

# Cost-effectiveness of eculizumab for active antibody-mediated rejection in early post-kidney transplantation patients

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## Background and importance

The presence of donor-specific antibodies (DSA) is the main cause of the development of acute humoral rejection (AHR), which is associated with a fourfold higher risk of graft loss. Eculizumab is a humanized anti-C5a antibody that inhibits the complement system.

## Aim and objectives



The objective is to evaluate the cost-effectiveness of eculizumab in a cohort of patients with AHR and DSA.

## Material and methods

### Patients

- Patients treated with eculizumab for AHR and DSA since 2016 at a tertiary care hospital.

### Statistics

- Descriptive analysis is presented as mean and standard deviation (SD).
- Inferential analysis was performed using the Kaplan-Meier statistical test.

### Outcomes

- Effectiveness:
    - ✓ Time free from renal replacement therapy (RRT) after AHR and treatment with eculizumab.
  - Cost:
    - ✓ Cost of medication.
    - ✓ Differential direct healthcare cost between hemodialysis and non-dialysis patients.
- National health system price with VAT for eculizumab and the direct cost is 144.5€/day (Data from the Renal Anemia Institute).

## Results

Nine patients, mean age 49 years (range 22-63 years), 56% women, and with DSA, were treated with eculizumab for AHR. The mean follow-up time was 784 days (112-2364), and the mean cumulative dose of eculizumab was 8633 mg (range 900-33600 mg).

Table 1. Pre and post treatment analytical values

	Pre-treatment	Post-treatment (28 days)	Post-treatment (end follow up)
eGFR (SD); mL/min/1,73m <sup>2</sup>	28.3 (7-90)	45.3 (16-90)	45.4 (16-90)
Creatinine (SD); mg/dL	4.7 (1.4-7.2)	1.95 (0.8-4.5)	1.99 (1.0-6.3)
Proteinuria (SD); mg/g creatinine	14763 (329.7-111689.1)	819.5 (59.8-2635.2)	576.5 (102.3-2621.3)

eGFR: estimated glomerular filtration rate; SD: standard deviation.

### Effectiveness

- ✓ Mean time free from RRT: 1851.0 days (95% CI, 1140.0-2562.0 days).
- ✓ 1/9 patients transitioned to RRT.

### Cost

- ✓ Mean cost of treatment: 94690.7€ (SD, 5484.5-377884.4€).
- ✓ Mean cost avoided per RRT: 113352.2€ (16184.0-341598.0€), for the actual follow-up time.
- ✓ Mean cost avoided per RRT is 267469.5€ (95% CI, 164730.0-370209.0€) in inferential estimation.

## Conclusion and relevance



✓ Eculizumab is effective in treating patients with AHR and the presence of DSA. Additionally, it is dominant in the cost-effectiveness analysis (-172778.8€, for 1851.0 days).