JAMES ALISON, REFLEXIONES DE UN SACERDOTE GAY

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Chile: $2130.00
Colombia: $8,900.00
Costa Rica: ₡1,900.00
Ecuador: S/.87,600.00
El Salvador: 31.00
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A BRIDGE OF LIFE

Just when Donald Trump is pushing for a wall of thousands of miles on the US-Mexico frontier, a determined surgeon and a world-famous economist join efforts to exchange organs between citizens of both countries. Marisol Robles is the corner stone of a bridge that could save thousands of lives.

MARISOL ROBLES dangles a pendant shaped as a kidney and inscribed with the date of her transplant.

BY **IVÁN CARRILLO** @carrillazo

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IN THE AUTUMN OF 2011,

Marisol Robles and her half-brother, Ray, entered operating rooms at the same time. They had been scheduled for a routine kidney transplant. Three months earlier, Robles, an editor and poet from Veracruz, Mexico had been diagnosed with kidney failure, a condition that prevented the organs from properly filtering her blood, and could result in systemic toxicity and ultimately death, if not treated with peritoneal dialyses, regular sessions of hemodialysis (artificial filtration of the blood) or an organ transplant. That had been her father's fate when Robles was 7 years old. And her fear of inheriting the disease came true three decades later. But now, well into the 21st century, the kidney she was about to receive offered her the hope of a normal life. "He wasn't as lucky as I am today," thought Marisol as she entered the OR. Science, and her half-brother's generosity, would save her life.

A series of unforeseen complications prevented implantation of the organ. After 10 long hours of struggle, doctors conceded defeat. For some of the surgeons involved, that was the first failed transplant of their careers. But to Marisol, awakening in the hospital and learning that all had been in vain was a devastating blow. She was deeply disheartened. And instinctively, she sought refuge in writing.

It was then that "The Diary of Thirst" was born. A blog that would soon become a reference to other kidney failure patients and their families. In her posts, the poet elegantly and sensitively shared the deepest feelings of a sufferer clinging to life, facing the difficulties and challenges of her day-to-day with profound serenity, longing and tenacity. Regarding the failed transplant, she wrote: "That was my first brush with hopelessness. Ray came to visit me after I left intensive care, but I could not look at him. I had pointlessly taken an organ from him. It was hard to keep fighting, I didn't want to live. I asked him to forgive me. He became very serious and said: 'Marisol, I'd do it a thousand times over if I had to.' Together, we convalesced from our losses: he, of his organ; I, of my hope."

THE ENCOUNTER

Seven years back, in 2004, Dr. Michael Rees, of the University of Toledo, Ohio, attended a medical conference in Chicago where he described a software he had developed with his father to improve matches between donors and recipients. His purpose was to use the web to locate the best transplant candidates and thus, maximize the quality of the procedures.

Although Alvin Roth listened attentively from the audience, the future 2012 Nobel laureate in Economics and professor at Stanford University wasn't thinking in terms of antigen properties or the effects of immunosuppressive drugs. Proficient in game theory and market design, his mind was considering the organ exchange within a context known as matching market: an exchange system ruled not by the laws of supply and demand, but by matching or mutual pairing. For kidney transplants, this means that not only does there need to be a patient requiring an organ, but that the organ has to be compatible with the patient. This is how Roth explains the dynamics: "In a match market, you not only choose, you have to be chosen. It's not just that you want to work for Google, Google also has to choose you."

With these ideas coursing through his mind, Roth approached Rees and offered to improve the system he had just described. Maybe it was the technical jargon or perhaps the different take on the problem. The fact is that the surgeon turned down his proposition. "I was a bit confused. I thought he offered to do more transplants. And I didn't want to do more transplants. I wanted to improve the quality of transplants. So, I said no", remembers Michael Rees, still surprised by his response. "Unbelievable! But I said no to this great Noble Prize winner!"

SENSITIZATION

The emotional blow, while painful, was not the worst part for Marisol.

PHOTO: ANTONIO CRUZ/NW NOTICIAS

YUYI AND MARISOL, pictured during their convalescence in Ohio. By this time, Marisol was writing her blog and drinking water to her heart's content.

Our immune systems produce antibodies not only to defend ourselves against a viral or bacterial attack, but also when exposed to other humans. And this can happen in the most ordinary of circumstances, such as a pregnancy, when the expectant mother releases antibodies that react with the red blood cells of her own fetus if the father's genetic information is incompatible with hers. Our body simply has to identify a foreign intruder, or antigen, to react against it. In Marisol's case, the transplant attempt –but mostly, the series of blood transfusions administered during the complications of the procedure- drove her immune system to a condition known as sensitization. As a result, her treating physician, Dr. Ricardo Correa-Rotter, estimated that Marisol would be incompatible with 97 percent of the organs that could be available to her.

Marisol's prospects were very bleak. Though there were other potential donors in her family, they couldn't help her. After the failed surgery, all she had left were three weekly sessions of hemodialysis, and the hope that the waiting list at the National Transplant Registry (part of the National Transplant Center where, to date, there are a little over 13,000 registered patients) would document a cadaveric organ with the required tissue typing. "I knew that my situation was like finding a needle in a haystack", says Marisol.

Dr. Correa-Rotter recalls that, over the years, Marisol's name kept climbing on the list, again and again, only to be turned down for the same reason: incompatibility. Nephrologist and researcher at the Salvador Zubirán National Institute of Medical Sciences and Nutrition, Correa-Rotter notes that his patient's sensitization was highly unusual, and that her chance for a future was being consumed by the years-long wait for a compatible organ which, "to be honest, perhaps would never arrive."

THE ALGORITHM

Fortunately, Alvin Roth was persistent. So, he approached Michael Rees once again. "I really believe I can help you, Mike," he said. Roth explained that his idea was not only to do more transplants, but to "do high-quality transplants, and to balance both things in a very sophisticated manner", recounts Rees.

From Roth's perspective, the major hurdle to overcome in the United States was an organ deficit. The Organ Procurement and Transplantation Network (OPTN), currently the United Network for Organ Sharing (UNOS), keeps a waiting list of nearly 120,000 patients, of which only some 11,000 get cadaveric kidney transplants each year. "Waiting for a transplant on that list can be a long, difficult, and dangerous process," explains Roth during a Skype interview from California. "Thousands of people die every year while they wait," he adds. (According to NKF, one patient dies every 14 minutes while waiting for a kidney, only in the US.)

In his search for a possible solution, Roth focused on one of the forms of kidney exchange between living individuals, known as the "2-way Kidney Exchange" (see Infographics). The concept, developed in 1986 by F. T. Rapaport, aims to overcome the barrier of incompatibility between pairs of donors and recipients. Marisol provides the perfect example: despite having three relatives willing to donate a kidney, it was impossible to carry out the transplant due to incompatibility.

Roth explains: "Previously, potential donors were turned down saying, 'Sorry, there's nothing we can do." But the development of this arrangement allowed one to organize kidney exchanges between pairs of donors-recipients, with the bonus that the system promotes transplants from living donors (which usually last longer and are of better quality than deceased donor kidneys) and reduces the average time on the waiting list. Thousands of kidney transplants from living donors are currently done every year. According to the US Renal Data System, in 2014 there were a total of 17,914 kidney transplants, only in the United States; and 5,537 of them were from living donors."

PHOTO: ANTONIO CRUZ/NW NOTICIAS

GLOBAL KIDNEY EXCHANGE: WIN-WIN-WIN

DANIEL WIKLER uses a metaphor to describe the complexity of the kidney transplant phenomenon in the world: "From the very moment that a kidney transplant is possible, something 'miraculous' happens to the body of young people in developing countries" (...) "it is the fact the each one becomes the bearer of an asset worth a small diamond." Mary B. Saltonstall Professor of Ethics and Population Health at the Harvard T. H. Chan School of Public Health, Wikler notes that this opens up a debate which has ethical and legal implications that should be carefully considered.

In an interview, the philosopher said that the Global Kidney Exchange project (GKE) emerges as a parallel organ market that "somehow allows us to remain on the right side of doing things". Wikler refers to the almost worldwide prohibition to sell organs of any kind, and to the ethical grounds for this stance. Nevertheless, he believes that many of our ethical or moral decisions are dependent on the proposal, while our responses are not always based on logic and rationality, and may change over time. Eighty years ago, for example, life insurances were considered an abomination, as it was unacceptable for anyone to pay for an instrument that "gambled on his/her life". Yet, what yesterday was a reviled transaction, today is a mainstream concept.

In this sense, Wikler believes that GKE stands at the border between a market of transplants and what we consider ethically acceptable, so he finds no moral objection to this approach. It is a parallel market where a "moral currency" (the organ itself) is used to save a life. However, the fact that each rich person saves the life of a poor person who would otherwise die for not having the resources to pay for the transplant, contradicts one of the main objections to the existence of organ markets: i.e., that transplants flow in just one way. Therefore, he has no hesitation in stating that GKE as a "great" project that may be seen as the next step in the organ exchange. It's a "win-win-win" proposition, he concludes.

Yet, there is a further restriction to this peer-to-peer donation: an almost worldwide restriction (except in the Islamic Republic of Iran) of assigning monetary value to organs, a situation that forces surgeries to be carried out simultaneously. There is no legislation requiring anyone to be an organ donor. Therefore, if the donor in a pair should decide not to give up an organ –even if the recipient of the pair has already received an organ from another pair- no one has the authority to coerce the donation.

To avoid this potential default, and prevent that one of the pairs in the exchange is affected by donating a kidney and not receiving one in return, donor nephrectomies (kidney removals) are usually carried out simultaneously in separate operating rooms. This "principle of simultaneity" –which Roth witnessed during his research- can reach obsessive peaks, with countdowns via cellphone before initiating each procedure: "Three... two... one...".

The problem is that the logistics of each surgery are quite complex, and this creates a bottleneck that obstructs the flow of transplants. For instance, an organ exchange between two pairs requires four operating rooms; therefore, the procedure for three pairs will involve six ORs and so on. Still, some specialists have achieved amazing feats. In May 2014, surgeons from Melbourne, Australia announced the successful, simultaneous organ exchange of six pairs.

In his search for a solution, Roth, along with Utku Unver and Tayfun Sonmez, developed an algorithm that could maximize the match-up of patients and potential donors based on existing needs. For example, priority could be given to pediatric recipients, sensitized patients or those who had been longest on hemodialysis. However, to their technological proposition –which uses patient databases- they added a new exchange feature.

The economist wondered what would happen if he eliminated the principle of simultaneity to make the system flow more efficiently. He imagined organized chains of living non-direct donors, where organs could be exchanged using the kidney as currency in a "receive now, pay later" system. To achieve this, he introduced the persona of an altruistic donor, an individual willing to contribute a kidney without an assigned recipient. A concept that, surprisingly enough, is becoming more prevalent in the realm of kidney donation.

The contribution of the additional kidney from a Good Samaritan who, through no personal interest or benefit, surrendered an organ to the chain, reduced the potential negative impact in case of default. It was then that the kidney acted as currency with no monetary value, a sort of bitcoin that enabled pairs to participate in the match market.

"CHAIN OF LOVE"

The theory developed by Alvin Roth and his team was masterfully implemented by Michael Rees. The surgeon and his wife, Susan, set up a chain of donors and recipients where participants committed to exchange organs in a non-simultaneous manner. Through years of work with kidney sufferers, the couple knew that potential donors would fulfill their part in the exchange once they experienced the gratitude of a family at receiving an organ that could save the life of their patient. So, for the first time in history, the guarantee in the process of organ exchange would no longer be simultaneous delivery but mutual trust; even if direct participants never met.

The life-saving chain began in July 2006 with an altruistic donation from a 28-year-old man from Michigan, who enrolled in the transplant program of the Buffalo General Hospital in Buffalo, New York. The donor's information was uploaded to the Alliance for Paired Donation (APD) site, and a search for a match was entered in a database created by Michael Rees and Jonathan Kopke, using the algorithm that Roth had developed.

Comprised by a coalition of 25 US states and the data from patients enrolled at over 70 US transplant programs, the APD registry yielded the first match in April 2007. The altruistic donor flew to Phoenix, Arizona to have his kidney transplanted, on July 18, 2007, to a 53-year-old woman whose husband had been incompatible. Seven days later, the husband traveled to Toledo, Ohio and donated his kidney to a 32-year-old woman. Thus, began this historic chain.

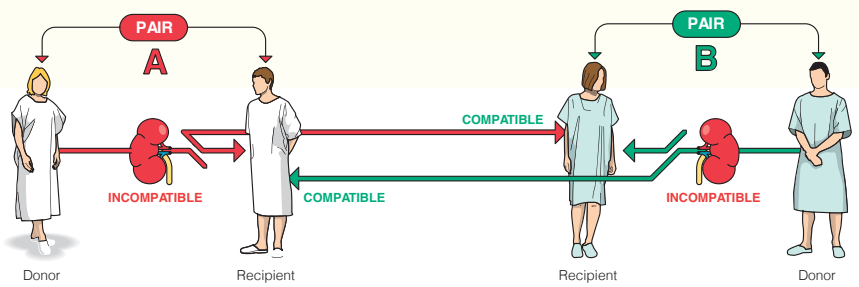
When Rees and Roth wrote about the scope of the project in the New England Journal of Medicine, the chain had reached 10 non-simultaneous transplants (ten donors and ten recipients.) All the donors had honored their commitments. This achievement would be mentioned in 2012, when the Royal Swedish Academy of Sciences awarded Alvin Roth the Nobel Prize in Economics Sciences (which he shared with the economist and mathematician Lloyd Shapley.)

During the awards ceremony, Roth spoke extensively about his work with Rees, and underlined the importance of collaboration among economists and physicians. In April 2015, the National Kidney Registry (NKR) documented the longest chain to date: a total of 68 individuals (34 donors and 34 recipients) exchanged organs using the new methodology.

THE LIFE EXCHANGE

The organ exchange process known as the ***2-way Kidney Exchange*** was proposed in 1986 by ***F. T. Rapaport*** and introduced in South Korea in the 1990s. It involves an organ exchange between two or more pairs of donor-recipients in order to overcome incompatibilities. The illustration shows that the donor in pair A provides a kidney to the recipient in pair B. In turn, the donor in pair B returns the favor by donating to the recipient in pair A. These kinds of surgeries occur simultaneously to prevent default by any of the parties involved, as there are no legal entities compelling donors to give up their organs should they refuse.

2-WAY KIDNEY EXCHANGE



GRAPHIC: OLDEMAR

DR. MICHAEL Rees kisses Marisol before her transplant surgery. His associate, Dr. Obi Ekwenna, holds the box with the kidney.

A feat known as the "Chain of Love". Out of 103 chains set up by the NKR between 2015 and 2016, only one has been broken by donor default.

A THIRST FOR LIFE

Routine is crucial for patients with a chronic condition. Daily activities provide a reassuring framework against the unforeseeable evolution of disease. Over the years on the waiting list, Marisol learned to redefine "normality", as her life revolved around a hemodialysis machine she had to use three times a week.

In addition to work and occasional trips to her birthplace, she maintained an active social life. She also exercised and worked diligently on her third poem collection: "Marherido". She kept to her monthly medical check-ups at the hospital where she supplied blood samples, so there were always fresh ones for crossmatch assays or compatibility tests should a deceased donor kidney of similar typing become suddenly available.

At the time, the pages of "The Diary of Thirst" became a profound and lucid record of her emotions and thoughts. Her experience as editor of a scientific magazine helped her navigate medical terminology and the processes she was encountering. In addition, the blog served as a forum to denounce –with significant impact within the community of patients and their families– situations affecting sufferers, such as unfair policy changes at the hemodialysis clinic.

Still, the only constant in her daily life –made explicit by the title of her blog– was thirst. Marisol documented this relentless yearning resulting from the rigorous restriction of fluids. On August 8, 2013, she wrote: "Water is what I miss the most in this new phase of my life. Living with thirst has been extremely difficult. I can't quench it with the mere 600 milliliters of fluids I'm allowed. And if I gamble that nothing will happen, and drink glass after glass, I have to pay the price of fatigue and breathlessness. But as I've been stubborn since childhood, I have contrived mechanisms that keep me from collapsing. If I can't drink water, I immerse myself in it, to soak my skin and confuse my body. So that my eyes take in the blue and I'm completely wrapped in water".

Her physical thirst was also a thirst for life. A thirst for her lost health.

TWO FOR THE PRICE OF ONE

While Alvin Roth had used his knowledge of economy to overcome medical issues, Michael Rees used his medical expertise to dissect the financial scaffolding of medical insurance. And the surgeon soon realized that the chains of transplants could not only save lives. They were mechanisms that resulted in savings which, in turn, could be used to save more lives.

Rees had estimated that, in the United States, the cost of hemodialysis per patient over a 3 to 5 years' period was two to three times higher than a transplant. According to the US Renal Data System, kidney treatments account for 7 percent of Medicare's budget: some $30 billion USD a year (not including another $15 billion USD from the American private insurance industry.) In 2013, the Medicare expenditure on hemodialysis amounted to $84,500 USD per patient/year, the peritoneal dialysis cost $69,919 USD per patient/year and transplants $29,920 USD per patient/year. In other words, over time, a transplant is a much cheaper treatment option than hemodialysis by a 3:1 ratio.

Savings over a 3-5 years' period would amount to between $300,000 and $500,000 USD per patient (depending on the insurance plan). Rees remembers: "When I considered the problem from this perspective, I didn't think that hemodialysis was three times more expensive than a transplant. I said: 'Wow, those resources could pay for two kidney transplants!' That's when the Global Kidney Exchange was born."

The new venture, which Alvin Roth soon joined, was established under the premise that, instead of picturing developing countries as places where poor people were desperate or forced to sell their organs in the black market, they should be reimagined as places where patients have willing, living kidney donors, but don't have sufficient means to pay for their own kidney transplants.

PHOTO: ANTONIO CRUZ/NW NOTICIAS

CHRONIC KIDNEY DISEASE IN MEXICO

CHRONIC KIDNEY DISEASE is a mounting up global challenge. Especially in Mexico, where the condition is growing at alarming rates, according to nephrologist Ricardo Correa-Rotter, a researcher at the Salvador Zubirán National Institute of Medical Sciences and Nutrition.

The disease is dependent on various conditions, which is why its prevalence and incidence have increased in Mexico: 30 out of 100 individuals over 20 years have high blood pressure; and it's estimated that between 10 to 14 percent of the Mexican population over the age of 20 are diabetic. In fact, "if you live in Mexico and you're in your 50s, you could be in the 30 to 40 percent of the population with diabetes," says Correa-Rotter.

He adds that these disorders, the leading cause of chronic kidney disease, have shown an exponential increase, judging by the population on hemodialysis. In 1992, there were only 140 individuals per million undergoing this treatment; currently, that number has grown to 900 per million. And while the extent of hemodialysis coverage is acknowledged, the condition keeps insidiously expanding.

There are several urgent requirements to address the problem of chronic kidney disease. Correa-Rotter emphasizes the need to develop an official registry of patients on dialysis; fostering a culture of organ donation; and promoting healthier lifestyles. Institutional efforts have included the World Congress of Nephrology, held at the Banamex Center in Mexico City from April 21 to 25, 2017. Lastly, Correa-Rotter considers extremely important that nephrologists and specialists of various areas, worldwide, invest additional efforts in the subject of diabetic neuropathy, a critical issue in Mexico. N

If those pairs were added to the pools of organ exchange in the United States, it would not only be possible to increase the number of available donors –that is, expand the availability of organs to improve matches–, but the US medical insurance system could pay for both the transplant of American patients and the transplants of patients from developing countries–and insurers, and insurers could still yield significant savings.

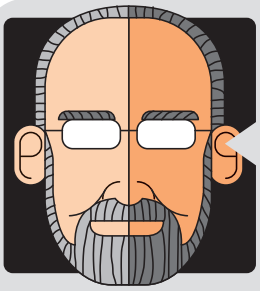
However, the project was not without dilemmas and contradictions. Who would pay for the treatment of the insured's potential donor if the organ was ultimately used by a third party? Another hurdle were the legal limitations of the various nations involved. After careful revision, the general plan seemed feasible, so they decided to proceed. Rees got support from the Agency for Healthcare Research and Quality, in the form of a grant, for two million dollars. His commitment: to develop a standard acquisition charge and assist with a viable plan for the Global Kidney Exchange.

In June 2015, the first Global Kidney Exchange (GKE) took place with a donor-recipient pair from the Philippines that had joined a US donation chain. This achievement, which overcame numerous obstacles, merits a separate chain in this story. Yet, most outstandingly, it proved that the plan to incorporate patients into the American exchange chains was viable. On December 19, 2016, the American Journal of Transplantation published the results under the heading "Kidney Exchange to Overcome Financial Barriers to Kidney Transplantation".

THE CALL

On June 15, 2016, Marisol met with her cousin, Yuyi, a beloved childhood playmate who had repeatedly offered the organ she so desperately needed. Over dinner, Yuyi wondered if they should have new tests. While previous analyses had confirmed incompatibility due to Marisol's sensitization, her cousin suggested texting Dr. Correa-Rotter for his opinion.

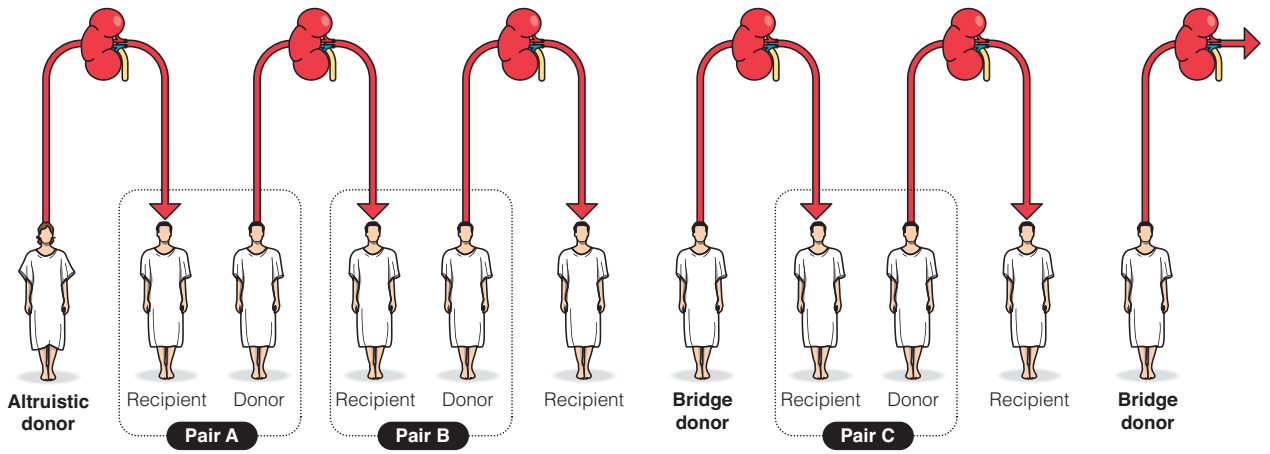
Marisol waited nervously the next day, checking her cell phone frequently for her doctor's answer. Suddenly, she received a call from an unidentified number. It was one Dr. Eric Vélez, on behalf of an "American association that enabled transplants between non-compatible individuals, using an algorithm invented by a Nobel Prize laureate in Economics", remembers Marisol.



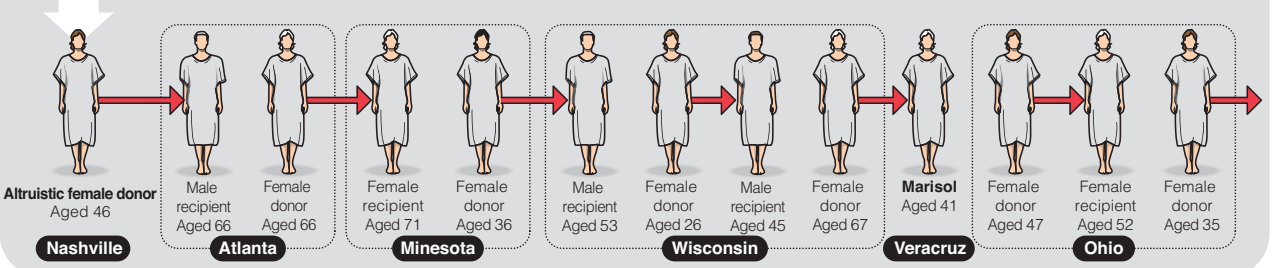
LIVING NON-DIRECT DONORS CHAIN

Alvin Roth transformed the organ exchange by eliminating the principle of simultaneity that ensured donor compliance. To achieve this, he introduced the concept of an altruistic donor (one without a previously assigned recipient) who, by providing an "extra" organ, prevents the negative impact in a pair in the event that a donor in the chain decides to default. In other words, the pairs never risk running out of the currency (the organ) that allows them to take part of the exchange process.

CHAIN OF DONATIONS



REAL CASE, INITIATED ON APRIL 21, 2016



GRAPHIC: OLDEMAR

"¡FREE OF DIALYSIS! I'm singing and dancing", reads the message in Marisol's living room.

Bewildered, she couldn't understand if they were trying to sell her an organ; and even wondered if it was a cruel joke or some personalized version of telephone extortion. But during the conversation, Vélez asked her to visit several websites that "appeared to be serious".

Just then, she got a text message. It was from her friend, business reporter Barbara Anderson, saying that representatives of Rejuvenate Health Care –the company Rees and Roth had created to launch their project- had contacted her asking for information on a Mexican case with specific characteristics, so she gave them their cell number. The most important revelation from Vélez was that Marisol could get their help if she had a potential donor, compatibility notwithstanding. Marisol thought of Yuyi. A shiver ran down her spine.

Six week after joining the project, Marisol was called to a meeting in Mexico City. She thought something had gone wrong and that the whole thing would be called off. "I hadn't even met Mike [Rees] and agreed to the program because I had no options", she says. But when she entered the room, she found Dr. Arturo Dib Kuri, the lead surgeon in her first transplant attempt. A man she trusted completely. Marisol was shocked. Kuri now represented Prorenal, the Mexican association that would be joining the Global Kidney Exchange program. He had only four words for Marisol: "We have your kidney".

"We embraced and cried together", remembers Marisol.

THE CORNER STONE

Marisol and Michael Rees greeted me in Toledo, Ohio on October 18, 2016. She was just beginning her postop recovery. Three weeks prior, Marisol had finally received her new kidney and I found her brimming with life, in a wonderful mood. Rees was also very pleased and optimistic. Marisol's case was the second international experience of the Global Kidney Exchange. While there have been many financial, clinical and bureaucratic barriers, the effort has been a success.

Marisol and Yuyi were part of a chain initiated by a female altruistic donor from Nashville in April 21, 2016. On September 28, the Mexican patient received her organ from a 67-year-old female donor from Wisconsin, who joined the chain to obtain a kidney for her son.

Marisol never met her donor personally. In fact, her organ was delivered to the hospital by courier. But the following day, when both were still in post-surgery recovery in their separate hospitals (one in Wisconsin and the other in Toledo), they had a very emotional FaceTime conversation.

One week later, Yuyi returned the favor by donating her kidney to a 52-year-old woman from Ohio.

That chain remains active today. Susan Rees has programmed four transplants over the next three months, and intends to add new links. Michael Rees believes that the dynamics of the exchange chains could save "thousands of lives in the United States, and hundreds or thousands of lives in Mexico".

Roth points out that this bridge of transplants between both countries is also a metaphor about the wall that the President Donald Trump intends to build along the southern border of the United States: "I guess that organs and patients with kidney failure will have to cross over or under the wall. There are benefits to the kidney exchange. American patients are currently dying for lack of organs, and there are Mexican patients who have donors but can't afford a surgery. So, there are people in both countries that can be mutually helpful", says the economist.

THE BRIDGES

On January 29, 2017, Marisol wrote on "The Diary of Thirst":

"I was so engrossed on the day-to-day for five and a half years, that everything else was minimized. It's different now. I need to find time not to lose my focus, not to misplace those ten weekly hours when I just listened to my body while my blood was being purified".

"Before sunup, and while they drew out my blood to get it back to basics, I remembered that Trump was in Toledo the day I arrived for the transplant. And that the road to the house where I was lodging was full of signs supporting him. I was in one of the states where he had the most followers. But that was unimportant. All that mattered was to make my body available. And trust".

"While some called for 'the wall', there were others who made dinner for us, Mexicans. Who opened their doors to offer us a home in this transition, who built bridges where nationalities didn't matter, who spoke a language rooted in humanity. Bridges where life was the only destination."

"Recalling that moment, I discovered that, during the entire experience, I never allowed fear to rule me. So focused was I on overcoming each second. And now, as I realize that anxiety resulted from the news that infused my day-to-day, I remember those lessons and I refuse to let fear take me by surprise and get under my skin. I refuse to surrender my dream to a wall, to a leader, to things I cannot control. If I must tremble, I choose to tremble with pleasure, with longing, with gratitude." N

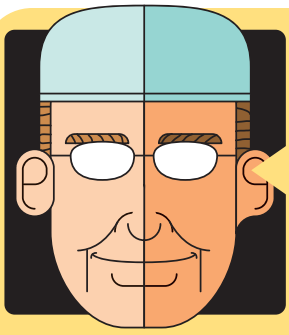
PHOTO: ANTONIO CRUZ/NW NOTICIAS

THE MEXICAN CHAIN OF LIFE

ON JANUARY 14, 2016 began the first sequenced kidney transplant chain in Mexico. The organ exchange took place at the Salvador Zubirán National Institute of Nutrition (HNNSZ), with funding from the Carlos Slim Foundation. Four individuals with non-compatible donors exchanged donors and so, overcame the incompatibility barrier, receiving a kidney their bodies could assimilate.

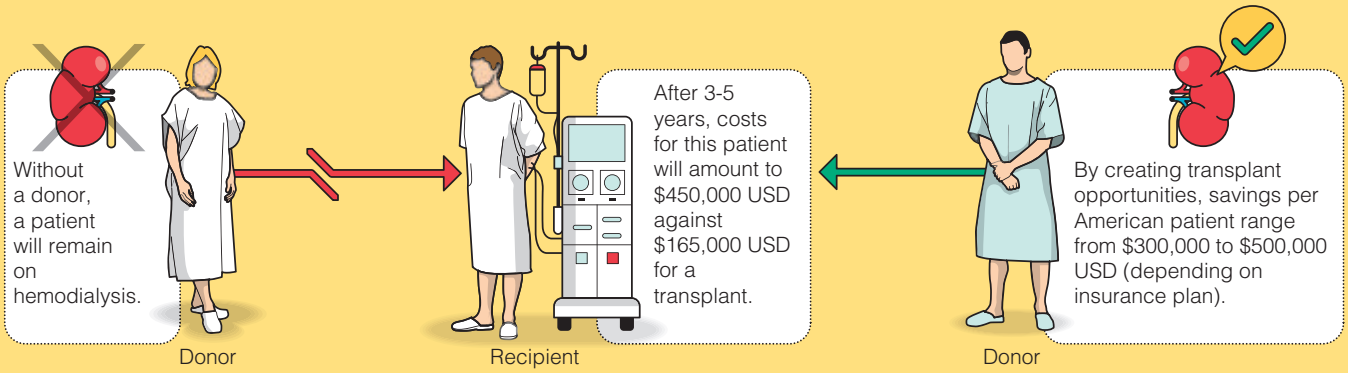
The donors' names were Jacaranda, Blanca, Nora and Carolina, and donations were made in that order. All were women aged between 22 and 59. Recipients were Karla (Blanca's daughter), Ana (Nora's niece), Noemí (Carolina's sister) and Alberto (Jacaranda's friend and the initiator of the chain). All participants are currently in perfect health.

Marisol is a patient of HNNSZ and was also enrolled in that listing, but being sensitized she couldn't opt for the chain, as there were no compatible organs for her. Specialists believe that this kind of chains could increase threefold the number of kidney transplants in Mexico. N

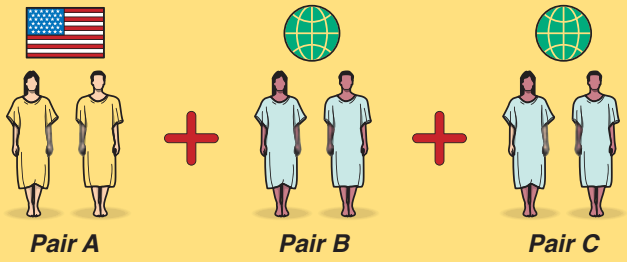


Global Kidney Exchange

Michael Rees realized that, in the US, the cost of hemodialysis over a 3-5 years' period was three times higher than a transplant. ***GKE*** proposes to leverage that difference in order to expand the transplant market in the United States by introducing patient-donor pairs from developing countries. With current resources, insurance companies could cover both transplants and immunosuppressive treatments for American customers and patients from developing countries, and still yield savings ranging from $159,000 to $300,000 USD per patient.

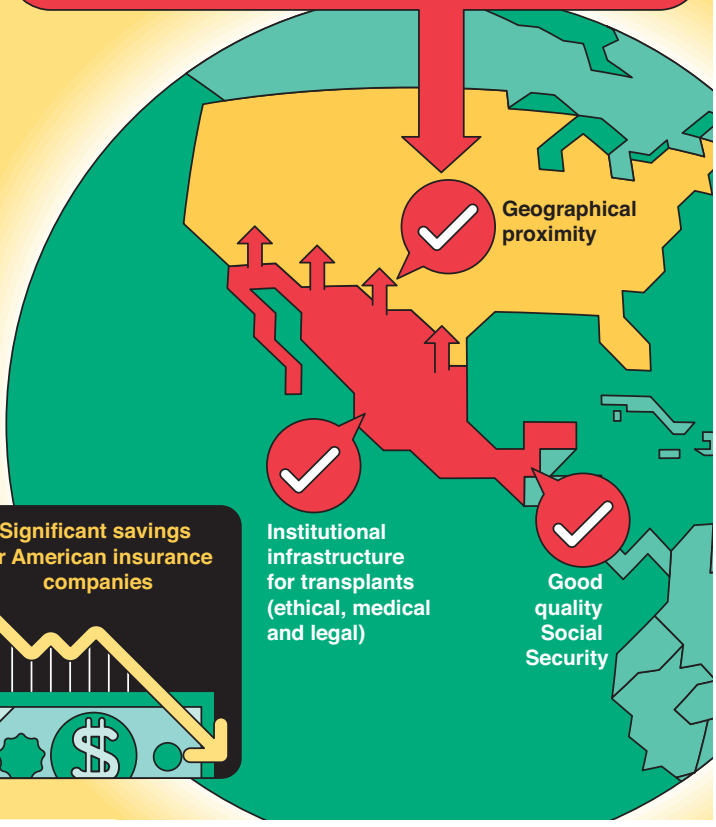


GKE seeks to add patient-donor pairs to the US



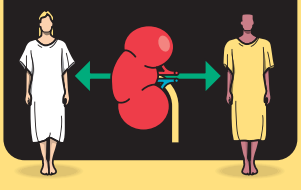
organ exchange market to broaden the number of matches, and increase the amount and quality of transplants. Savings resulting from transplants could fund transplants and immunosuppressive treatments for patients in developing countries.

Advantages for *GKE* in a strategic alliance with Mexico include:

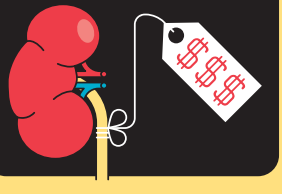


THE PROGRAM OFFERS:

Transplant opportunities for patients in the US and in developing countries



Fighting the black market for transplants



Significant savings for American insurance companies

GRAPHIC: OLDEMAR

MEXICO, AN EXCELLENT PARTNER TO EXPAND THE KIDNEY EXCHANGE

Dr. Alvin Roth, 2012 Nobel Prize in Economics Sciences, talks about his algorithm for kidney transplants.

BY **IVÁN CARRILLO**

–Would you explain the mechanics of your algorithm to match donors and recipients?

–Well. The way the algorithm works in kidney transplants begins with data that we speak off as a "compatible graph". You can think of a compatible graph as the participants in the kidney exchange market place, where patients and donors are pairs. Sometimes there are no direct donors, and sometimes there are people who are waiting for a donor kidney, but don't have a living donor. A compatibility graph for each of those pairs draws an arrow to another pair if the kidney from the donor in the first pair can go to the donor in the second pair. So, you can think of this as a big picture, with patient-donor pairs, and then a lot of arrows going between them. And on those arrows, we have gauges, having to do with how good that transplant is. So, an excellent transplant will have a big number on the arrow. And a not so good transplant will have a smaller number. And a transplant that is impossible between a particular donor and a patient will have no arrow at all. What the algorithm does is try to recommend a set of transplants as it tries to find the maximum gauged set of matches. So, it tries to pick the arrows with good numbers on them that reflect good transplants; finds as many of those as possible; and strings them together in a chain (...) so the surgeons can go ahead and accomplish those transplants.

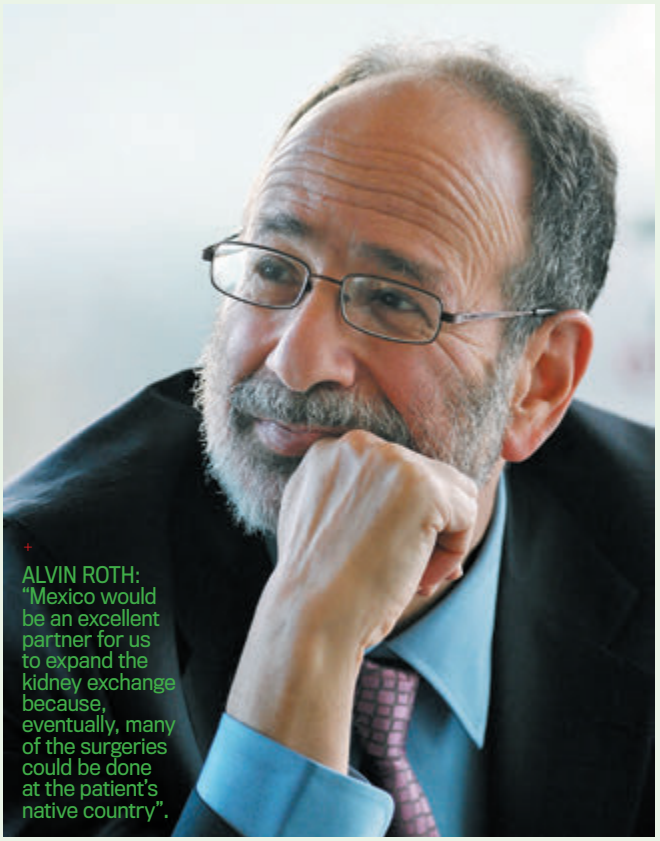
–How can the transplant market be improved?

–What are the possibilities to make the market work better? One of them, of course, is to make the marker thicker by bringing more people in to kidney exchange. And a way to do that is to bring overseas patients into the US, where they can take part in the kidney exchange. One of the things that make us hopeful about this kind of global kidney exchange is that it could be self-financing, because when you transplant an American you take them off dialysis, and that saves the US healthcare system about 1a quarter of million dollars in the first five years. So, if we can bring overseas patients into the American kidney exchange system, they would get help, the American healthcare system would benefit, and we could finance transplants for people who can't afford their own transplants. That's the idea of the Global Kidney Exchange. That's how we think we could expand the American Kidney Exchange, by taking American healthcare beyond Americans borders.

–Could Mexico be a strategic partner?

–Yes, I think Mexico could have a very important role in the Global Kidney Exchange, because Mexico is very close to the US. It has excellent hospitals where kidney patients can get surgery, and also pre- and post-surgical care. (...) Some of those patients could come to the US and we would pay for them with funds from the healthcare system, if the engaged the kidney exchange. That way, not only would they get a kidney, but an American would also get a kidney. Which is where the savings come from.

So, Mexico would be an excellent partner for us to expand the kidney exchange because, of course, eventually many of the surgeries could be done at the patient's native country. Finances would flow above borders and surgeries could be done nearby. Sometimes kidneys have to be transported, and we still need some changes in the law before kidneys can easily be transported across borders. But I think it would be very natural to have a North American kidney exchange that includes the United States, Mexico and Canada. And that will provide us with a thicker market which would allow for more people with kidney disease to receive a transplant. N



ALVIN ROTH: "Mexico would be an excellent partner for us to expand the kidney exchange because, eventually, many of the surgeries could be done at the patient's native country".

PHOTO: MANDEL NGAN/AFP

ALVIN ROTH IS A CRAIG AND SUSAN MCCAW PROFESSOR OF ECONOMICS AT STANFORD UNIVERSITY, AN EXPERT IN MARKET DESIGN, AND SHARED THE 2012 NOBEL PRIZE IN ECONOMIC SCIENCES WITH LLOYD SHAPLEY.

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