

Guidelines, Principles, and Rules for Organ Allocation in Emerging Deceased Donation Programs: A Narrative Review from Pakistan and Similar Contexts.

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Abstract

Living organ donation from family is not possible in many patients requiring transplantation. Deceased organ donation requires a clear understanding of the brain death concept with clear sensitivity to ethical, cultural and scientific aspects. How that organ is allocated: to whom, on what basis, and in what order, is one of the most consequential decisions a healthcare system can make. It is medical, yes, but it is also deeply ethical, politically loaded, and, in countries with histories of organ commercialization, a question of institutional survival.

This narrative review addresses that question directly. Drawing on international evidence and the specific legislative, cultural, and institutional context of Pakistan, we propose a framework for organ allocation that is both ethically sound and operationally realistic for programs still finding their footing.

Keywords: Organ allocation, deceased donor transplantation, Pakistan, Transplant Ethics, Organ trafficking, MELD score, Low and low middle income countries, kidney transplantation.

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Introduction

The moment a patient is declared brain-dead and a family consents to donation, a clock begins to run. Organs deteriorate. Distance matters, and somewhere, perhaps across the city or across a provincial border, a patient is waiting, possibly dying for the organ that will give them a second chance. How that organ is allocated: to whom, on what basis, and in what order, is one of the most consequential decisions a healthcare system can make. It is medical, yes, but it is also deeply ethical, politically loaded, and, in countries with histories of organ commercialization, a question of institutional survival.

Pakistan's relationship with transplantation is layered and complicated. Kidney transplantation began in the 1980s, and for years the practice was shadowed by a commercial organ market in which

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impoverished individuals sold kidneys to wealthy recipients, often through coercive or deceptive arrangements that violated every principle of medical ethics.^{1,2} The Transplantation of Human Organs and Tissues Ordinance of 2007, passed permanently into law in 2010, represented a genuine inflection point. It criminalized the sale of organs, restricted transplantation to citizens and legal domiciliaries, and established provincial regulatory bodies like the Human Organ Transplantation Authority (PHOTA) and its counterparts in Sindh and other provinces (SHOTA) to govern the practice.^{2,3}

And yet the work is far from complete. As of 2025, Pakistan's deceased-donor program remains nascent: the overwhelming majority of transplants still depend on living donors, deceased-donation rates are among the lowest in the region, and the institutional scaffolding needed to run a credible allocation system including centralized waiting lists, transparent matching algorithms, independent oversight committees which is still being assembled.^{2,9} This is not uniquely Pakistani. Kenya is navigating a similar inflection point, as are countries across sub-Saharan Africa, Southeast Asia, and the Middle East. The shared question is: once we have deceased-donor organs, how do we allocate them fairly, efficiently, and in a manner the public can trust?

This narrative review addresses that question directly. Drawing on international evidence and the specific legislative, cultural, and institutional context of Pakistan, we propose a framework for organ allocation that is both ethically sound and operationally realistic for programs still finding their footing. We examine the core ethical tensions every allocation system must resolve, discuss organ-specific strategies for liver, kidney, and thoracic organs, and outline the structural requirements and anti-exploitation safeguards without which any policy, however well-intentioned, will fail in practice.^{1,4,5}

Pakistan's Policy Journey and the Current Landscape

Understanding why allocation policy carries such weight in Pakistan requires a brief reckoning with history. Before the 2010 legislation, Pakistan had acquired an unwanted international reputation as a destination for transplant tourism: wealthy foreigners purchased kidneys from impoverished Pakistani citizens for a fraction of what equivalent care would cost in Western countries.^{2,8} The social fallout was severe. A scarred permanent underclass emerged, people who had sold organs under financial desperation. And a transplant community whose legitimate practitioners were tarred by association with an exploitative trade.

The legislative response was meaningful, though imperfect. The prohibition on transplantation for foreign nationals addressed transplant tourism directly, and the creation of provincial regulatory authorities gave governance a concrete institutional address.³ PHOTA recent memorandum of understanding with the National Database and Registration Authority (NADRA) aimed at creating a national register of voluntary organ donors, represents exactly the kind of systematic infrastructure that a credible deceased-donor program requires.⁹ It is a meaningful step, even if it remains early in the journey.

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The structural challenges remain formidable. Transplant capacity is concentrated in a handful of urban centers like Lahore, Karachi, and Islamabad leaving patients in rural and semi-urban areas with little or no realistic access. Brain-death certification, the clinical gateway to deceased donation, is still inconsistently applied across hospitals, reflecting variable neurological expertise and, in some settings, residual cultural reluctance to accept brain death as equivalent to biological death.² And trust, once damaged by commercialism, is not quickly rebuilt. Unfortunately, families who might otherwise consent to donation carry memories or community narratives of a system that once treated human organs as a commodity.

This is the context into which any allocation framework must be introduced. It must do more than match organs to recipients. It must visibly demonstrate, through its rules and through its institutional behavior, that it is governed by principle rather than profit. That credibility cannot be claimed; it has to be earned, one transparent decision at a time.

Core Ethical Principles Governing Allocation

Every organ allocation system, regardless of the country in which it operates, must confront the same uncomfortable reality: there will never be enough organs to meet the demand. Scarcity means that giving an organ to one patient necessarily means withholding it from another. Allocation is, at its heart, triage at a societal scale, and the ethical frameworks guiding this triage have been debated extensively across the transplantation literature.^{1,3-5} Three principles have emerged as foundational, and understanding each and the tensions between them is prerequisite to designing any workable policy.

Utility, the imperative to maximize benefit from each donated organ, holds that organs should go to recipients most likely to survive the transplant and enjoy durable graft function. In resource-constrained settings this principle carries additional weight. A futile transplant, one performed in a patient whose clinical state makes a good outcome unlikely, wastes not only the organ but the surgical capacity, intensive care beds, and immunosuppressive medications that are equally scarce. Utility is not a cold arithmetic exercise; it is a form of stewardship on behalf of every patient on the waiting list.

Equity, or justice, demands that allocation systems be genuinely blind to wealth, social standing, geographic origin, and political connection. This is harder than it sounds, and the difficulty compounds in healthcare environments where informal payments and personal relationships have historically shaped medical access. Without explicit structural protections, anonymous matching, mandatory waiting-list registration, transparent audit trails the well-connected will find ways to the front of the line. Equity must be architecturally enforced, not merely emotionally stated.

Medical urgency, the prioritization of the sickest patients, reflects transplantation's fundamental purpose: to save lives that cannot otherwise be saved. The patient who will die within days without a liver transplant holds a different claim from one who is unwell but clinically stable. Yet urgency must be weighed against utility, because the sickest patients are not always those who will benefit most.¹ A patient in multi-organ failure may receive a liver that functions perfectly and still not survive. The

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allocation system must have explicit, publicly defensible rules for how these three principles are balanced, and those rules must be applied without exception.

A fourth principle deserves naming, particularly in Pakistan's context: **transparency** itself. When allocation decisions emerge from visible, rule-based processes rather than the discretion of individual clinicians or administrators, it generates the public trust that donation programs depend on. People are substantially more likely to consent to their loved one's donation if they believe the system receiving that gift will honor it with fairness and accountability.⁷ In a setting where historical exploitation has eroded that trust, transparency is not merely good governance but it is a precondition for program viability.

Structural Requirements for a Functioning Allocation System

Centralized Oversight and an Electronic Registry

An allocation system that cannot track who is waiting, how long they have been waiting, and what organs are currently available is not really an allocation system at all. It is a collection of local, ad hoc decisions dressed up as policy. The non-negotiable infrastructure requirement is an electronic, centralized waiting-list registry one that is accessible in real time to every registered transplant center, tamper-resistant, and subject to independent audit.

In Pakistan's federal structure, the initial responsibility logically falls on provincial human organ transplant authorities like PHOTA in Punjab, SHOTA in Sindh but these bodies must build interoperability between their registries from the outset, not attempt it as a retrofit years later. India's experience is instructive in this regard.¹⁰ The National Organ and Tissue Transplant Organization (NOTTO), operating through regional and state-level networks, coordinates deceased donation across more than 900 hospitals and maintains standardized, publicly accessible waiting lists. Tamil Nadu's state-level transplant coordination model, which both preceded and inspired NOTTO, demonstrated that a well-run coordination infrastructure can achieve deceased-donation rates that rival those of considerably wealthier health systems. The key enabling factors include dedicated transplant coordinators, standardized brain-death certification, trained family communication, and allocation algorithms that remove individual discretion from matching decisions.

Transparent, Rule-Based Decision Making

The case for rule-based allocation is simultaneously practical and moral. Practically, when allocation follows publicly known criteria applied consistently, it closes the space in which favoritism operates. Morally, it treats all waiting patients as equals before the same rules which is, after all, what equity requires. China's computerized allocation system, China Organ Transplant Response System (COTRS), whatever the broader controversies surrounding Chinese transplantation practice, demonstrates the technical feasibility of automating organ matching on objective criteria and thereby reducing the surface area for manipulation.⁷

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For Pakistan, this means developing allocation algorithms, ideally open-source, publicly documented, and independently auditable that score candidates on pre-specified medical criteria and generate ranked match lists automatically. Human override of these rankings should require formal documentation and independent committee review. It should not be possible for a well-connected recipient's physician to move a patient up the waiting list simply because they have a personal relationship with the transplant coordinator.

Alignment with the Legal Framework

Allocation policies must operate within the laws that govern them, and in Pakistan's case that means sustained compliance with the 2010 Transplantation Act. Deceased-donor allocation must exclude any financial consideration, verify that recipients are legitimate domestic patients in genuine medical need, and maintain documentation sufficient to satisfy retrospective legal scrutiny.² This is not merely regulatory formality. In a country where organ commercialization remains a credible concern, every allocation decision that is auditable and defensible on purely clinical and ethical grounds is a small but real contribution to the institutional legitimacy the program needs in order to survive.

Organ-Specific Allocation Principles

Liver Allocation

Of all solid organs, the liver presents the sharpest tension between urgency and utility. A patient in acute liver failure can deteriorate from apparent stability to irreversible circulatory collapse in hours. Yet a liver transplanted into a recipient whose overall condition is too precarious carries a high risk of immediate graft failure and wasting an irreplaceable resource. International practice has moved decisively toward objective severity scoring as the primary allocation criterion, displacing both waiting time and subjective clinical opinion as the dominant determinants.⁵

The Model for End-Stage Liver Disease (MELD) score, derived from variables predicting short-term mortality in cirrhosis, has become the standard allocation tool for adult liver recipients in the United States, across much of Europe, and progressively in Asia.⁵ Its appeal in resource-constrained settings is genuine: the calculation requires only three laboratory values, serum bilirubin, serum creatinine, and INR all of which are available in any adequately equipped hospital laboratory. Higher MELD scores correlate directly with 90-day mortality risk, providing a comparable, objective measure of need across a diverse patient population.

For an emerging program, the practical liver allocation hierarchy should begin with a highest-priority category for patients with acute liver failure or primary graft non-function following a prior transplant conditions carrying near-certain short-term mortality without immediate re-transplantation, analogous to Status 1A in the United States system. Below this, allocation proceeds by MELD score, with mandatory reassessment at defined intervals to capture clinical evolution. The pediatric population requires parallel consideration through the Pediatric End-Stage Liver Disease (PELD) score, which incorporates serum albumin and growth failure alongside the standard adult parameters.

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Geographic allocation tiers offering organs first to the procuring center, then the procuring region, then nationally preserve organ viability by minimizing transport time, while ensuring that livers not used locally reach patients in genuine need elsewhere. Exception points for conditions such as hepatocellular carcinoma or hepato-pulmonary syndrome, which carry high mortality risk despite often modest MELD scores, must be individually authorized through an oversight committee to prevent systematic gaming of the scoring system.^{1,5}

Kidney Allocation

Kidney allocation unfolds in a meaningfully different clinical context. Dialysis, whatever its limitations in quality of life and long-term survival, provides a bridging therapy that prevents immediate death. This changes the ethical calculus in important ways. Waiting time becomes a relevant allocation factor, as it cannot be for liver candidates, because dialysis vintages the cumulative duration of renal replacement therapy represents a real and measurable burden. Incorporating waiting time into the algorithm acknowledges that burden without using it as the sole or primary criterion.

Human leukocyte antigen (HLA) compatibility matters more in settings where immunosuppressive options are costly or unreliably available. In Pakistan's current context, reasonable HLA matching is a pragmatic strategy for improving long-term graft survival at a population level.¹ That said, overly stringent HLA criteria must be explicitly avoided: they systematically disadvantage minority ethnic groups whose HLA antigens are underrepresented in the donor pool, introducing a form of structural inequity that a commitment to equity requires guarding against.

Age matching: allocating older kidneys preferentially to older recipients is a pragmatic strategy that maximizes expected graft-years across the recipient population without wasting a young donor's kidney in a patient who may not survive to benefit from its full lifespan. Pediatric recipients warrant explicit priority over adults in all framework tiers, given the severe developmental and metabolic consequences of prolonged dialysis during childhood and the disproportionate long-term benefit these patients derive from successful early transplantation.

Thoracic Organ Allocation: Hearts and Lungs

Thoracic organ allocation is constrained by biology in a way that kidney and liver allocation simply are not. The cold ischemic tolerance of a transplanted heart is approximately four to six hours; for lungs, it is somewhat longer but still measured in hours, not days. There is no bridging equivalent to dialysis or portal decompression. Geographic proximity is therefore not a logistical convenience in thoracic allocation it is a clinical necessity, and allocation zones must be defined accordingly.

Status-based prioritization, stratifying recipients by degree of hemodynamic dependence on mechanical circulatory support, continuous high-dose inotropic therapy, or mechanical ventilation, provides the urgency framework within the geographic constraint. A patient requiring an intra-aortic balloon pump or extracorporeal membrane oxygenation to maintain perfusion holds a fundamentally different claim from one who is deteriorating but hemodynamically independent.¹ For an emerging

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program with limited thoracic transplantation capacity, the immediate practical priority is developing standardized hemodynamic status assessment protocols and establishing the regional communication networks capable of moving organs within the biologically mandated time window.

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Safeguards Against Commercial Exploitation

Any allocation framework designed for Pakistan must reckon honestly with the conditions that allowed commercial organ trafficking to persist for as long as it did. It was not primarily a failure of individual medical ethics. It was a systemic failure: institutional conditions created opportunities and incentives that existing regulatory structures were inadequate to oppose.^{2,8} An allocation system designed for the post-legislation era must build its safeguards in from the beginning, not add them as afterthoughts once problems re-emerge.

The prohibition on transplantation for foreign nationals, enshrined in the 2010 Transplantation Act, addresses transplant tourism at its source and should be rigorously enforced.² But legislation alone is insufficient. Independent transplant authorization committees modeled on India's approach, where multidisciplinary bodies review all transplant proposals to confirm the legitimacy of donor-recipient relationships and the absence of any commercial element are an essential institutional complement to the legal framework.¹⁰ These committees should include transplant clinicians, ethicists, legal representatives, and community members, and their decisions should be fully documented and subject to appeal.

Allocation decisions for deceased donors should be comprehensively traceable: every step from organ procurement to recipient identification to transplantation should be logged in the central registry system with timestamps, operator identifiers, and documented reasons for any deviation from standard protocol. Retrospective audits conducted by bodies independent of the transplant program are not an expression of distrust in transplant professionals; they are a structural necessity in any system where the stakes are this high and the history of exploitation this recent.⁷

Perhaps less obvious but equally important: meaningful mechanisms for reporting suspected commercial activity must exist and must be accessible to hospital staff without fear of professional retaliation. Confidential reporting to the provincial regulatory authority, with legal protection for those who report in good faith, should be an explicit component of every approved program's governance architecture. The absence of such mechanisms is not neutral, it is an invitation for abuse.

Implementation Priorities for Emerging Programs

Building Incrementally Rather Than Comprehensively

There is a natural temptation, when designing any new system, to design it perfectly to build all the infrastructure simultaneously, implement all safeguards at once, and launch at national scale. Kenya's recently published organ donation committee report illustrates both the ambition and the risk of comprehensive-launch approaches.⁴ Programs that attempt full deployment before adequate institutional capacity exists tend to fracture under their own weight, and the resulting failures cause public disappointment that is difficult to recover from. The more durable approach is to identify a small cohort of hospitals with demonstrable clinical and governance capacity, sufficient ICU infrastructure, experienced transplant surgeons, reliable brain-death certification capability, and administrative

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commitment to protocol adherence and designate them as pilot sites, and build expertise systematically from that base.

Investing in Transplant Coordinators

Tamil Nadu's deceased-donation story with the highest donation rates in India, achieved without proportionally higher financial resources has been studied repeatedly, and its consistent lesson is the centrality of the trained transplant coordinator.¹⁰ These individuals do work that cannot be automated or assigned to part-time administrative staff: they identify potential donors in ICUs, approach families at the most vulnerable moments of their lives with both empathy and clinical accuracy, manage the complex logistics of multi-organ procurement, and ensure that allocation protocols are followed through to transplantation. In a healthcare system where coordination functions are chronically undervalued and underfunded, the transplant coordinator role requires explicit institutional recognition, dedicated training pathways, and remuneration that reflects its clinical and ethical importance.

Engaging Communities and Religious Leadership

The Sindh Institute of Urology and Transplantation's approach to providing transplantation free of cost to patients who cannot afford it has earned genuine public respect in Pakistan, demonstrating that ethical transplantation practice is not only aspirationally possible but practically achievable.² But program-level ethics are not sufficient on their own. In Pakistan, where Islamic jurisprudence shapes community attitudes toward bodily integrity, the permissibility of organ donation, and the concept of death itself, engagement with religious scholars is not optional, it is structurally necessary. The majority position among Pakistani and international Islamic scholars now accepts brain death as a legally valid determination of death and deceased organ donation as an act of recognized charity. But this position is not uniformly understood or accepted at the community level, particularly in rural areas.⁸ Sustained, respectful engagements between the transplant community and religious leadership facilitated by health ministry officials and conducted in settings and languages accessible to ordinary citizens should be an explicit component of any national deceased-donor program strategy.

Data Systems, Monitoring, and Quality Improvement

A program that does not measure its own outcomes cannot improve them, and cannot be held accountable by those it serves. A minimum national dataset capturing waiting-list demographics, time from listing to transplantation, allocation decisions with rationale, transplant outcomes, and graft and patient survival at one and three years is the feedback mechanism that allows the system to identify disparities, detect irregularities, and demonstrate accountability to the public and to international transplantation bodies.^{4,7} Pakistan's NADRA linkage creates potentially powerful infrastructure for this purpose. The challenge is ensuring that clinical and administrative data are captured consistently across all registered centers, that quality indicators are reviewed at regular intervals by bodies with the authority to act on what they find, and that findings are reported publicly in a form accessible to non-specialists.

Addressing Geographic Disparities in Access

Geography shapes access to transplantation in Pakistan in ways that allocation policy alone cannot fully correct, but can meaningfully mitigate. Organ procurement capacity, transplant surgical expertise,

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and the intensive care infrastructure that sustains potential donors are concentrated in a handful of urban centers. A waiting list that is formally open to all citizens but practically accessible only to those who can afford to relocate to Lahore or Karachi for months-long pre-transplant evaluation and care is not, in any substantive sense, an equitable waiting list.

Allocation zone definitions should be based on the biology of organ viability specifically, on transport time within the cold ischemic window rather than on administrative provincial boundaries, which bear no systematic relationship to transplant logistics. For livers, this means defining sharing zones by approximately eight to ten hours of transport time; for hearts, the viable circle contracts to four to six hours. Where provincial boundaries cut across these biologically defined zones, formal inter-provincial sharing agreements, negotiated between regulatory authorities, should determine how organs are offered and accepted across those borders.¹

The longer-term solution to geographic disparity is capacity building: training transplant surgeons and coordinators in cities currently underserved by the system, supporting smaller hospitals to develop the ICU and operating room infrastructure required for organ procurement, and establishing satellite listing sites that allow patients from rural areas to register on provincial waiting lists without requiring them to abandon their homes and livelihoods. None of this is fast, and none of it is cheap. But an allocation policy that does not acknowledge geographic inequity and create mechanisms to address it will, over time, function as a system that formally treats all patients equally while practically serving only those who are already relatively privileged.

Discussion

The framework proposed in this review is not intended to be lifted wholesale from international practice guides and applied to Pakistan without modification. Its value lies precisely in its contextual specificity: it takes the ethical and technical architecture of established transplantation systems and asks what must be adapted, simplified, or reinforced for it to function in a setting where donated organs are scarce, institutional trust is fragile, and commercial pressures remain a live concern.

Several features distinguish this framework from generic guidance. First, the emphasis on anti-exploitation safeguards, transplant authorization committees, comprehensive audit trails, accessible whistleblower protections is proportionally heavier than it would be in a country without Pakistan's transplantation history. This weighting is deliberate and, we believe, defensible. An allocation policy that is ethically impeccable on paper but routinely circumvented in practice is worse than no policy at all, because it provides a false assurance of legitimacy while the underlying dysfunction continues undisturbed.

Second, the implementation sequencing, start small, invest in coordination, build the registry before scaling reflects a lesson that emerges consistently from transplantation programs that have succeeded in resource-constrained environments. Tamil Nadu, Catalonia, and Iran all followed variants of this incremental approach, and all achieved donation rates that surprised observers who had assumed the

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cultural or economic barriers were insurmountable. The lesson is not that ambition should be tempered but that the sequence in which ambition is pursued matters enormously.

Third, and perhaps most distinctively, this framework treats religious and cultural context as a structural variable rather than a communication challenge. Families who consent to organ donation in Pakistan do so within a moral universe shaped by Islamic ethics, extended family decision-making norms, and memory whether, institutional or personal of a system that once exploited the poor. An allocation policy that is not legible within that moral universe will consistently fail to convert potential donation into actual donation, regardless of how technically sophisticated its matching algorithm may be.⁸

The limitations of this article are worth acknowledging directly. This is a narrative review and normative policy analysis, not an empirical study. The recommendations are evidence-informed but cannot be evidence-derived from comprehensive local Pakistani data, which does not yet exist at the scale required for rigorous quantitative analysis. The framework is necessarily general in places where local program design will require specific technical and operational expertise. And the political feasibility of some recommendations, particularly those involving federal-provincial coordination authority, independent audit powers, and legal whistleblower protections depends on institutional and political conditions that lie beyond any individual researcher's control.

These limitations define the framework's scope rather than diminishing its utility. It is intended as a starting point for national policy discussion, a reference document for provincial regulatory bodies developing their own protocols, and a contribution to the growing literature on transplantation in low- and middle-income countries that moves beyond problem description toward solution design.^{4,6}

Conclusion

Getting organ allocation right in an emerging program is harder than it looks. The technical problem of matching scarce organs to candidates by medical criteria is actually the more tractable part. The harder work is building the governance architecture, the public trust, and the institutional habits that allow the technical system to function as intended when it is under pressure, which is exactly when it matters most.

Pakistan stands at a genuinely consequential juncture. The legislative framework exists. Provincial regulatory bodies are operational, however imperfectly. NADRA's involvement in donor registration opens the possibility of a systematic, population-level approach to building a voluntary donor pool. What is missing is a coherent, context-specific allocation policy that translates these foundations into a fair, transparent, and operationally credible system for deciding who receives the gift of a donated organ.

This framework is offered in that spirit. It does not resolve every tension or answer every question. The allocation policy is a domain in which thoughtful, ethical people will always disagree about how exactly to balance competing principles, but it insists on something that should not be open to

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negotiation: whatever rules are chosen, they must be publicly stated, consistently applied, independently audited, and genuinely accessible to all patients regardless of wealth or geography. Anything less is not allocation policy. It is, in one form or another, a continuation of the commercial logic that the 2010 legislation was enacted to end.

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Reference:

1. Electronic Code of Federal Regulations. 42 CFR 121.8 — Allocation of organs [Internet]. Washington (DC): United States Government Publishing Office; 2026 [cited 2026 Jul 03]. Available from: <https://www.ecfr.gov>
2. Moazam F, Jafarey AM. Pakistan and kidney trade: battles won, battles to come. *Monash Bioeth Rev.* 2009;28(3):1-12. doi:10.1007/BF03351326
3. Punjab Human Organ Transplantation Authority (PHOTA). Regulatory overview and mandate [Internet]. Lahore: Government of the Punjab; 2024 [cited 2026 Jul 03]. Available from: <https://phota.punjab.gov.pk>
4. Committee on Tissue and Organ Transplant Services. Report on the establishment of a deceased organ donation programme. Nairobi: Government of Kenya; 2025.
5. Kwong AJ, Devlin JM, Bonham CA. Update on organ allocation and liver transplantation. *Gastroenterol Hepatol (N Y)*. 2025;21(7):415-427.
6. BioSpectrum India. Urgent call for policy reform to ensure global equity in organ transplantation [Internet]. Pune: MM Activ Sci-Tech Communications; 2025 Jul 2 [cited 2025 Dec 10]. Available from: <https://www.biospectrumindia.com>
7. National Health Commission of the People's Republic of China. China principles and core policies for human organ allocation and sharing. Beijing: NHC; 2018.
8. Garwood P. Dilemma over live-donor transplantation. *Bull World Health Organ.* 2007;85(1):5-6. doi:10.2471/BLT.07.020107
9. Pakistan Observer. Health department to sign MoU with NADRA for registration of organ donors: Dr Javed. Pakistan Observer [Internet]. 2026 Feb 3 [cited 2026 Feb 15]. Available from: <https://pakobserver.net>
10. Indian Express. World Organ Donation Day: what developing nations can learn from India's organ transplant policy. Indian Express [Internet]. 2025 Aug 13 [cited 2025 Sep 1]. Available from: <https://indianexpress.com>