

# Deceased donor chains in kidney exchange program \*

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Patients with kidney failure have two options to get a kidney transplant, either via a living donor transplant or via a deceased donor transplant. Patient with a willing donor can directly go for a kidney transplant if his intended donor is compatible with him otherwise they can join a kidney exchange registry as an incompatible pair. Patient without a willing donor register for deceased donor (DD) allocations. Currently in India, whenever a deceased donor becomes available two high-rank compatible patients from the wait list gets the transplant (since a deceased donor offers two kidneys to the pool). Our idea was to merge these two allocation processes by initiating chains from deceased donors which includes a few pairs from paired kidney exchange (PKE) registry and end on a patient in the deceased donor wait list. Through this merging mechanism, there won't be any loss to the wait list registry and several incompatible pairs will get a compatible transplant.

We developed an integer programming model and simulated our model with the data of PKE registries and DD allocations. Results show that there was a significant gain in terms of the number of transplants even with small size registries and this gain will increase as the registry size and deceased donations will increase.

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