Improving Decision Support for Organ Transplant

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Abstract : An estimated 22-25% of viable deceased donor kidneys are discarded every year in the US, while waitlisted candidates are dying every day. As many as 85% of transplanted organs are refused at least once for a patient that scored higher on the match list. There are hundreds of clinical variables involved in making a clinical transplant decision and there is rarely an ideal match. Decision makers exhibit an optimism bias where they may refuse an organ offer assuming a better match is imminent. We propose a semi-parametric Cox proportional hazard model, augmented by an accelerated failure time model based on patient specific suitable organ supply and demand to estimate a time-to-next-offer. Performance is assessed with Cox-Snell residuals and decision curve analysis, demonstrating improved decision support for up to a 5-year outlook. Providing clinical decision makers with quantitative evidence of likely patient outcomes (e.g., time to next offer and the mortality associated with waiting) may improve decisions and reduce optimism bias, thus reducing discarded organs and matching more patients on the waitlist.

Keywords : decision science, KDPI, optimism bias, organ transplant
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