

# Prevalence and determinants of nonadherence with immunosuppressive regimen in adult renal transplant recipients



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## 1. Conclusion

### Prevalence:

- Overall electronically monitored (EM) nonadherence with immunosuppressive medication was low in our sample kidney transplant patients (KTx), approaching 100% for the median patient (n=249; largest EM sample ever in KTx)
- still, an important subsample of patients showed severe nonadherence

### Determinants:

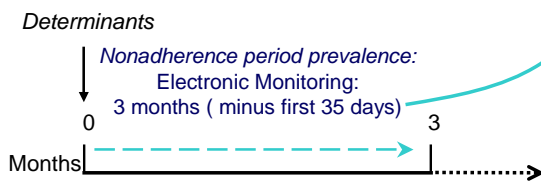
We detected several patient and therapy related variables associated with nonadherence, allowing identification of patients at risk and development of adherence enhancing interventions.

## 2. Aim of the study

- Few studies exist using electronic monitoring to measure nonadherence with immunosuppressive medication in renal transplant patients
  - A first aim of the study was to determine period prevalence of nonadherence with the immunosuppressive regimen
- Few studies comprehensively investigated determinants / correlates of nonadherence with immunosuppressive medication in renal transplant patients (patient, therapy, condition, health care system related and socioeconomic factors)
  - A second aim of the study was to screen for determinants / correlates of nonadherence with immunosuppressive drugs

## 3. Methods

**Design:** Prospective cohort study

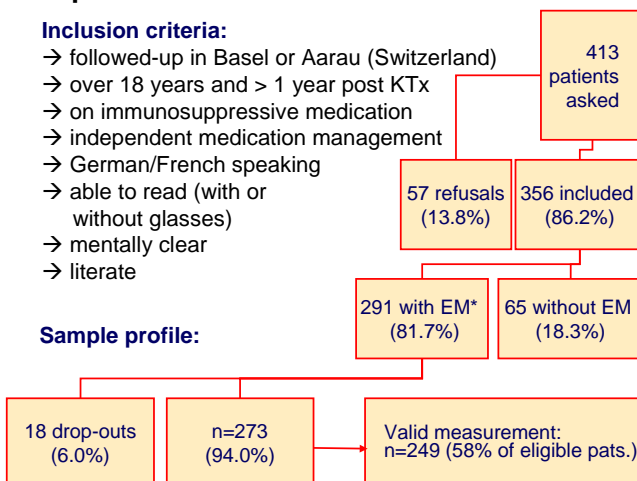


**Sample:**

### Inclusion criteria:

- followed-up in Basel or Aarau (Switzerland)
- over 18 years and > 1 year post KTx
- on immunosuppressive medication
- independent medication management
- German/French speaking
- able to read (with or without glasses)
- mentally clear
- literate

### Sample profile:



\* EM = electronic monitoring

## Electronic measurement of nonadherence



### Period prevalences

- Taking adherence:** (# taken doses / # prescribed doses) \* 100
- Dosing adherence:** (# correctly dosed days / # days monitored) \* 100
- Timing adherence:** (# correct interdose intervals\* / # openings) \* 100  
\* correct interdose interval = within +/- 25% of prescribed interval
- Drug holidays:** no medication intake for >48h (1x/d); >24h (2x/d)

## Measured nonadherence determinants

### Health care system & HC team:

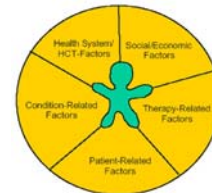
- Center
- Regularity follow-up

### Condition related:

- Depressive symptoms
- Substance use (alcohol, smoking)

### Patient related:

- Illness representations
- Coping styles
- Self-efficacy
- Health behaviors (former nonadherence, vaccination & alternative med.)
- Busyness & routine in life style



### Socio-economic:

- Age & gender
- Nationality
- Living alone/together
- Received social support
- Employment/education
- Perception financial sit.

### Therapy related:

- Time on dialysis / with Tx
- Dialysis mode / Pre-emptive Tx
- # of transplants received
- Graft type
- Complexity medication regimen
- Symptom occurrence & -distress
- Therapy changes
- Use of medication aids

## Data analysis

- Excluding the first 35 days because an intervention effect of the electronic monitoring on adherence was observed
- Screening of all determinants by simple random intercept logistic regression analyses based on a binary longitudinal sequence representing daily dosing adherence (=0) or nonadherence (=1).
- Adapting p-values for multiple-testing
- Putting all significant variables in a multiple model

## 4. Results

### Period prevalences

- Taking adherence 100% (IQR 1.3; range: 47-110%)
- Dosing adherence 100% (IQR 3.6; range: 23-100%)
- Timing adherence 98% (IQR 6.8; range: 18-100%)
- Drug holidays 0 (IQR 1.1; range: 0-29)

### Determinant analyses

The analysis detected more nonadherence in:

- in patients showing a *low self-efficacy* with medication taking
- in patients having a *weak belief that the drugs are needed* to keep the kidney
- in patients *experiencing spots in the face*
- in patients *not using a pill-organizer*
- in patients having higher *self-reported nonadherence*
- when *later in the week* (nonadherence increased gradually from Monday until Sunday)