Commentary: Blood type O, a bigger problem in the new heart allocation system?

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It is known that blood type O candidates listed for heart transplant are less likely to be transplanted and are more likely to be delisted. As universal donors, type O hearts can be allocated to any recipient. In addition, due to the scarcity of type B donors in the United States, type B candidates share the same primary allocation as type O candidates for type O hearts (vs secondary, type A or AB).

In this article, Eapen and colleagues analyzed data for adults listed for heart transplant between 2015 and 2020 in the United Network for Organ Sharing database and compared characteristics and outcomes of blood type O with non-type O transplants before and after the 2018 change in allocation system. They confirmed that in both the old and new systems, type O candidates underwent heart transplant less frequently and had greater rates of waitlist death or deterioration. Of note, there was a small but statistically significant increase in the percentage (14.5% vs 12.0%) of type O hearts allocated to secondary ABO candidates with the new system.

Previously, Ando and colleagues used a simulation model to look at anticipated changes in outcomes, when the percentage of O to non-O transplants was changed in the old allocation system. It was found that reducing the percentage of O to non-O initially improved survival for the whole group, and further reduction equalized survival between O and non-O recipients. With zero O to non-O transplants, survival in the O group was greater. Similar studies with current data could provide further insight into whether this would remain the case with the new allocation system.

After the allocation system change, fewer patients overall are being bridged with durable left ventricular assist devices and temporary mechanical support devices are being used more frequently. Type O candidates are more likely to undergo left ventricular assist device implant and be listed at status 3 or lower. These candidates compete with status 1 and 2 secondary ABO candidates who are now allowed to accept donor hearts from within a 500-mile radius. In this study, the most noticeable difference in survival and adverse events between type O and non-type O was in those listed as status 3. Therefore, as the authors suggest, expanding the initial donor offer radius to 500 miles (from 250 miles) for type O status 3 candidates may improve the survival to transplant and reduce death or deterioration in this group.

The differences noted in this study may regress over time, but it is concerning that the already-existing disparity for blood type O candidates has possibly increased with the new heart allocation system. Utility and justice are key ethical principles in the allocation of organs. While it is not acceptable to pursue justice at the expense of the overall good, allocation cannot focus solely on maximizing medical benefit without considering justice in the distribution. Abrupt changes in policies carry an inherent risk of unexpected consequences, and disparities resulting from implementation of the 2018 heart allocation system should be further investigated.
References


