



Panaxea

# Cell-based treatment increases Quality of Life and reduces amount of Knee Replacement Surgeries compared to current standard of care for knee osteoarthritis patients

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**QALYs per person over 40 years:**

Cell-based T: 22.3  
Standard T: 19.5

**Total knee repl. per 1,000 persons over 40 years:**

Cell-based T: 426  
Standard T: 644

**Total knee repl. revision per 1,000 persons over 40 years:**

Cell-based T: 15  
Standard T: 23

## Background

Osteoarthritis (OA) is a leading cause of disability worldwide, resulting in pain, structural changes in the bone and joint space, and limitation of motion [1]. Current treatments are designed to reduce pain and improve the mobility of joints instead of promoting the regeneration of damaged articular cartilage [2]. Cell and cell-based therapies are being developed for the prevention and treatment of OA [2]. This study was set up to assess the effectiveness of new cell-based therapies compared to current standard of care for patients with knee OA in the Netherlands.

## Methods

A Markov model with 8 health states was developed to calculate the difference in health outcomes (i.e., quality adjusted life year (QALYs)), amount of total knee replacement (TKR) surgery and TKR revision (TKRR) surgery over 40 years. Knee OA health states were based on the Kellgren Lawrence (KL) scale. The eight health states are Healthy, KL I, KL II, KL III, KLIV, TKR, TKRR and Death. Input parameters were derived from literature [3, 5-10]. QALYs were discounted [4].

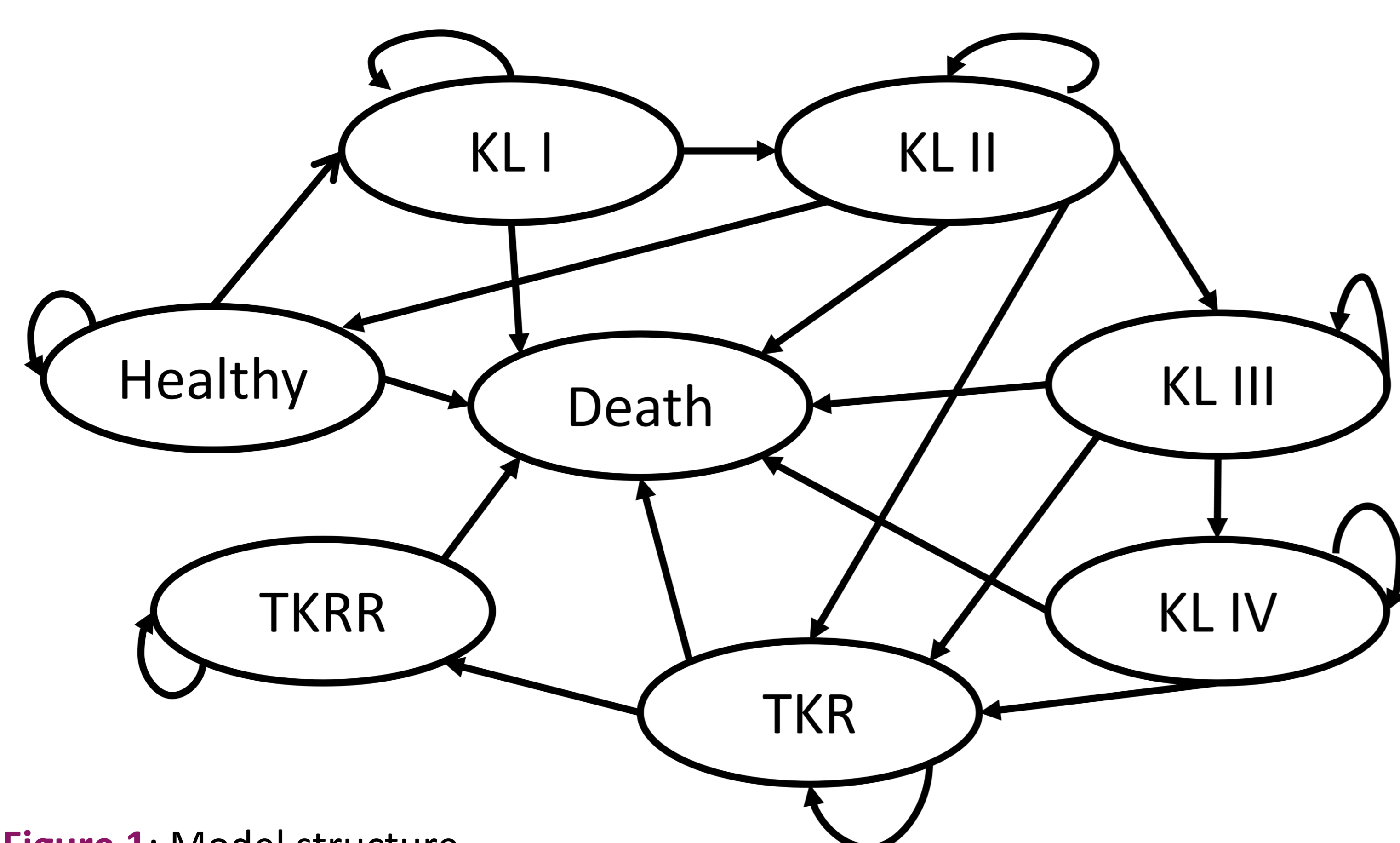


Figure 1: Model structure

## Results

The average discounted QALYs per person over 40 years were 22.3 for patients receiving cell-based treatment, and 19.5 for patients receiving standard of care. The amount of TKR surgeries were 426 and 644, respectively, the amount of TKRR surgeries 15 and 23, respectively.

## Conclusion

Based on the available evidence, the model shows that cell-based therapies could increase the QALYs of Dutch knee OA patients and could decrease the amount of TKR and TKRR surgeries. Effectiveness data of the cell-based treatment should be updated when more data becomes available. Future cost-effectiveness studies could be performed to also assess the cost-effectiveness.

## AutoCRAT

Automated Cellular Robot-Assisted Technologies for translation of discovery-led research in Osteoarthritis (AutoCRAT) is a Horizon2020 project focused on delivering new cell and cell-based therapies for OA and joint repair using sustainable sources of cells and developing a closed, scalable and regulatory-compliant automated system to enable future production of therapeutic products.

## References

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