

Potential Impacts of Improvements in Turnaround Time

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BACKGROUND:

Time to result (TTR) in solid organ donor and recipient laboratory screening is a critical factor of transplant outcomes. Current benchmarks estimate total donor screening TTR to be 265 minutes. Reduction in this time could improve time to organ availability, recipient outcomes, and transplant laboratory operations.

AIMS:

Time to result (TTR) in solid organ donor and recipient laboratory screening is a critical factor of transplant outcomes. Current benchmarks estimate total donor screening TTR to be 265 minutes. Reduction in this time could improve time to organ availability, recipient outcomes, and transplant laboratory operations. We aim to demonstrate the use of a novel infectious disease screening methodology and model its impact on solid organ transplant donor screening

METHODS:

Assuming a centralized testing site, the novel screening system-assay technology was modeled to ensure performance yields results that, like existing donor screening, is actionable within an organ donor screening algorithm. Statistical analysis for significant difference between the observed model mean TTR (MTTR) and mean available TTR (ATTR) was performed.

RESULTS:

Ten samples were tested sequentially using the model apparatus; each test completion time was 40 minutes (mean/median/mode 40). Time to result for existing screening methodology was established at 265 minutes (mean/median/mode 265 minutes). The mean MTTR was 15% (40/265) of mean ATTR. When compared to benchmark ATTR performance of 265 minutes in an independent sample population of 10 samples, the 85% MTTR reduction from 265 minutes represented a significant difference ($p<0.01$).

Figure 1. Time to result estimate

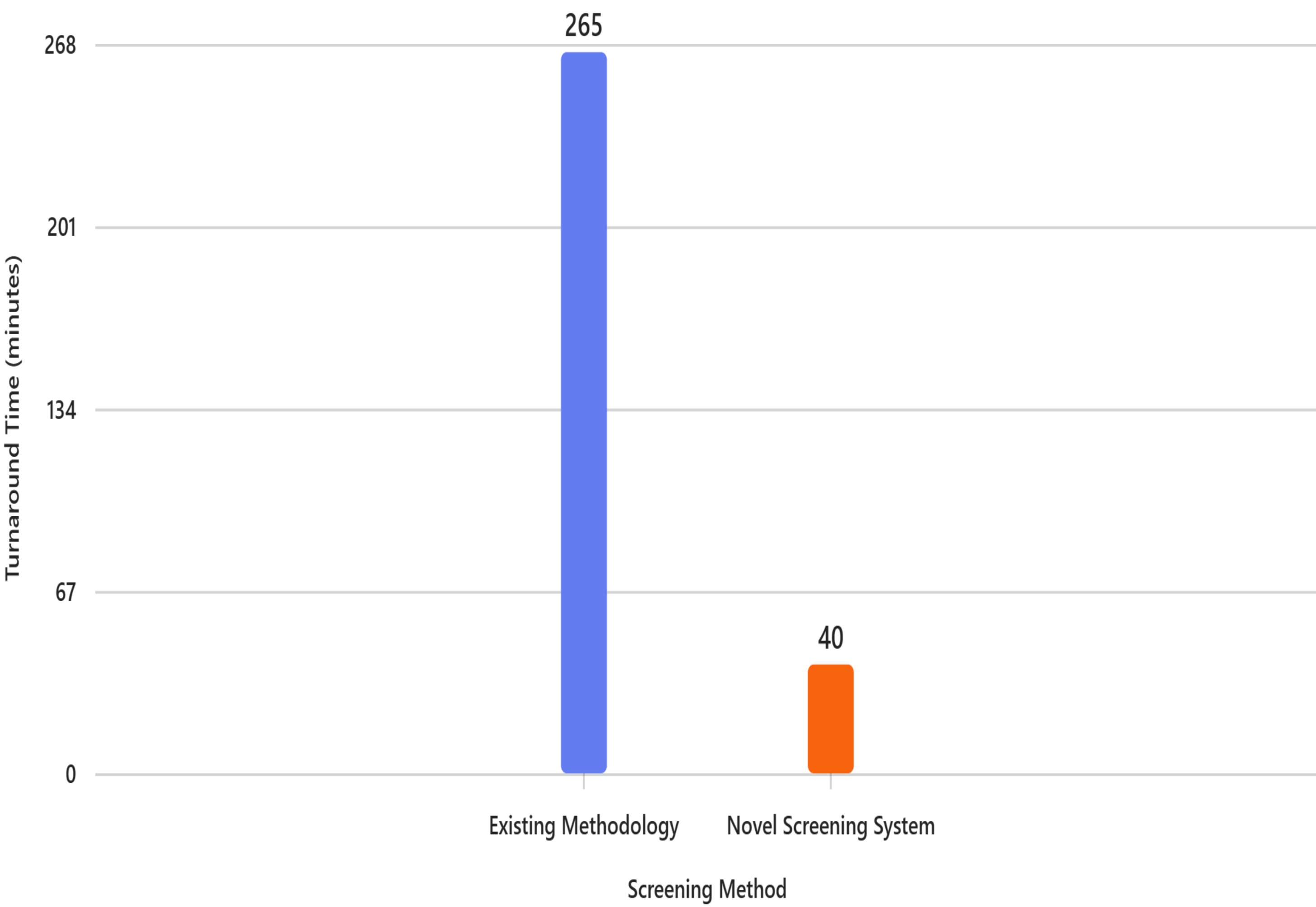
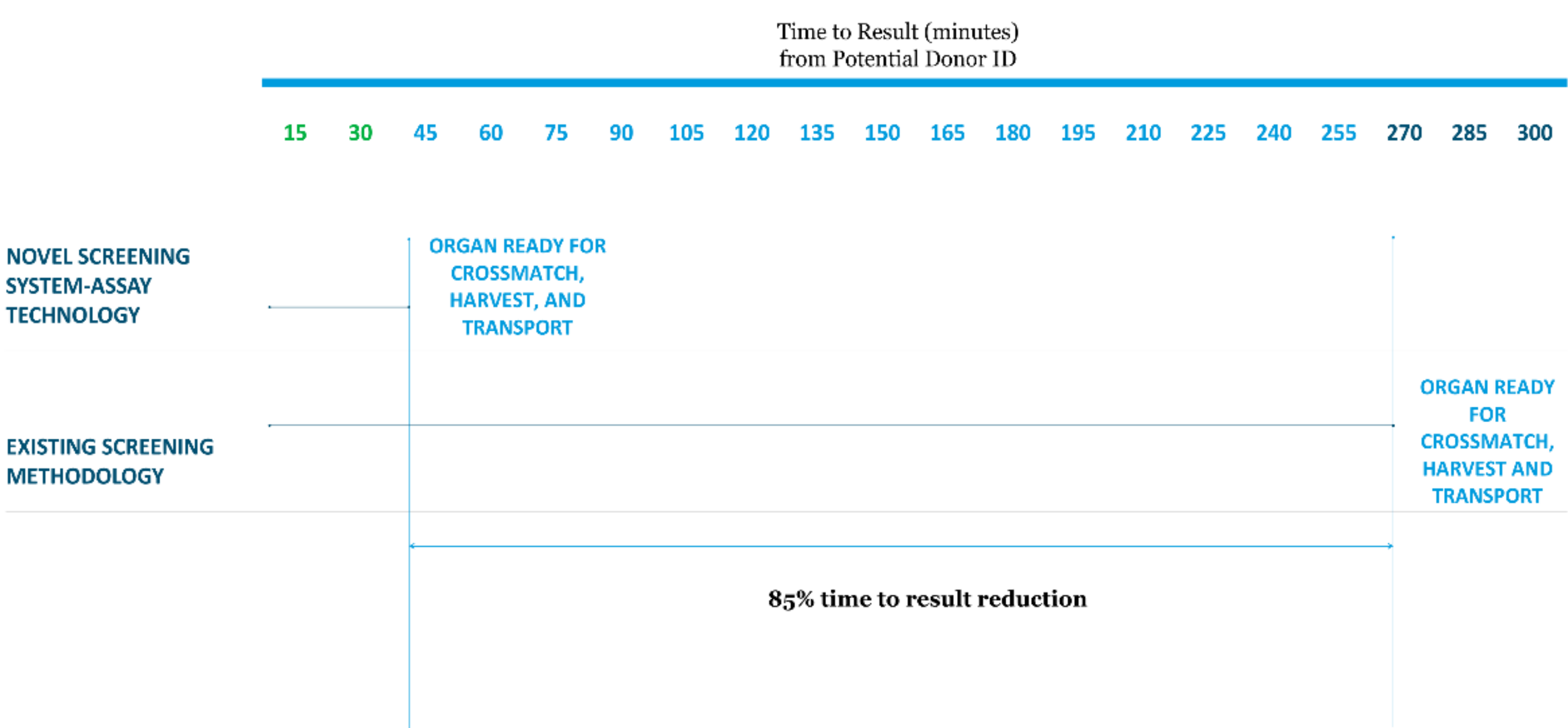


Figure 2. Organ Availability Acceleration



Conclusions :

These findings suggest that the novel screening methodology could positively impact transplant outcomes by accelerating organ availability and enhancing efficiency. Significant decreases in ATTR such as the modeled 85% decrease in TTR can lead to decreases in time to transplant, faster decision making, and reduced delays. Improved transplant screening laboratory operations can be realized via significant gains in efficiency and decreased cost. Leveraging new technologies and optimizing complex transplant logistics is crucial to successful outcomes in high-acuity scenarios with real stakes. This is an opportunity to positively impact transplant patient care.