



TRANSPLANT.NET - monitoring of patients before and after the transplantation



**Online** diary of the recipient

- liver
- kidneys
- **lungs**
- heart

# What is the project about?



- The number of organ transplant surgeries is growing: from **662** in 2006 to **1896** in 2017.
- Patients with a transplanted organ are always at risk and therefore their health needs constant monitoring.
- Doctors today do not have effective tools for monitoring patients in the field of organ transplantation.

TRANSPLANT.NET is a cloud platform designed for continuous monitoring of:

- the patient's subjective well-being;
- objective medical indicators;
- the medications taken by the patient.

The doctor sees a cumulative picture of the patient's condition, displayed in dynamics by days



# How does the monitoring work?



## The System Principle is survey

1. The doctor obtains the patient's consent for remote monitoring and registers him (her) in the system.
2. The doctor prescribes for the patient
  - medication schedule;
  - measurement schedule;
  - schedule of health questionnaires.

## Patient:

1. In accordance with the schedule (no more than once a day), he receives an invitation to his email to fill out a questionnaire.
2. Follows the link and sees the current questionnaire.
3. Answers questions about well-being, enters indicators, notes the medications taken.

## Doctor:

1. Periodically receives a list of his patients by mail with links to their cards
2. Opens the patient's chart and sees his (her) condition in dynamics.



# How does the doctor set the schedule?

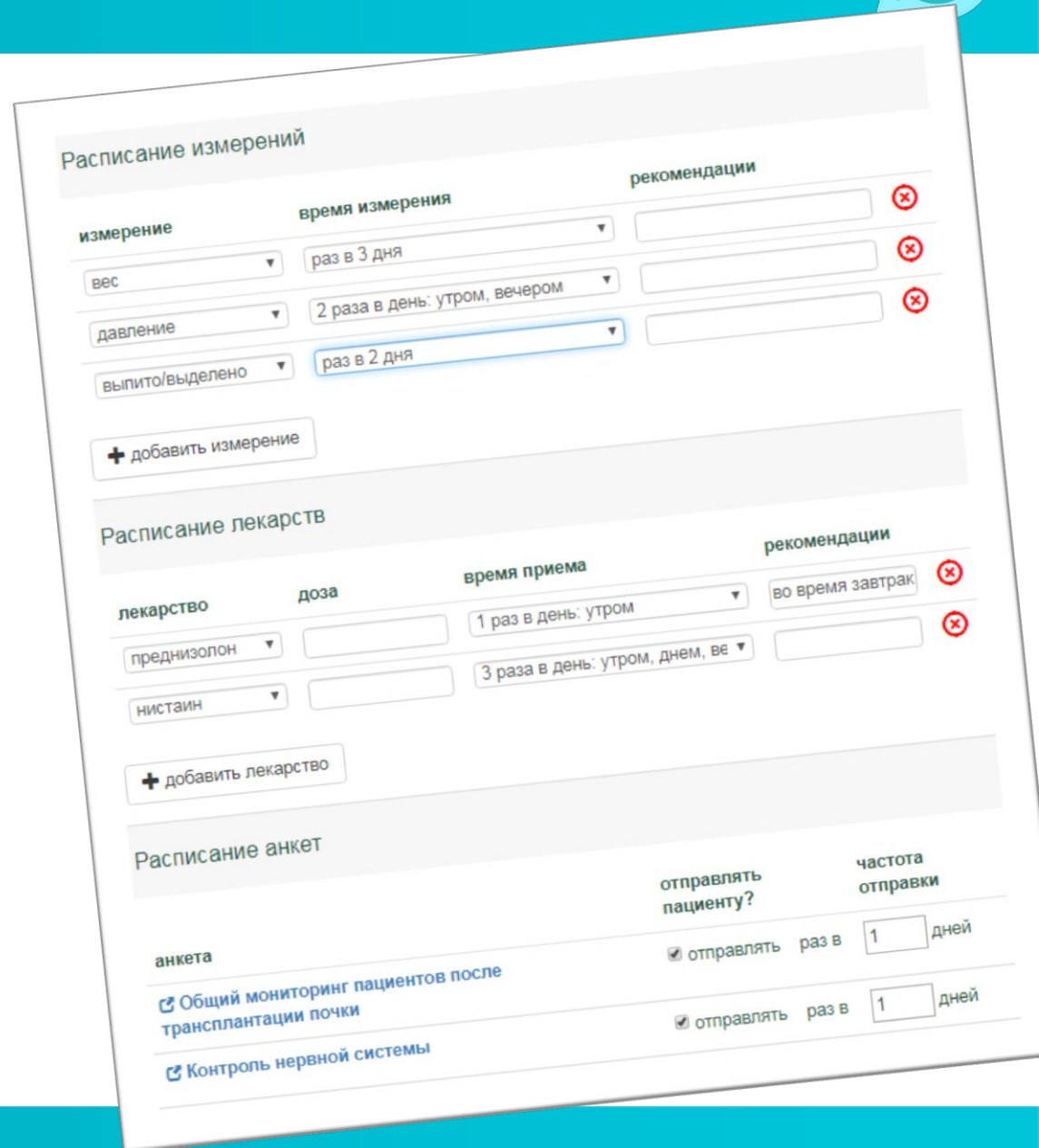
For each **measurement or drug**, you can assign:

- frequency of execution/reception in days;
- time of execution/reception: morning, afternoon, evening, night in any combination.

To simplify the doctor's work, standard options have been selected for measurements and medications: the doctor only needs to choose.

For each questionnaire, simply the frequency in days is selected.

The questionnaire displays the general well-being of the patient during the day.



**Расписание измерений**

измерение	время измерения	рекомендации
вес	раз в 3 дня	
давление	2 раза в день: утром, вечером	
выпито/выделено	раз в 2 дня	

+ добавить измерение

**Расписание лекарств**

лекарство	доза	время приема	рекомендации
преднизолон		1 раз в день: утром	во время завтрака
нистаин		3 раза в день: утром, днем, ве	

+ добавить лекарство

**Расписание анкет**

анкета	отправлять пациенту?	частота отправок
Общий мониторинг пациентов после трансплантации почки	<input checked="" type="checkbox"/> отправлять	раз в 1 дней
Контроль нервной системы	<input checked="" type="checkbox"/> отправлять	раз в 1 дней



# How does the patient's questionnaire look like?

## Measurements and medicines:

If for today something is assigned by schedule (measurement, medicine, questionnaire), the patient receives a notification with a link by mail.

The link opens the questionnaire page with questions that are relevant only for today.

If the patient wants to enter the data beyond the schedule (for example, to mark a special condition or additional medication), he can always do this on his page.



The screenshot displays a patient questionnaire interface with three main sections, each with a dark teal header and a light blue body:

- Назначения на утро**
  - Измерения, выполненные около 9 часов утра:
    - давление верхнее:  мм рт ст
    - давление нижнее:  мм рт ст
    - пульс:  уд/мин
  - Лекарства, принятые около в 9 часов утра:
    - преднизолон во время завтрака: ☒ принято
    - нистаин: ☐ не принято
- Назначения на середину дня**
  - Лекарства, принятые около 14 часов:
    - нистаин: ☐ не принято
- Назначения на вечер**
  - Измерения, выполненные около 20 часов:
    - давление верхнее:  мм рт ст





# How does the patient's questionnaire look like?

## Health questionnaire:

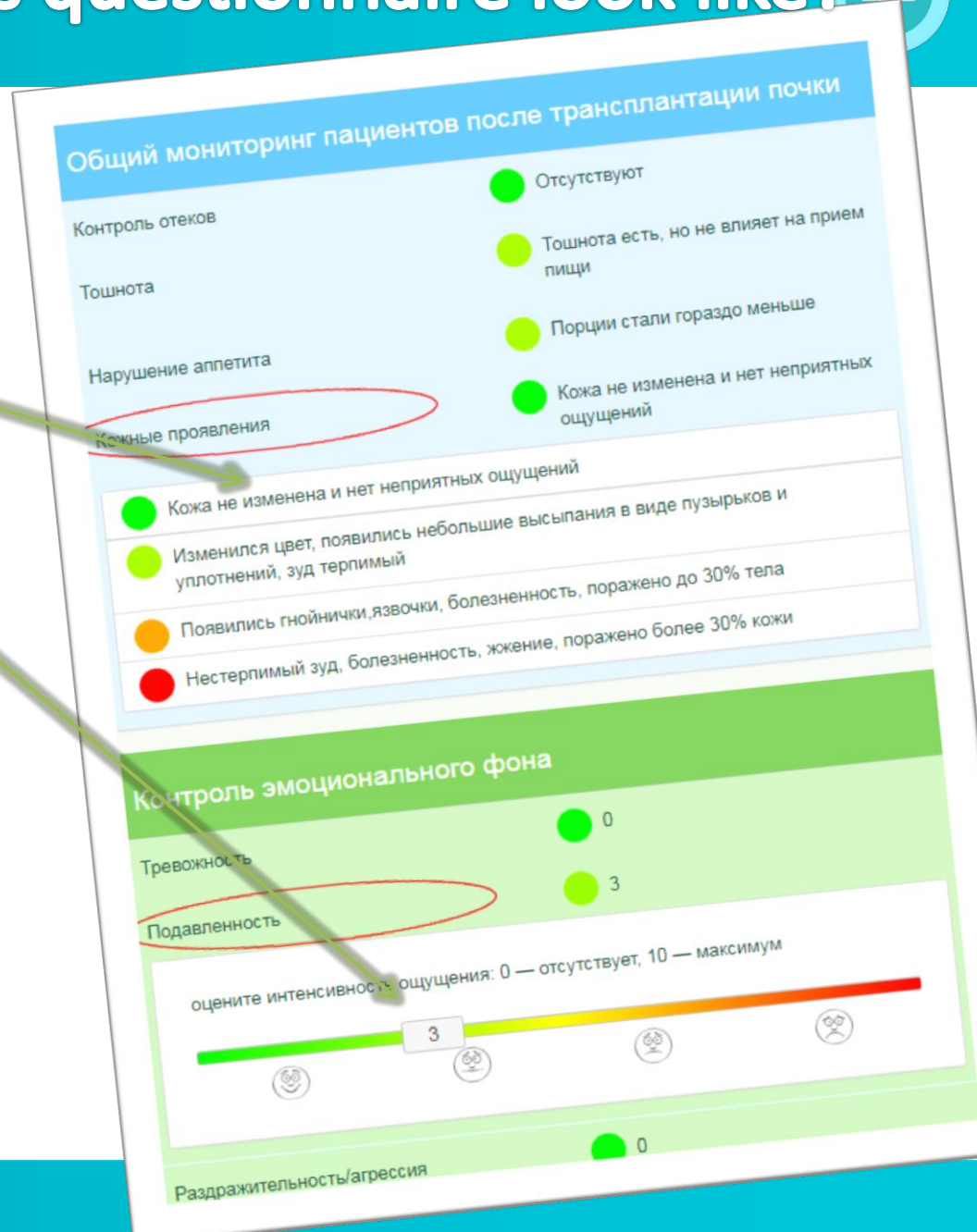
The questionnaire contains two types of questions :

- with answer options: the patient chooses the answer
- with a scale of sensation: the patient moves the slider

Initially, all responses are set to the "normal" state, so the patient notes only deviations.

Questionnaire page is optimized for the mobile phone.

The time required for a response is usually 2-4 minutes.



**Общий мониторинг пациентов после трансплантации почки**

Контроль отеков ☐ Отсутствуют

Тошнота ☐ Тошнота есть, но не влияет на прием пищи

Нарушение аппетита ☐ Порции стали гораздо меньше

**Кожные проявления** ☐ Кожа не изменена и нет неприятных ощущений

☐ Изменился цвет, появились небольшие высыпания в виде пузырьков и уплотнений, зуд терпимый

☐ Появились гнойнички, язвочки, болезненность, поражено до 30% тела

☐ Нестерпимый зуд, болезненность, жжение, поражено более 30% кожи

**Контроль эмоционального фона**

Тревожность ☐ 0 ☐ 3

**Подавленность**

оцените интенсивность ощущения: 0 — отсутствует, 10 — максимум

☐ 0 ☐ 3 ☐ 6 ☐ 9 ☐ 10

Раздражительность/агрессия ☐ 0



# How does the doctor see the patient's card?

The map view contains three datasets:

**Measurements**

**Medications**

**Well-being**

Well-being is displayed in colors:

**Green** – norm,

**Shades of yellow** – degree of anxiety,

**Red** – dangerous condition.



# Additional options



## INTERMAIL

The doctor and the patient can correspond by regular e-mail without exchanging mailing addresses. The "intermail" technique provides transmission of letters through the service transparently for both interlocutors. The broadcast stops when the monitoring ends.

## LIBRARY TRANSPLANT.NET

In addition to the service part, the patient has access to a "library" containing useful information from legal information to medical articles and detailed descriptions of side effects, dangerous conditions, etc.

