



# University Hospital patients distribution

MBarrera

# UNIKLINIK RWTHAACHEN

## Patients Floor Plan Problem



Covid19 is having a big impact in the hospitals, the overflow of patients makes it harder to offer the best conditions and comfort since the rooms available are not enough for the patients to have an individual bedroom.

# Problem: Patients Floor Plan

- Due to staff shortages, hospitals are currently having to repeatedly reduce the number of beds in individual wards or even close entire wards.
- It is therefore becoming increasingly important to utilize the remaining bed spaces as efficiently as possible in order to ensure good care for the population.



The task is to create the best possible patient - room plan for a hospital ward for the next four weeks.

# Conditions

- Each patient must be assigned to a bed in a room each day of their stay.
- A man and a woman cannot be housed in the same room at the same time.
- There are other conflicts between individuals of the same gender that must be avoided
- It is also advantageous to put patients whose surgery appointments are two days apart in the same room together.
- Some patients are entitled to a single room for medical or insurance reasons. This can be waived in case of acute shortage
- It may be necessary for patients to change rooms during their stay, only one change is allowed.



# Example plan

This figure shows an exemplary patient-bed assignment over a period of nine days on a ward consisting of two double rooms. Between the arriving patients, there is a conflict and an advantageous patient combination here

