



## The OPTN/UNOS KPD Program:

# An Idea Whose Time Has Come

*"Do not go where the path may lead, go instead where there is no path and leave a trail."*

Ralph Waldo Emerson

The idea of a national kidney paired donation (KPD) program, available to every U.S. kidney transplant program and accessible to every renal patient with a willing but incompatible donor, has been considered since the country's first paired exchanges in 2000. In the spring of 2004, the OPTN/UNOS Kidney Transplantation Committee began exploring the feasibility of that notion.

"A couple of us on the committee were speaking out rather strongly for the concept and having a debate with a few others who felt it was too early to get involved," Kenneth Andreoni, MD, recalled. "Then [co-chairs] Alan Leichtman, MD, and Mark Stegall, MD, said a few words between them, looked at me and said something like, 'If you feel so strongly about this, then run the subcommittee.'"

In late 2004 Dr. Andreoni, who had been involved with the kidney committee since 2003 and is now president of the OPTN/UNOS Board of Directors, established the KPD working group, recruiting transplant surgeons, coordinators, nephrologists, a psychologist, a living donor, and experts in histocompatibility, mathematics, economics, and computer science. Dr. Andreoni, and indeed many of the group's founding members, have remained with the project ever since.

John Friedewald, MD, a longtime member of the committee, was among them. "From the beginning," he explained, "the goal of the UNOS KPD program was to include all U.S. transplant centers and patients in a way that is efficient, equitable, and transparent while serving the greatest number of people. KPD addresses limitations in the field of kidney transplantation on several levels. Most importantly in this era of organ shortages, KPD has the potential to significantly increase the number of kidney transplants performed each year. It can achieve this while also helping patients with blood type incompatible donors or those who are highly sensitized, who have been traditionally disadvantaged by the allocation system and may have difficult access to transplantation."

There are other paired exchange programs in existence, but the working group saw a clear need for something different. Rich Formica, MD, who has been chair of the working group, explained, "The UNOS KPD program is unique because it has been designed by, and is run by, members of the transplant community in a way that is transparent. We are responsible to the UNOS membership. We must design this program to meet the needs of members."

The working group first sent concept documents and a full proposal for a national KPD program out for public comment,

engaging the community, collecting feedback, and refining their vision for the program. The goal was to deliver a fully vetted proposal for the Board's approval in 2006.

The proposal was delayed, however, due to concerns that KPD might constitute "valuable consideration," and thus violate the National Organ Transplant Act.

It would take an act of Congress to get the wheels turning again. In December 2007, after a concerted effort by many across the transplant community, President George W. Bush signed into law the Charlie W. Norwood Living Organ Donation Act, which established the legality of paired donation. "We literally learned how a bill becomes a law in our country," Dr. Andreoni reflected. "A great civics lesson!"

In June 2008, the OPTN/UNOS Board approved plans for a KPD Pilot Program. Carnegie Mellon University computer science professor Tuomas Sandholm, PhD, and Sommer Gentry, PhD, a mathematics professor at the U.S. Naval Academy and Johns Hopkins University, collaborated with the KPD working group to refine algorithms, eventually donating the optimization software upon which the entire program is based.

In addition to the contributions of Sandholm and Gentry, the pilot phase of the KPD program attracted gifts from charitable foundations, and in-kind donations of software and consulting from the New England Organ Bank, EDS Consulting, and ILOG.

In 2009, the pilot test was launched with five participants: The Alliance for Paired Donation; Johns Hopkins Hospital; the New England Program for Kidney Exchange; and UCLA Medical Center/California Pacific Medical Center of Los Angeles and San Francisco. By 2012 more than half of the nation's kidney transplant programs were involved, giving feedback on the technical user experience, system components, user practices, and system rules.

In early 2012, the working group and pilot participants concluded that to effectively implement the KPD program, and to ensure that all kidney programs had access to it, the system's manual processes needed to be automated and integrated into UNet<sup>SM</sup>, the system that supports the national wait list



Kenneth Andreoni, MD



Richard Formica, MD

and the matching and placement of deceased donor organs.

This phase would take 24 months and cost almost \$1.5 million. The funds were not in the OPTN's budget, but for Drs. Andreoni, Friedewald, and Formica, slowing the project's momentum was simply not an option. "Currently, paired kidney exchanges are the only available way of increasing the number of transplants," Dr. Formica said. "We had to find a way."

So in June 2012, they worked with the UNOS Foundation to find funding, helping to craft the

proposal, talking up the project among their own contacts, and attending calls with prospective supporters.

Within six months they met their fundraising goal thanks to five generous sponsors: United Health Foundation, Novartis, Amgen, Pfizer, and Genentech.

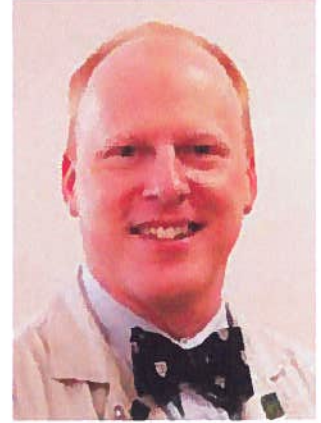
Currently the KPD team is focused on realizing the program's fullest potential. The next set of program enhancements, rolling out in late 2013, will allow KPD participating centers to view

match results and potential living kidney donor records in UNer<sup>SM</sup>, and directly respond to match offers. Participants can also look forward to self-learning modules and an educational video for patients and their prospective donors. Phase 3 of the automation project is expected to be completed in mid-2014.

"UNOS KPD has had amazing support from the community since its inception," said Dr. Andreoni. "Now, we need the centers who have not been actively involved to enter patient pairs.

When every center in the country involves its patients and their potential donors, we'll be creating transplant opportunities for every potential candidate who has a willing and appropriate, but incompatible, living donor."

For more information about the OPTN/UNOS KPD Program, go to [transplantpro.org/kidney-paired-donation](http://transplantpro.org/kidney-paired-donation), or contact program manager Ruthanne Leishman at [ruthanne.leishman@unos.org](mailto:ruthanne.leishman@unos.org) or 804-782-4770.



John Friedewald, MD



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