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## One Donor Sparks Five-Way Kidney Transplant

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**November 21, 2006**

### MedPage Today Action Points

- Explain to interested patients that domino kidney transplantation can match living donors with compatible recipients and make better use of scarce resources.
- Explain that there are living altruistic donors willing to give a kidney to anyone who needs it, such as the woman whose donation started the series of five simultaneous transplants at Hopkins.

### Review

BALTIMORE, Nov. 21-- A single altruistic kidney donor offering an organ to anyone who needed it stimulated five simultaneous transplants in domino fashion to unrelated HLA-compatible recipients here.

Domino organ transplants aren't new, but the size and scope of this one were. With assembly line efficiency, 12 surgeons in six operating suites at Johns Hopkins Hospital harvested kidneys from five living donors to implant into five unrelated recipients.

The recipients, three men and two women, were reported to be recovering well after the surgical marathon, which took place a week ago.

The five-way exchange came about after four donors with their paired but HLA-incompatible recipients arrived at Hopkins, and an altruistic donor came forward to offer a kidney.

As the possible connections were traced, officials at Hopkins discovered that each of four of the five donors turned out to be a fit for someone else in the group, and the five-way match emerged. The fifth kidney was given to a recipient on a national waiting list run by the United Network for Organ Sharing (UNOS).

The operations were done at the same time as all donors and recipients were available. Waiting would have run the risk of one of the 10 becoming ill and producing significant delays.

The altruistic donor was identified by Hopkins as Honore Rothstein, a 48-year-old woman from Martinsburg, W.Va., whose decision to donate came after the death of her husband from a brain hemorrhage, and the death of her daughter from an overdose.

"It has been a privilege to help Ms. Rothstein fully realize her altruism by placing her into a domino transplant where her gift has made five transplants possible that would not have occurred," said Robert Montgomery, M.D., D.Phil., director of the incompatible kidney transplant program at Hopkins.

Rothstein's gift set in motion a well-choreographed series of steps. Under a

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### Learning Objectives

Upon successful completion of this educational program, the reader should be able to:

1. Discuss the results of this study
2. Review the relevance and significance of the study in the broader context of clinical care

### Disclosures

**Neil Osterweil** and **Zalman S. Agus, MD; Emeritus Professor at the University of Pennsylvania School of Medicine.**, have disclosed that

Kornstein's gift set in motion a well-choreographed series of steps. Under a simple domino transplant scenario, a donor-recipient pair such as a husband and wife with incompatible blood and HLA types is matched with a different pair in which the donor and recipient are incompatible. Then the pairs exchange donations. The donor in the first pair gives a kidney to the compatible recipient in the second pair, and the donor in the second pair gives a kidney to the compatible recipient in the first pair.

The domino-paired strategy takes this idea one step further. When an altruistic person steps forward and offers to donate a kidney to anyone who needs it, the organ is given to the recipient in a mismatched pair, and the donor in that pair then gives an organ that is directed to the first eligible recipient in the UNOS (United Network of Organ Sharing) match run.

Thus, a single act of donation results in two -- or in this case, five -- recipients getting organs that are more suitably matched to their medical needs and therefore more likely to result in a better clinical outcome.

The domino-paired system also satisfies the donor criteria currently used in various allocation systems, in which kidneys are either given to the person who might have the best clinical outcome, the person in greatest need (such as the most critically ill or financially disadvantaged), or to the patient who is the first match at the top of the UNOS transplant list.

In a study published in *The Lancet* earlier this year, Dr. Montgomery and colleagues used a computer model to compare the number of non-directed donations reported until that time by UNOS with the number of transplants that would have occurred had the domino-paired model been in place. They determined that 583 transplants could have been achieved, instead of the 302 non-directed procedures then recorded by UNOS.

To ensure that healthy non-directed donors are truly acting for altruistic reasons and are not under coercion, the potential donors undergo the same psychological and social evaluation that all living donors are subjected to, Dr. Montgomery said.

The 1984 National Organ Transplant Act, states that no one may receive money -- or anything else of value -- in return for donating an organ. It was enacted long before kidney swaps among unrelated, living people were considered and was designed to prohibit a commercial market for human organs.

In a kidney-paired donation, a kidney is donated with the expectation that a specified recipient will receive an organ in return. As a result, UNOS, which coordinates organ transplants nationwide, is reluctant to replicate these organ swaps on a larger scale that could save thousands of lives.

Attempts are being made, to develop legislation to exempt paired organ transplants from the federal organ trafficking ban.

"In light of the crisis the transplant community continues to experience in terms of the number of available organs," Dr. Montgomery continued, "the fact that people are coming forward voluntarily to help ease this shortage should not be treated with suspicion but rather should be considered morally praiseworthy. These are good people doing good things."

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