Markets in Human Organs for Transplantation

Controversy and Contention

Edited by James Stacey Taylor and Mark J. Cherry

First published 2026

ISBN: 978-1-041-17431-8 (hbk)
ISBN: 978-1-041-17429-5 (pbk)
ISBN: 978-1-003-68965-2 (ebk)

2 WHO Says Countries Should Be Self-Sufficient in (Unremunerated) Organs and Blood

Kimberly D. Krawiec and Alvin E. Roth

DOI: 10.4324/9781003689652-3

The funder for this chapter is Stanford University

Routledge
Taylor & Francis Group
NEW YORK AND LONDON

2 WHO Says Countries Should Be Self-Sufficient in (Unremunerated) Organs and Blood

Kimberly D. Krawiec and Alvin E. Roth

2.1 Introduction

Twenty years ago, two books, Mark J. Cherry's *Kidney for Sale by Owner* (2005) and James Stacey Taylor's *Stakes and Kidneys* (2005), urged the consideration of monetary markets in kidneys. Although we are sympathetic to that view, societies and governments around the world are not – the intervening years have seen no broader acceptance of organ markets than at the time Cherry and Taylor wrote. As was the case 20 years ago, no country other than Iran permits legal payment for kidneys, and shortages persist around the world. In the United States alone, the transplant waiting list is approximately 100,000 persons and if current trends continue will only grow in the coming years (U.S. Department of Health & Human Services). This nonremuneration principle is embodied in World Health Organization (WHO) guidelines on organ and tissue (WHO 2009) and blood (WHO 2023) donation, and in the laws of many countries around the world.

Although this nonremuneration rule has received intense criticism, it is only half of a WHO policy, broadly accepted around the world, that mandates both national (or sometimes only regional) self-sufficiency and an absence of remuneration for both blood products and transplantable organs (hereafter, the "twin principles") (WHO 2009, 2023). This self-sufficiency mandate, though less examined than the ban on remuneration, presents a real hurdle to progress in transplantation, especially for smaller and low and middle income (LMIC) countries.

This is especially the case because some of the most exciting and promising developments for increasing the availability of transplants have been in *kidney exchange*, a mechanism that leverages in-kind exchange, rather than financial compensation, to encourage and facilitate donation among those with willing but incompatible partners. But kidney exchange works best when a large pool of patient-donor pairs can engage with one another, and so requiring that transplantation be contained within

DOI: 10.4324/9781003689652-3

national boundaries unnecessarily limits access to transplants that could be achieved (only) by cross-border exchange.

WHO's insistence on self-sufficiency inhibits cooperative kidney exchange efforts (as well as other innovations) among countries that would benefit all concerned, especially the LMIC that the policy is purportedly designed to help. As will be discussed, the policy's effect on blood products, especially when combined with the no remuneration rule, is even more stark – no country that fails to compensate donors is self-sufficient in plasma collection and few LMIC collect sufficient supplies of whole blood.

This chapter critiques these twin principles, making several central points. In Section 2.2, we discuss the twin principles as applied to blood products, noting the particularly pernicious effects on plasma supply and availability, especially in poorer nations. In Section 2.3, we turn to transplantation, emphasizing the numerous benefits of international cooperation and cross-border transplantation – benefits that would be undermined by self-sufficiency, especially in smaller countries and those without well-developed domestic exchange programs. We illustrate this point with examples drawn from several noteworthy instances of cross-border kidney exchange.

In Section 2.4, we argue that the current discourse around remuneration and organ donation is frequently overdramatic and unhelpful. Although nearly every effort to increase organ donation and transplantation presents ethical challenges, not every such effort amounts to "trafficking" or "a crime against humanity." These labels stifle helpful deliberation, progress, and consensus. Section 2.5 concludes with recommendations for a saner approach to the scarce resources of blood products and transplantable organs – one that is focused on international cooperation, rather than self-sufficiency; evidence-based policies, rather than a reliance on decades-old assumptions and understandings; and the use of pilot studies and trials to test the ethics, safety, and efficacy of incentives in various settings.

2.2 Blood Products

Since at least 1975, the World Health Assembly (the decision-making body of WHO) has emphasized the twin concepts of self-sufficiency and voluntary nonremunerated blood donation (VNRBD) as keys to ensuring the quality and safety of the blood supply (WHO Expert Group 2012; Taylor 2005/2017). Despite this, few countries are self-sufficient in blood products. Moreover, as will be shown, the nonremuneration policy is in direct tension with the self-sufficiency policy, as is especially evident in the case of plasma.

2.2.1 Whole Blood

Blood products can be divided into several categories, but the most important for this discussion are whole blood for transfusion and blood

plasma to be manufactured into plasma-derived medicinal products (PDMPs). According to the American Red Cross,

> Whole Blood is the simplest, most common type of blood donation. It's also the most flexible because it can be transfused in its original form, or used to help multiple people when separated into its specific components of red cells, plasma and platelets … .Whole blood is used to treat patients who need all the components of blood, such as those who have sustained significant blood loss due to trauma or surgery.
>
> (American Red Cross 2025)

Although wealthy countries are typically able to satisfy domestic whole blood needs from VNRBD, the vast majority of LMICs are not (Allain 2019; WHO 2023). As a result, in many LMICs, shortages of blood for transfusion contribute to maternal death, death from traffic accidents, and complications from childhood anemia (Asamoah-Akuoko et al. 2023; Allain 2019). Moreover, even wealthy countries may experience seasonal shortages of whole blood or deficiencies in some blood components, such as platelets, which are harder to collect and have a shorter shelf life (Han, Kesten and Ünver 2024).

According to WHO, although 79 countries collect over 90% of their blood supply from VNRBD, 54 countries collect more than 50% of their whole blood supply from family/replacement or paid donors (WHO 2023). The use of family/replacement donors poses problems of inefficiency and fairness – for example, some patients may not be able to recruit sufficient replacement donors and instead must turn to black market transactions in which a paid donor poses as a friend or family member willing to donate on a replacement basis (Han Kesten and Ünver 2024).

2.2.2 Plasma

Plasma is the liquid portion of blood that carries red and white blood cells, platelets, and a number of vital proteins such as albumin, gamma globulin, and anti-hemophilic factor. Plasma is obtained by separating the liquid portion of blood from the cells. Although plasma is sometimes transfused to patients (such as those suffering from severe burns or trauma), the greatest demand for plasma is for plasma derivatives used to create PDMPs (American Red Cross 2025).

PDMPs are life-saving treatments for multiple acute and chronic conditions for which there are no alternative treatments. For this reason, PDMPs are classified as essential drugs by the WHO (Rizky and Sjaaf 2023). Yet these life-saving therapies are unavailable to much of the world's population.

No country that relies on VNRBD is self-sufficient in plasma – indeed, the United States (which collects plasma from paid donors) supplies 70%

of the world's plasma needs, with Germany, Austria, Hungary, Czechia, and Latvia (which also permit some form of payment for plasma donors) supplying another 20% of the world total (Elias et al. 2024; Jaworski 2020). According to WHO, only 56 of the 171 countries represented in their data produce *any* PDMPs from plasma collected within their borders. Ninety-one countries import 100% of PDMP and another 16 countries report that they use no PDMP at all (WHO 2023).

2.2.3 Rationales

Although the WHO (2012) proffers rationales in support of national self-sufficiency in blood products, as Taylor (2015) demonstrates, these purported rationales, at best, support only the use of VNRBD regardless of geographic source and, in many instances, are unrelated to either self-sufficiency or nonremuneration (or counsel against them). For example, WHO's contentions that blood products "should not be considered as mere 'commodities'," and should be provided by "regular, voluntary, non-remunerated blood donors" for safety reasons relate to the nonremuneration directive, not to the self-sufficiency directive. WHO's contention that each country owes its citizens access to a safe and adequate quantity of blood products not only does not require national self-sufficiency, it is incompatible with self-sufficiency for the vast majority of countries (WHO Expert Group 2012, 339).

In the context of transplantation, however, both the WHO and others have provided rationales in favor of self-sufficiency, which presumably animate the WHO position on blood products as well. Repeatedly, the dominant rationale involves prohibiting the flow of transplantable organs from poor to rich countries. As summarized by Danovitch et al. (2013) in discussing the WHO position,

> The core concept of self-sufficiency, however, is simple: that poor countries should not allow organs from living donors to be sold to foreigners rather than provided to their own citizens and that wealthy countries should develop adequate transplant programs, including the use of deceased donation to the maximum extent possible, rather than allowing their wealthy or well-insured citizens to purchase a kidney transplant in a country where organs are sold.
>
> (1309)

In other words, the WHO and other supporters of self-sufficiency fear a stream of organs (and presumably blood) running from poor countries to rich ones. The irony in the context of blood products is that the reality is the opposite. As already discussed, the United States supplies plasma

around the world, at least to other wealthy countries that can afford to purchase it. Meanwhile, LMIC can neither manage self-sufficiency nor afford to purchase blood products on the open market and simply do without, to the detriment of their citizens.[1]

The twin directives of self-sufficiency and nonremuneration exacerbate this problem in multiple ways. Wealthy countries that could add to the world's plasma supply fail to do so, citing the nonremuneration principle. Because this results in insufficient domestic supply, those same wealthy countries import PDMPs from the United States, reducing the supply available to LMIC and driving up the price. In part, this is because it is cheaper to buy plasma from the United States than to collect it domestically from unpaid donors. Unpaid donors have to be recruited and retained, both of which are expensive, and also donate less frequently than paid donors. Robert Slonim (2018) found that in Australia, for example, "the domestic supply of immunoglobulin costs over three times more per unit than what is imported, despite domestic donors not being compensated." Although Peter Jaworski (2023, 11, Table 5) finds that the differential cost between plasma imported from paid donors and plasma collected domestically from unpaid donors in Australia has narrowed, domestic plasma still costs Australia 1.5 times more than imported plasma.

Finally, some discussion of blood safety is in order, as maintaining the safety of the blood supply is of paramount importance. Since the publication of Titmuss's influential *The Gift Relationship* in 1971, safety concerns have been invoked in favor of the nonremuneration principle. Yet, field-based evidence from large, representative samples shows that properly devised rewards increase supply without compromising safety (Lacetera, Macis and Slonim 2013). The safety evidence on fractionated plasma is particularly clear. Today, stringent regulatory protocols requiring sophisticated testing, rigorous donor screening, and inspections of both collection and fractionation facilities produce a safe supply of PDMPs, whether derived from paid or unpaid sources (Elias et al. 2024, Table 1).

2.2.4 The EU and Substances of Human Origin

On April 24, 2024, the European Parliament approved new rules governing substances of human origin. Although the main goals of the new rules are to enhance safety and promote self-sufficiency, the new rules echo the WHO guidance that "donation should be voluntary and unpaid, and be founded on the principles of altruism" (The European Parliament and The Council of the European Union, hereafter "EU," 2024). The rules are intended to govern all substances of human origin, other than solid organs, including those for which there are no current known uses in humans. The rules thus apply to "blood and blood components," "tissues

and cells, including haematopoietic stem cells from peripheral blood, from umbilical-cord blood or from bone marrow, reproductive cells and tissues, embryos, foetal tissues and cells and adult and embryonic stem cells," and "human breast milk, intestinal microbiota, blood preparations that are not used for transfusion, and any other SoHO that might be applied to humans in the future" (EU 2024).

The rules prohibit "making the human body and its parts as such a source of financial gain." Rationales offered in support of this position include safety, encouraging solidarity between donor and recipient, respect for human dignity, and protecting vulnerable populations. Interestingly, the rules continue to permit "compensation," as distinct from financial gain – in other words, donors are to be made whole, but not gain financially through donation (EU 2024).

The rules are not intended to take effect until three years after publication (roughly mid-2027) so their impacts, if any, on the supply of blood products collected in the EU are difficult to predict and will likely depend on implementation. We note, however, that the Council's own evidence indicates that member countries will only attain plasma self-sufficiency through monetary payments to donors. As already discussed, only five European countries (Austria, Czech Republic, Germany, Hungary, and Latvia) are fully self-sufficient in plasma. These are also the only EU member countries that presently permit monetary payment (Elias et al. 2024, Table 1).

Notably, the new EU rules reject the WHO self-sufficiency approach, at least among EU member states. For example, the rules explicitly recognize that "The exchange of [substances of human origin] between Member States is necessary for ensuring optimal patient access and sufficiency of supply, particularly in the case of local crises or shortages" (EU 2024, ¶ 69). Of course, this rationale holds for all countries, and not merely those in the EU.

2.2.5 Section Summary and Recommendations

When it comes to plasma, decades of experience have shown that the twin principles of self-sufficiency and nonremuneration are untenable. Moreover, modern testing capabilities and stringent regulations have ensured that the plasma supply is safe, whether collected from paid or unpaid donors. Despite protestations to the contrary, wealthy countries around the world that prohibit remuneration for plasma must know this, given that they import large quantities from the United States, which pays donors (Jaworski 2020). The WHO should thus abandon the twin principles in plasma collection and, instead, encourage experiments that encourage LMIC to use foreign aid to purchase plasma from the United States (as wealthy countries already do).

While the case for remuneration to providers of whole blood for transfusion (which undergoes less processing than plasma that is used for PDMPs) is less straightforward, nonetheless WHO should (cautiously) shift its approach here as well. First and foremost, blood collection policy should be based on the best current evidence, rather than on decades-old understandings and assumptions. Much of the research prompting concerns with paid blood donation is dated (Titmuss, for example, wrote before the development of reliable tests for hepatitis, HIV, and other blood-borne illnesses) or relies on surveys and uncontrolled studies. More recent field-based evidence from large, representative samples contradicts these early results. Indeed, more recent research on incentivizing blood donation finds that noncash incentives increase blood donations, and that higher value incentives increase it more than lower value ones. These interventions are cost-effective and do not compromise blood safety (Lacetera, Macis, and Slonim 2013). Indeed, wealthy countries, including the United States, already compensate whole blood donors through noncash incentives, such as gift cards and paid work leave, and have for some time (Chell et al. 2018).

2.3 Self-Sufficiency and Organs

2.3.1 Cross-Border Kidney Exchange

As noted, WHO takes the position, emphasized in the Declaration of Istanbul, that countries should strive for self-sufficiency in organ donation and transplantation (Declaration of Istanbul 2008/2018; Delmonico 2011). The 2018 Declaration of Istanbul defines self-sufficiency as "meeting the transplant needs of a country by use of donation and transplant services provided within the country and organs donated by its residents" though it does permit "equitably sharing resources with other countries or jurisdictions" (Declaration of Istanbul 2018).

However, many countries could benefit from international kidney exchange, as the WHO and transplant community appear to recognize when the exchanging countries are wealthy. Kidney exchange offers numerous benefits to patients and transplant programs, such as expanding the pool of potential donors, creating better matches between donors and recipients, and avoiding the costs and risks associated with desensitization therapies. Yet the success of kidney exchange depends on the inclusion of a large enough number of donor-recipient pairs (Agarwal et al., 2019).

International hubs for kidney exchange are needed because hard-to-match patient-donor pairs may need to find compatible exchanges outside the borders of their own countries. This is particularly true for citizens of countries with relatively small populations of potential compatible

donors, and of countries that don't yet have widespread kidney exchange. But even a big country like the United States, in which kidney exchange is a standard mode of transplantation, can sometimes be too small to find compatible kidneys for the hardest to match patients. The United States itself is a natural hub for international kidney exchange, but so far, bureaucratic obstacles have prevented it from integrating kidney exchange even with Canada. These benefits to cross-border kidney exchange are illustrated by several recent efforts and exchange agreements, none of which have yet risen to the level of standard practice – most have resulted in only a very small number of transplants.

Within the EU, for example, a number of cross-border kidney exchange collaborations have emerged. The South Alliance for Transplants (SAT), founded in 2017, consists of ten Spanish hospitals, three Italian hospitals, and one Portuguese hospital. At least in Portugal, the complications of potential delay and long distances between hospitals are ameliorated using the Portuguese air force, rather than commercial flights, to transport organs. Nonetheless, from 2017 to 2023, only seven cross-border transplants (involving only three Portuguese patients) were performed (Francisco et al. 2023).

Outside of the EU, one of the more interesting examples of recent cross-border exchange involves the United Arab Emirates (UAE) and Israel. The UAE has excellent hospitals that can perform kidney transplants and they are prepared to do kidney exchange, both domestically and internationally. The biggest of the Emirates, Abu Dhabi, provides medical care for its residents that includes dialysis and transplantation for kidney failure, which is prevalent there (perhaps due in part to the very hot weather and the perils of frequent dehydration in outdoor work) (Glaser et al. 2016). Most of those patients are on dialysis, although the national health insurance will pay for transplants for those who have willing donors either in the Emirates or in their home country. The UAE is wealthy, and many of the home countries are not, so the UAE assumes the costs of bringing family members to the UAE and providing the necessary medical care (Personal communication from Dr. Ali Abdul Kareem Al Obaidli 2024). This is cost effective as well as good for the patient because in the UAE, as elsewhere, transplantation is much cheaper than dialysis and also the best treatment. So taking a UAE resident off dialysis via transplant saves a life and pays for itself (Held et al. 2016).

Of course, sometimes the UAE resident's family member who is willing to donate a kidney isn't compatible with the UAE resident. Kidney exchange makes a lot of sense in this case. But with a resident population of only ten million, there are severe limits on how much domestic kidney exchange can do for hard-to-match patients. International kidney exchange, in which patient-donor pairs from other countries could also be transplanted

in the UAE through kidney exchange with UAE residents (or, eventually, with other international pairs), could be very helpful. Moreover, the UAE is an air transit hub with two international airlines, so a big portion of the world's population is within a few hours of direct air travel to the UAE.

These considerations enabled a three-pair kidney exchange between the UAE and Israel in the summer of 2021 (della Cava 2021). The pairs who exchanged kidneys were an Arab-Israeli husband and wife, a Jewish-Israeli mother and daughter, and a mother and daughter pair who were Arab residents of the UAE. The donor in each pair could not donate to the paired recipient because each recipient was a highly-sensitized mother.[2] Because the mothers were quite hard to match and because Israel and the UAE are both small, each with populations of around ten million, they had to look across national borders. To conduct the three-way exchange, two kidneys were flown internationally, one from Israel to the UAE and one the other way.

Cross-border kidney exchange requires some diplomacy, particularly when the countries involved are working together for the first time (and don't necessarily have a long history of cooperation). In this case, the exchange was politically delicate, with UAE officials downplaying the partnership with Israel and emphasizing instead the more general need for international cooperation in kidney exchange (della Cava 2021).

Other examples of successful cross-border kidney exchange include: Portugal and India (Kute et al. 2017), Czech Republic and Austria (Böhmig et al. 2017), Italy and the United States (through the Alliance for Paired Kidney Donation) (Castiglia 2022), and Israel with the Czech Republic, Cyprus, and Austria (Shkurko 2023). This list is not exhaustive but illustrates several points relevant to the WHO policy on self-sufficiency.

First, these examples show the benefits of cross-border exchange. Rather than promoting self-sufficiency, WHO should instead seek to promote and facilitate such cooperation. Second, these exchanges have so far been fairly isolated instances, rather than a regular occurrence. This is, in part, because cross-border agreements between countries with comparable kidney exchange programs almost all proceed by first matching domestically every patient-donor pair possible, and then attempting cross-border matches only with those hard-to-match pairs who could not be transplanted domestically. But it's especially difficult to match hard-to-match pairs to other hard-to-match pairs, so this process yields many fewer additional transplants than would be possible if national patient-donor pools were examined for cross-border matches before domestic options had been exhausted (see, e.g., Ashlagi et al. 2012). Rather than following the WHO's flawed premises on national self-sufficiency, the international transplant community should seek to improve the efficiency of existing international collaborations, as well as foster new ones.

2.3.2 Other Developments

As discussed in Section 2.3.1, WHO's policy on self-sufficiency is incompatible with robust international kidney exchange which, even in its currently limited form, provides mutual benefits to the countries that participate in it. But WHO's policy on self-sufficiency also threatens to undermine other beneficial international cooperative efforts, including deceased donor-initiated chains and Global Kidney Exchange (GKE).

WHO and others committed to self-sufficiency particularly emphasize the need to use scarce deceased donor organs only to transplant citizens of the country in which the donors died (Delmonico et al. 2018). This restriction is perhaps unobjectionable, so long as deceased donor organs are scarce and can each produce only a single transplant.[3] But kidney exchange now offers the possibility of transplant chains initiated by a deceased donor, meaning that a single organ of the right type can enable multiple transplants (Melcher et al. 2016; Furian et al. 2020). As with kidney exchange more generally, small countries are at a disadvantage and international cooperation between small and large countries could be mutually beneficial.

Consider a country like Denmark. Denmark's population is approximately six million people. The United States, with approximately 300 million people, is 50 times more populous. In 2020 Denmark had 124 deceased donors and performed 200 deceased donor kidney transplants (and an additional 78 living donor kidney transplants). In contrast, in 2020 the United States had 12,588 deceased donors (100 times as many as Denmark) and performed 18,410 deceased donor kidney transplants and an additional 5,234 living donor kidney transplants, for a total of 23,644 (Global Observatory 2024).

A difficult to match patient thus has roughly 100 times the chance of finding a match in the American deceased donor pool than in the Danish deceased donor pool. A hard-to-match patient-donor pair could travel from Denmark to the United States where the patient could receive a compatible deceased donor kidney. His or her intended Danish donor could then continue the chain by donating into the United States kidney exchange pool. Americans would not suffer from this trade: the US deceased donor kidney would be replaced by a Danish living donor kidney, which produces better long-term patient and graft survival, and the chain would end with a living donor donating to the deceased donor waiting list. This cooperative exchange benefits both Danish and US patients.

Another relatively new form of mutual aid in transplantation, GKE, also depends on cross-border collaboration to deliver benefits to all parties involved. In wealthy countries with the most robust kidney exchange programs, difficult to match donor-patient pairs for which no suitable

match can be found still exist. These pairs benefit from a larger donor-patient pool, as this increases the chances of finding the rare pair that meets the necessary criteria for a successful kidney exchange. In many LMICs, by contrast, the primary barrier to transplantation is the inability to pay for the procedure. Even LMIC with national health coverage generally do not cover transplantation and may have even limited coverage for dialysis, despite increasing rates of end stage renal disease in these countries (Rees et al. 2017; Krawiec and Rees 2014).

A pilot program launched in the United States in 2017 seeks to address both of these needs through a mutually beneficial program of kidney exchange that pairs hard-to-match American pairs with easy-to-match pairs from LMIC who could not otherwise afford transplantation (Rees et al. 2017; Bozek et al. 2018). The exchange is enabled by the fact that transplantation is much cheaper than dialysis. Transplanting an American pair thus relieves Medicare (or, in some cases, private insurance) from paying dialysis costs, and those cost savings are more than enough to pay the expenses associated with transplantation including immunosuppression and other postsurgical care for the recipients and donors of both the American pair and the LMIC pair. Neither patients nor donors are paid, and GKE has been endorsed by the European Society of Transplantation (Ambagtsheer et al. 2020) and by thoughtful moral philosophers in prestigious medical journals, such as *The Lancet* (Minerva, Savulescu and Singer 2019).

Nonetheless, to some observers it appears that, despite the fact that donors aren't paid, GKE violates the twin principles. So GKE has been condemned by some members of the transplant community, despite the positive results (see, e.g., Delmonico and Ascher 2017). We return to this debate in the following section, where we discuss the nonremuneration principle.

2.4 Nonremuneration and Organs

As noted at the beginning of this chapter, the nonremuneration principle in organ donation has long been contested. In part, this is due to disagreement about whether remuneration (including cash payments) is justified to meet the sizable unmet need for transplantable organs, especially kidneys. However, it also stems from lack of agreement about which measures designed to incentivize or enable donation amount to remuneration. The vast differences in laws, practices, and attitudes around the world illustrate this point.

In the United States, for example, the National Organ Transplant Act (NOTA) prohibits the knowing acquisition, receipt, or transfer of "any human organ for *valuable consideration* for use in human transplantation,"

but neither the statute itself nor the legislative history provide guidance on the meaning of the term "valuable consideration" beyond the obvious legislative concerns about for-profit commerce in human organs. Fears that kidney exchange, which involves trading kidneys, might be viewed as violating this prohibition resulted in the eventual passage of the Charlie W. Norwood Living Organ Donation Act, which establishes that kidney exchange does not violate NOTA (Krawiec and Rees 2014). In other countries, however, including Germany and Brazil, kidney exchange is (as we write this in 2024) not permitted, due to tight restrictions on organ donations to strangers (Van Basshuysen 2020).

Some countries provide various forms of financial assistance to organ donors or their families, while others do not. In the United States, for example, a number of states and federal agencies have implemented financial policies designed to encourage organ donation, which typically take the form of tax deductions, tax credits, or sick leave guarantees (Lacetera, Macis and Stith 2014). Israel provides incentives in the form of prioritization on the deceased donor waiting list of registered donors and family members of deceased donors, as well as comprehensive financial aid, including 40 days of lost wage reimbursement and seven days of recovery in a recuperation facility (Lavee et al. 2013). Finally, some countries provide funeral benefits to the families of deceased donors. A similar attempt by Pennsylvania, however, was halted due to concerns that it violated NOTA (Bryce et al. 2005).

In other words, disagreement about the nature and permissibility of remuneration are long-standing and expected. However, the current discourse around remuneration and organ donation is frequently overdramatic and unhelpful. Although nearly every effort to increase organ donation and transplantation presents ethical challenges, not every such effort amounts to "trafficking" or "a crime against humanity" (Declaration of Istanbul 2018; Malek-Hosseini 2017). These labels stifle helpful deliberation, progress, and consensus. A few examples will illustrate this point.

In some respects, no country has made more promising recent progress than China in developing a legally regulated, ethical system of organ donation, primarily from deceased donation. Earlier, China obtained most of its transplantable organs from executed prisoners, but publicly resolved to no longer do so in 2015. While the rate of organ donation (per million population) in China is still low by international standards, China's new system of deceased donation was second only to the United States in the total number of transplants performed in 2022. Part of this success is that the Chinese Red Cross encourages deceased donation by assisting donor families with funeral expenses, which proponents have argued recognizes "specific aspects of the Chinese culture" (Chen et al. 2023). However, opponents of donor remuneration seek to end even this effort: Ascher and

Delmonico (2023) argue that it is unacceptable, and a violation of WHO standards.

Doctors Delmonico and Ascher are prominent signatories of a declaration that payments to families of organ donors amount to organ trafficking and thus are *crimes against humanity* (as are payments to living donors, and both are declared comparable to transplanting organs from executed prisoners) (Malek-Hosseini 2017; Declaration of Istanbul 2018). Ascher and Delmonico (2023) raise the question of whether saving many lives by increasing deceased donation in China will be justified if it involves paying funeral expenses of donors. But Chinese health authorities, thinking of the many lives to be saved, may very well think that this act of generosity to families of deceased donors is justified, taking account of "national conditions and the social reality in China aiming to build an ethical and effective scientific organ donation and transplantation system" (Chen et al. 2023). Many people in China and elsewhere might even think that little if any justification is needed for generosity, particularly generosity to families of deceased donors, who are themselves generous.

Importantly, these types of overbroad generalizations stymie productive conversation about the legal and ethical limits of incentivizing organ donation. As noted by Roth et al. (2022), the phrase " 'crimes against humanity' entered the legal lexicon in the post-World War II Nuremberg trials of Nazi war criminals." Is the payment of funeral expenses to deceased donor families really analogous to such events?

As should be obvious from this discussion, there are many different views on what counts as remuneration, and a variety of methods employed around the world to encourage both living and deceased organ donation. Rather than stymie such well-meaning experiments through heated accusations of criminality, the international transplant community should encourage and provide guidance for ethical pilot studies on safe and effective mechanisms to encourage organ donation, followed by robust and respectful debate and discussion. WHO should follow suit and provide guidance, encouragement, and funding for such pilot programs.

2.5 Conclusion

This chapter has criticized the twin WHO principles of self-sufficiency and nonremuneration in organs and blood, urging a more sensible approach to the scarce resources of blood products and transplantable organs. Specifically, WHO and other experts have failed to acknowledge the tension between self-sufficiency and nonremuneration in blood products – no country that fails to pay plasma donors is self-sufficient, making the United States (which pays donors) the supplier of roughly 70% of the world's plasma. This raises both equity concerns (since poor countries are

priced out of this market) and security concerns, because world dependence on a single supplier of this vital resource risks the health of millions of patients should that supply be disrupted.

In addition, the international transplant community must do more, rather than less, to safely and ethically facilitate kidney exchange across national borders. The future of a number of transplant innovations and the lives of patients with end stage renal disease, especially in poorer and smaller countries, depend on it.

We close by noting that the combination of the nonremuneration principle and the self-sufficiency principle denies to patients whose health and continued survival depends on substances of human origin many of the benefits that trade has brought to so many other human endeavors. Substances of human origin are special, but not so special that we prohibit plasma or organ donation. So we should be open to exploring and experimenting with ways to bring these patients some of the benefits that trade has brought to so many other human endeavors, such as the production and distribution of food and lifesaving vaccines and other medicines.

Notes

1 There is very little reliable socieoeconomic data on plasma donors in the United States. Dooley and Gallagher (2024) find that plasma donors are young, low income, and liquidity constrained. Ochoa et al. (2021) find that commercial plasma centers are disproportionately located in poor communities.
2 These recipients, all mothers, were difficult to match with a compatible kidney because each had many antibodies against human proteins. During childbirth, mothers can develop such antibodies to the father's proteins that the children inherited. So the father and the children were incompatible donors, since the mother had antibodies against the paternal proteins (human leukocyte antigens) in their kidneys.
3 For example, perhaps citizens will be less likely to respond to calls to altruistically donate after death if there is a perception that the organs will be used to transplant noncitizens, especially if those noncitizens are perceived as sufficiently wealthy to travel internationally for healthcare and bypass their own countries' transplant systems (Perez-Blanco et al. 2021).

Bibliography

Agarwal, N., I. Ashlagi, E. Azevedo, C. R. Featherstone, and O. Karaduman. 2019. Market failure in kidney exchange. *American Economic Review* 109(11): 4026–4070.

Allain, J-P. 2019. Current approaches to increase blood donations in resource-limited countries. *Transfusion Medicine* 29(5): 297–310.

Ambagtsheer, F., B. Haase-Kromwijk, F. J.M.F. Dor, G. Moorlock, F. Citterio, T. Berney, and E.K. Massey. 2020. Global Kidney Exchange: Opportunity or exploitation? An ELPAT/ESOT appraisal. *Transplant International* 33(9): 989–998.

American Red Cross. 2025. Blood Components. Available at: www.redcrossblood.org/donate-blood/how-to-donate/types-of-blood-donations/blood-components.html#:~:text=Whole%20blood%20contains%20red%20cells,(~55%25%20of%20volume)

American Society of Transplant Surgeons. 2017. Position on global kidney exchanges, drafted and finalized by the ASTS executive committee, October 2017. https://asts.org/about-asts/position-statements#.Xv2we7V7nIV

Asamoah-Akuoko, L., B. Appiah, M. Delaney, B. M'baya, C.T. Tagny, and I. Bates. 2023. The status of blood supply in sub-Saharan Africa: Barriers and health impact. *The Lancet* 402(10398): 274–276.

Ascher, N.L. and F.L. Delmonico. 2023. Organ donation and transplantation in China. *Transplantation* 107(9): 1880–1882.

Ashlagi, I., D. Gamarnik, M.A. Rees, and A.E. Roth. 2012. *The need for (long) chains in kidney exchange*. No. w18202. National Bureau of Economic Research. www.nber.org/system/files/working_papers/w18202/w18202.pdf

Böhmig, G.A., J. Gronek, A. Slavcev, G.F. Fischer, G. Berlakovich, and O. Viklicky. 2017. Czech-Austrian kidney paired donation: First European cross-border living donor kidney exchange. *Transplant International* 30(6): 638–639.

Bozek, D.N., T.B. Dunn, C.S. Kuhr, C.L. Marsh, J. Rogers, S.E. Rees, and L. Basagoitia. 2018. Complete chain of the first global kidney exchange transplant and 3-yr follow-up. *European Urology Focus* 4(2): 190–197.

Bryce, C.L., L.A. Siminoff, P.A. Ubel, H. Nathan, A. Caplan, and R.M. Arnold. 2005. Do incentives matter? Providing benefits to families of organ donors. *American Journal of Transplantation* 5(12): 2999–3008.

Castiglia, P. 2022. Trapianti di rene: Attese più brevi grazie all'algoritmo del premio Nobel Alvin Roth. *Sanità* 24 (Oct. 3).

Chell, K., T.E. Davison, B. Masser, and K. Jensen. 2018. A systematic review of incentives in blood donation. *Transfusion* 58(1): 242–254.

Chen, Z., Y. Deng, Z, Li, H. Chen, W. Wang, and X. He. 2023. First affiliated hospital of Sun Yat-sen University, Guangzhou, People's Republic of China: 5-year experience at a high-volume donor and recipient liver transplant center. *Transplantation* 107(9): 1855–1859.

Cherry, M.J. 2005. *Kidney for sale by owner: Human organs, transplantation, and the market*. Washington, DC: Georgetown University Press.

Danovitch, G.M., J.R. Chapman, E. Mor, B. Dominguez-Gil, and M. Haberal. 2013. Organ trafficking and transplant tourism: The role of global professional ethical standards—The 2008 Declaration of Istanbul. *Transplantation* 95(11): 1306–1312.

Declaration of Istanbul Custodian Group. 2008/2018. The Declaration of Istanbul on organ trafficking and transplant tourism. Available: www.declarationofistanbul.org/the-declaration. Accessed March 28, 2025.

Della Cava, M. 2021. How three Jewish and Arab families swapped kidneys, saved their mothers and made history. *USA Today* (October 8).

Delmonico, F.L., L. Noel, H. Wang, and A.M. Capron. 2011. A call for government accountability to achieve national self-sufficiency in organ donation and transplantation. *The Lancet* 378(9800): 1414–1418.

Delmonico, F.L. and N.L. Ascher. 2017. Opposition to irresponsible global kidney exchange. *American Journal of Transplantation* 17(10): 2745–2746.

Delmonico, F.L., S. Mohan, N.L. Ascher, J.R., Rodrique, and D.L. Segev. 2018. Deceased donor organ transplantation performed in the United States for noncitizens and nonresidents. *Transplantation* 102(7): 1124–1131.

Dooley, J.M. and E.A. Gallagher. 2024. Blood money: Selling plasma to avoid high-interest loans. *The Review of Financial Studies* 37(9): 2779–2816.

Elias J.J., N. Lacetera, M. Macis, A. Ockenfels, and A.E. Roth. 2024. Quality and safety for substances of human origins: Scientific evidence and the new EU regulations. *BMJ Global Health* 9: e015122.

The European Parliament and The Council of the European Union. 2024. *Standards of quality and safety for substances of human origin intended for human application* (April 24). *Official Journal of the European Union*. 13 June. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401938

Francisco, J.T., R. Carvalho, J. Freitas, M.T. Coimbra, S. Vilela, M. Almeida, and S. Tafulo. 2023. International kidney paired donation – The experience of a single center. *Brazilian Journal of Transplantation* 26(1): e3423. https://doi.org/10.53855/bjt.v26i1.531_ENG

Furian, L., A. Nicolò, C. Di Bella, M. Cardillo, E. Cozzi, and P. Rigotti. 2020. Kidney exchange strategies: New aspects and applications with a focus on deceased donor-initiated chains. *Transplant International* 33(10): 1177–1184.

Glaser, J., J. Lemery, B. Rajagopalan, H.F. Diaz, R. García-Trabanino, G. Taduri, and M. Madero. 2016. Climate change and the emergent epidemic of CKD from heat stress in rural communities: The case for heat stress nephropathy. *Clinical Journal of the American Society of Nephrology* 11(8): 1472–1483.

Global Observatory on Donation And Transplantation. 2024. Summary. Available: www.transplant-observatory.org/summary/?> (last visited, July 25, 2024).

Han, X., O. Kesten, and M. U. Ünver. 2024. Blood allocation with replacement donors: Theory and application. *Available at SSRN 3858158*. Available: https://dx.doi.org/10.2139/ssrn.3858158

Held, P.J., F. McCormick, A. Ojo, and J. P. Roberts. 2016. A cost-benefit analysis of government compensation of kidney donors. *American Journal of Transplantation* 16(3): 877–885.

Jaworski, P. 2020. Bloody well pay them: The case for voluntary remunerated plasma collections. London: Adam Smith Institute; Washington, DC: Niskanen Center; WaitList Zero; and Australian Taxpayers Alliance, June 14: 1–74.

Jaworski, P. 2023. *The case for commercial compensated plasma collections*. Washington, DC: Niskanen Center. www.niskanencenter.org/the-case-for-commercial-compensated-plasma-collections/

Krawiec, K.D. and M.A. Rees. 2014. Reverse transplant tourism. *Law & Contemporary Problems* 77: 145–173.

Kute, V.B., H.V. Patel, P.R. Shah, P.R. Modi, V.R. Shah, S.J. Rizvi, and B.C. Pal. 2017. International kidney paired donation transplantations to increase kidney transplant of O group and highly sensitized patient: First report from India. *World Journal of Transplantation* 7(1): 64–69.

Lacetera, N., M. Macis, and R. Slonim. 2013. Economic rewards to motivate blood donations. *Science* 340(6135): 927–928.

Lacetera, N, M. Macis and S.S. Stith. 2014. Removing financial barriers to organ and bone marrow donation: The effect of leave and tax legislation in the US. *Journal of Health Economics* 33(1): 43–56.

Lavee, J., T. Ashkenazi, A. Gurman, and R. Steinberg. 2013. Preliminary marked increase in the national organ donation rate in Israel following implementation of a new organ transplantation law. *American Journal of Transplantation* 13(3): 780–785.

Malek-Hosseini, S.A. 2017. Statement of the Pontifical Academy of Sciences summit on organ trafficking and transplant tourism. *International Journal of Organ Transplantation Medicine (IJOTM)* 8(2): 123–124.

Melcher, M.L., J.P. Roberts, A.B. Leichtman, A.E. Roth, and M.A. Rees. 2016. Utilization of deceased donor kidneys to initiate living donor chains. *American Journal of Transplantation* 16(5): 1367–1370.

Minerva, F., J. Savulescu, and P. Singer. 2019. The ethics of the global kidney exchange programme. *The Lancet* 394(10210): 1775–1778.

Ochoa, A., H. L. Shaefer, and A. Grogan-Kaylor. 2021. The interlinkage between blood plasma donation and poverty in the United States. *Journal of Sociology & Social Welfare* 48(2): 56–71.

Organ Procurement and Transplantation Network. 2024. OPTN Metrics. Available: https://insights.unos.org/OPTN-metrics/

Pérez-Blanco, A., S. Wirth, W. Wojciechowski, M. Knauth, and C. Jean. 2021. Access of non-residents to transplantation of deceased donor organs: Practices and strategies in the European setting. *Transplant International* 34(11): 2112–2121.

Personal Communication from Dr. Ali Abdul Kareem Al Obaidli, Chairman of the National Committee for Organ Donation and Transplantation of the United Arab Emirates (August 1, 2024)

Rees, M.A. T.B. Dunn, C.S. Kuhr, C.L. Marsh, J. Rogers, S.E. Rees, and A. Cicero. 2017. Kidney exchange to overcome financial barriers to kidney transplantation. *American Journal of Transplantation* 17(3): 782–790.

Rizky, I. and A.C. Sjaaf. 2023. Self-sufficiency challenges of blood products in LMICs and role of diplomacy. *BKM Public Health and Community Medicine* 39(5): e6922.

Roth, A.E., I.R. Marino, K.D. Krawiec, and M.A. Rees. 2022. Criminal, legal, and ethical kidney donation and transplantation: A conceptual framework to enable innovation. *Transplant International* 35: 10551.

Shkurko, J. 2023. First exchange kidney transplant between Cyprus and Israel (Updated). *CyprusMail* (March 1).

Slonim, R. 2018. How Australia can fix the market for plasma and save millions. *Medicalxpress* (September 4). Available: https://medicalxpress.com/news/2018-09-australia-plasma-millions.html

Taylor, J.S. 2005/2017. *Stakes and kidneys: Why markets in human body parts are morally imperative*. New York: Routledge.
Taylor, J.S. 2015. WTF WHO? *HEC Forum* 27(4): 287–300.
Taylor, J.S. 2022. *Bloody bioethics: Why prohibiting plasma compensation harms patients and wrongs donors*. New York: Routledge.
U.S. Department of Health & Human Services (Health Resources & Services Administration). 2024. Organ donation statistics. Available: www.organdonor.gov/learn/organ-donation-statistics
UW School of Medicine and Public Health. 2025. Kidney desensitization frequently asked questions. https://patient.uwhealth.org/education/kidney-desensitization-frequently-asked-questions. Accessed March 27, 2025.
Van Basshuysen, P. 2020. Kidney exchange and the ethics of giving. *Journal of Ethics & Social Philosophy* 18(1): 85–110.
WHO Expert Group. 2012. Expert consensus statement on achieving self-sufficiency in safe blood and blood products, based on voluntary non-remunerated blood donation (VNRBD). *Vox Sanguinis* 103(4): 337–342.
World Health Organization. 2009. Human Organ and Tissue Transplantation: Report by the Secretariat, A62/15. Sixty-Second World Health Assembly, Provisional Agenda Item 12.10, 26 March 2009. Geneva: World Health Organization. Available: https://apps.who.int/gb/ebwha/pdf_files/a62/a62_15-en.pdf
World Health Organization. 2023. *Blood Safety and Availability: Key Facts* (June 2). www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability