

# Improving post-transplant clinical outcomes



Over the past decade, there have been more than 25,000 organ transplants per year in the U.S., with some years seeing over 30,000 transplants.

Demand for transplants also continues to rise, as newly listed candidates added to the waitlist outpace the number of transplants performed each year, often by as much as six times.<sup>1</sup>

The cost for transplants is also extremely high and unpredictable. For example, the estimated U.S. average cost per transplant episode, from 30 days prior to transplant through 180 days post-transplant, in 2020 was<sup>2</sup>:

**\$1.7M**

for a heart

**\$440,000**

for a kidney

**\$878,000**

for a liver

Transplant care is highly specialized, with only 250 hospitals in the U.S. providing these services.<sup>3</sup> Patients must navigate a fragmented health care system while managing a chronic condition such as end-stage renal disease (ESRD) or other advanced organ failure. The process includes:

- Referral for evaluation at a transplant center
- Placement on the transplant list
- Receiving a transplant
- Returning home and adhering to a complex treatment plan

The at-home treatment plan is critical to avoid organ rejection and achieve the promised benefits of this life-saving procedure. Helping patients navigate this complicated process and providing guidance and support is an important component to improving their clinical outcomes and post-transplant quality of life.

## Optum Transplant Solutions

The Optum® Transplant Resource Services program provides patients with specialized transplant clinical case managers that help guide patients through every aspect of the transplant process, including:

- Evaluation
- Pre-transplant
- Transplant
- Post-transplant (transportation arrangements, lodging and aftercare)

The case managers assist patients in making informed decisions about their transplant care, through:

- Education about treatment and care
- Referrals to the Centers of Excellence transplant facilities
- Considerations in choosing where to get care
- Assistance in navigating the health care system
- Aiding in making and keeping all necessary doctor and lab appointments
- Support in compliance of post-operative instructions
- Transplant medical director support

## Optum analysis of transplant case management

Optum recently conducted a study to determine whether program participation affected clinical outcomes following the transplant. Outcomes were compared for two populations:

- Commercial health plan members who had a transplant and participated in case management (treatment)
- A matched group of commercial health plan members who had a transplant and did not participate in case management (control)

	Transplant patients
Participants	878
Non-participants	878

## Measurement and methods

A retrospective case-control study was conducted on patients 18 years and older who had a solid organ transplant in 2018, 2019 or 2020. The treatment and control groups were matched 1:1 via propensity score, which included demographic and pre-transplant characteristics, such as:

- Age
- Sex
- Charlson Comorbidity Index
- Consumer Health Activation Index score
- Transplant year
- Transplant organ type
- Centers of Excellence utilization
- UNOS region

Also included were geographic variables such as urban/rural type, median household income by ZIP code, and physician concentration by ZIP code. Propensity score matching was used to enable comparability between the cohorts on health behavior that could be associated with participation bias. In addition, the cohorts were balanced on their use of transplant Centers of Excellence to mitigate their impact on outcome differences between groups.

Health plan claims data were used to assess clinical outcomes between the treatment and control groups and differences were examined through chi-square tests and zero-inflated binomial regression analysis.

## Clinical outcomes following transplant

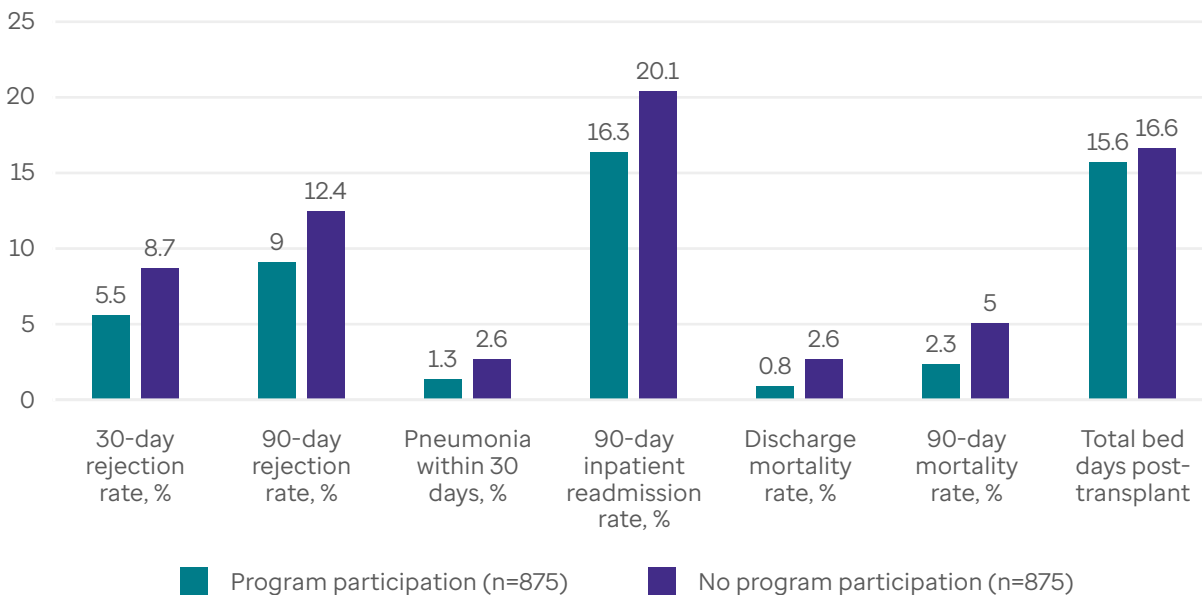
The results of the analysis show that members who participate in case management from the time to transplant referral to 90 days post-transplant have more favorable outcomes compared to those who do not participate in case management. Overall, patients who participated in case management had the following:

- Lower 30-day and 90-day rejection rates
- Lower pneumonia rates within 30 days
- Lower 90-day inpatient readmission rates
- Lower mortality rates
- Fewer total bed days following the transplant

All results are statistically significant at a 0.05 level.

When examined by organ type, liver transplant recipients who participated in the case management program consistently showed better outcomes across all measures. The other organ types showed less consistent results; however, this is likely a result of smaller sample sizes.

### Clinical outcomes following solid organ transplant



## Conclusion

Organ transplantation is a long, complex process that requires specialized care and coordination among many parts of the health care system. The Optum Transplant Resource Services program is designed to help patients navigate this process and provide education and resources that can lead to more favorable outcomes. The results of this study show that patients who participate in the program have significantly better outcomes, including:

- Lower rejection rates
- Lower pneumonia rates
- Fewer readmission rates
- Lower mortality rates
- Fewer bed days post-transplant

There are limitations to the study and conclusions based on potential confounding factors, however, the results are still very encouraging.

1. Scientific Registry of Transplant Recipients. 2019 Annual Data Report. [srr.transplant.hrsa.gov/annual\\_reports/default.aspx](https://srr.transplant.hrsa.gov/annual_reports/default.aspx). Accessed June 6, 2022.
2. Bentley TS, Ortner NJ. 2020 U.S. organ and tissue transplants: cost estimates, discussion, and emerging issues. Milliman Research Report. [milliman.com/-/media/milliman/pdfs/articles/2020-us-organ-tissue-transplants.ashx](https://www.milliman.com/-/media/milliman/pdfs/articles/2020-us-organ-tissue-transplants.ashx). Accessed June 6, 2022.
3. United Network for Organ Sharing (UNOS). How UNOS, OPOs and transplant programs work together to save lives. [unos.org/about/national-organ-transplant-system](https://unos.org/about/national-organ-transplant-system). Accessed June 6, 2022.

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