantation

02/04/2005

## Transplantation rank

1

## Recipient age at transplantation (years)

51

## Recipient gender

- Female  
 Male

## Cardiovascular history

- No  
 Yes

## Diabetes history

- No  
 Yes

## Anti-HLA immunization of class I

- No  
 Yes

## Donor age (years)

32

## Donor gender

- Female  
 Male

## Donor type

- Living donor  
 Cerebrovascular death  
 Other cause of death

## Acute rejection in the first year post transplantation

- No  
 Yes

## 3-month serum creatinine (µmol/l)

88

## 6-month serum creatinine (µmol/l)

99

## 12-month post transplantation visit

Visit 2

Visit 3

Visite 4

Visite 5

Add a visit

## Date

05/04/2006

13/04/2007

23/05/2008

30/05/2009

17/05/2010

## Serum creatinine (µmol/l)

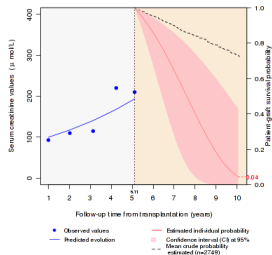
93

110

115

220

210



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## Dynamic predictions in renal transplant patients

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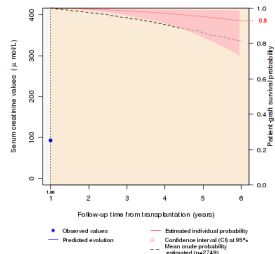
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## Dynamic predictions in renal transplant patients

- English  
 Français

## Year of transplantation

02/04/2007

## Transplantation rank

2

## Recipient age at transplantation (years)

60

## Recipient gender

- Female  
 Male

## Cardiovascular history

- No  
 Yes

## Diabetes history

- No  
 Yes

## Anti-HLA immunization of class I

- No  
 Yes

## Donor age (years)

57

## Donor gender

- Female  
 Male

## Donor type

- Living donor  
 Cerebrovascular death  
 Other cause of death

## Acute rejection in the first year post transplantation

- No  
 Yes

3-month serum creatinine ( $\mu\text{mol/l}$ )

100

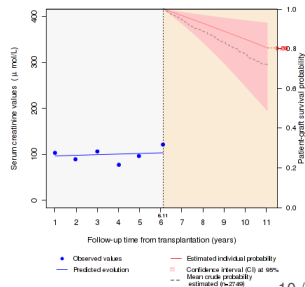
6-month serum creatinine ( $\mu\text{mol/l}$ )

121

Date Serum creatinine ( $\mu\text{mol/l}$ )

12-month post transplantation visit	Date	Serum creatinine ( $\mu\text{mol/l}$ )
Visit 1	14/04/2008	103
Visit 2	03/04/2009	89
Visit 3	16/04/2010	106
Visit 4	23/04/2011	77
Visit 5	04/04/2012	96
Visit 6	24/05/2013	121

Add a visit



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## Dynamic predictions in renal transplant patients

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### 3-month serum creatinine ( $\mu\text{mol/l}$ )

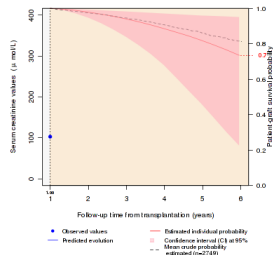
100

### 6-month serum creatinine ( $\mu\text{mol/l}$ )

121

	Date	Serum creatinine ( $\mu\text{mol/l}$ )
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Visit



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- Outil pour une implémentation en pratique de la Médecine 4P (personnalisée, participative, prédictive, préventive)
  - ⇒ Information pour le patient
  - ⇒ Décision partagée
- Perspectives : revoir le format de présentation, consulter des patients et psychologues.

<https://shiny.idbc.fr/SCOPOUSEP/>

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SCOPOUSEP: a predictive model for scoring the severity of relapses in multiple sclerosis

**Age at the time of the relapse in years**

**Date of disease onset**

**Date of the relapse**

**Last EDSS before the relapse**

**EDSS at the relapse**

**Subjective sensitive disorders**

**Proprioceptive ataraxia**

Among a group of 10 patients with comparable characteristics and having the same relapse, research indicates that 1 patients will present a significant increase in the disability level\* at 6 months.



\*A significant increase in the disability level is defined as an increase in the EDSS score of at least one point at 6-months post-relapse.

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**Merci pour votre attention**