

Study finds nighttime organ transplant surgery not associated with poorer survival after 1 year

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An analysis of data on heart and lung transplant recipients indicates that patients who had transplant surgery performed at nighttime did not have a significantly different rate of survival up to one year after organ transplantation, according to a study in the June 1 issue of *JAMA*.

"Since the Institute of Medicine published a report suggesting that medical errors result in more than 98,000 deaths annually, increasing emphasis is being placed on systems-based approaches to improve patient safety," according to background information in the article.

"Although the causes of medical errors are likely multifactorial, many have suggested that medical staff fatigue associated with delivering medical care outside of daytime working hours is an important driving factor. Nighttime medical care has previously been associated with worse outcomes in general medicine, cardiology, [general surgery](#), and abdominal organ transplant surgery."

Timothy J. George, M.D., of Johns Hopkins Medical Institutions, Baltimore, and colleagues assessed whether performing heart or lung transplants at [night](#) was associated with adverse outcomes for transplant recipients. The study included information from the United Network for Organ Sharing database from January 2000 through June 2010. Primary stratification was by operative time of day (night, 7 p.m. - 7 a.m.; day, 7 a.m. - 7 p.m.). A total of 27,118 patients were included in the study population.

Of the 16,573 patients who underwent a [heart transplant](#), 8,346 (50.4 percent) did so during the day and 8,227 (49.6 percent) during the night. Of the 10,545 patients who underwent a lung transplant, 5,179 (49.1 percent) did so during the day and 5,366 (50.9 percent) during the night. During a median (midpoint) follow-up of 32.2 months, 8,061 patients (29 percent) died. The researchers found that survival was similar for patients with [organ transplants](#) performed during the day and night.

"[Survival rates](#) at 30 days for heart transplants during the day were 95.0 percent vs. 95.2 percent during the night and for lung transplants during the day were 96.0 percent vs. 95.5 percent during the night. At 90 days, survival rates for heart transplants were 92.6 percent during the day vs. 92.7 percent during the night and for lung transplants during the day were 92.7 percent vs. 91.7 percent during the night. At 1 year, survival rates for heart transplants during the day were 88.0 percent vs. 87.7 percent during the night and for [lung transplants](#) during the day were 83.8 percent vs. 82.6 percent during the night," the authors write.

Among lung transplant recipients, there was a slightly higher rate of airway dehiscence (a surgical complication) associated with nighttime transplants. Total hospital length of stay was similar regardless of operative time of day.

"Given the emerging consensus in the literature that nighttime operations are associated with an increase in complications, it is noteworthy that operative time of day is not associated with thoracic [organ transplantation](#) outcomes in a clinically meaningful way," the authors write. "It is likely that because urgent nighttime operations are common in all types of transplant surgery, health care personnel involved in the transplant have developed various systems to prevent errors and directly cope with the limitations associated with nighttime medical care."

The researchers note that these equivalent results for thoracic organ

transplants regardless of operative time of day should be taken in context. "Although our study was retrospective, it does suggest that not all trends in patient safety can be applied empirically across all specialties and that not all purportedly beneficial safety interventions are necessary or will be effective. Further investigation is warranted to understand why thoracic organ [transplants](#) do not appear to be associated with deleterious outcomes previously reported to be associated with nighttime surgery. Insight into the systems-based interventions that mitigate the effects of fatigue and disrupted circadian rhythms may provide information to help ameliorate the adverse outcomes associated with nighttime medical care in other settings."

More information: *JAMA*. 2011;305[21]2193-2199

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