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Managing Finances of Shipping Living Donor Kidneys for Donor Exchanges

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Kidney donor exchanges enable recipients with immunologically incompatible donors to receive compatible living donor grafts; however, the financial management of these exchanges, especially when an organ is shipped, is complex and thus has the potential to impede the broader implementation of donor exchange programs. Representatives from transplant centers that utilize the National Kidney Registry database to facilitate donor exchange transplants developed a financial model applicable to paired donor exchanges and donor chain transplants. The first tenet of the model is to eliminate financial liability to the donor. Thereafter, it accounts for the donor evaluation, donor nephrectomy hospital costs, donor nephrectomy physician fees, organ transport, donor complications and recipient inpatient services. Billing between hospitals is based on Medicare cost report defined costs rather than charges. We believe that this model complies with current federal regulations and effectively captures costs of the donor and recipient services. It could be considered as a financial paradigm for the United Network for Organ Sharing managed donor exchange program.

Key words: CMS, financial analysis, live donor transplantation, paired donation, paired exchanges, standard acquisition charge, UNOS

Abbreviations: ASA, American Society of Anesthesia; CMS, Centers for Medicare and Medicaid Services; DRG, diagnosis-related group; NEAD, nonsimultaneous, extended, altruistic-donor; NKR, National Kidney Registry; PDE, paired donor exchange; OACC, organ acquisition cost center; OIG, Office of the Inspector General; OPO, organ procurement organization.

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Introduction

Paired donor exchanges (PDE) and donor chain transplants are performed to expand the kidney donor pool by utilizing healthy and willing but immunologically incompatible living donors. PDE transplants involve the exchange of kidneys between two incompatible donor recipient pairs to enable two compatible transplants (1,2). Nonsimultaneous, extended, altruistic-donor (NEAD) transplants are chain transplants that are initiated by an altruistic nondirected donor whose kidney is transplanted into a patient who has an incompatible donor (3). The incompatible donor donates to another recipient whose incompatible donor donates to yet another pair. 'Domino' transplants are similar to NEAD transplants except that the chain is ended by donating to the deceased donor list and the transplants usually occur simultaneously (4–6). The financial sustainability of such programs depends, in part, on consistent billing mechanisms that capture appropriate costs, adhere to the Centers for Medicare and Medicaid Services (CMS) regulations, accommodate diverse insurance contracts, and minimize financial and regulatory barriers to recipients, donors and institutions.

Cost allocation is complex even in the scenario of single donor and recipient transplants as recent audits by the Office of the Inspector General (OIG) have found (7). Medicare requires that transplant centers must account for donor and recipient acquisition services in the Organ Acquisition Cost Center (OACC) that is reported in the annual Medicare Cost Report. The costs include but are not limited to (1) donor evaluation, (2) donor hospital technical services for the donation and (3) technical costs associated with donor complications.

This is accomplished in standard living donor transplants as follows: The donor evaluation is charged to the OACC. For the donor surgical admission, the hospital technical fees are charged to OACC, and the donor nephrectomy professional fees are charged to the recipient health care plan. For donor complications, the hospital technical fees are

charged to the OACC, and the physician professional fees are charged to the recipient health care plan. Federal guidelines allow for 6 months of donor follow-up costs to be reported on the OACC. Beyond 6 months medical necessity must be established and documented to demonstrate a linkage between a complication and the donation.

However, CMS regulations for billing and reimbursement of facility charges, professional fees, and donor complications were developed based on the assumption that the recipient and compatible donor operations take place in the same center on the same day and with a family member (blood relative).

The added financial complexity of exchange transplants comes from several factors. (1) While the operations of incompatible pairs may take place in the same institution, the kidneys are often being transported to the compatible recipients' hospital to be transplanted (8,9). Since there are no federal regulations covering donor exchanges, one has to rely on existing regulations for standard living donors. CMS guidelines state that the recipient's health care plan pays for the professional services rendered to the live donor during the donation surgery and postdonation follow-up; therefore, a mechanism must exist to bill the recipient health care plan at the other location. Some centers, in consultation with their fiscal intermediary, have interpreted CMS guidelines such that they were able to charge for the standard postdischarge technical services of the donor to their own OACC even though the actual recipient was in another hospital. Unfortunately, this could cause a billing conflict when they exchange organs with other centers that do not manage their charges in the same manner. (2) In a series of chain transplants that takes place over several months, the potential for billing conflicts that result in double billing or under billing of recipient health care plans becomes even greater. (3) Institutions use different mechanisms for obtaining organ acquisition reimbursement depending on the case mix of their population. A facility transplanting patients within 1–2 years may have a different proportion of Medicare patients than a facility transplanting patients in 6–8 years because Medicare becomes the primary payer after the coordination of benefit period ends, unless the patient has an individual health care plan. In addition, many health care plans consider kidney transplants part of general surgery, and therefore, transplants fall under general services agreements and not transplant case rates. The amount that the institutions receive from Medicare is based on the proportionate share of acquisition cost in the OACC plus the associated DRG to cover the cost associated with the inpatient stay. Therefore, since the acquisition cost associated with the OACC is reimbursed based on the percentage of Medicare organs, institutions recover a widely varied proportion of acquisition costs assigned to the Medicare Cost Report. (4) Medicare OACC reimbursement also varies geographically for identical procedures because hospitals in different regions have a different operating cost basis, making it difficult for institutions to agree on payment schedules.

We propose a financial methodology that addresses the challenges outlined above based on the work of financial coordinators, senior administrators, a health care consultant and surgeons from multiple centers around the country with diverse financial models and constraints.

Methods

Programs participating in the National Kidney Registry (NKR) were invited to participate in multiple phone conferences to develop a consensus financial model to deal with the financial challenges encountered when living donor kidneys were shipped between participating transplant centers. The goal was to describe a consistent method of charging for all phases of donor services associated with both PDE and chain transplants that was fair to all institutions and compliant with current federal regulations.

A detailed review of CMS regulations was performed to ensure compatibility with current federal regulations. The most relevant CMS regulations for living donor kidney donation identified by the group focused on the mandate that the recipient center account for the cost of their recipient's donor nephrectomy (CMS Pub 100-04, 90.1.1; Part A intermediary letter, July 1974. No. 74-23) and that the recipient facility is responsible for postdonation technical charges including charges for postdonation complications (Provider Reimbursement Manual Part I, §2771.3 and §2771.4) (10).

The geographically diverse participating centers included Stanford University Hospital and Clinics, University of California Los Angeles Medical Center, University of California San Francisco Medical Center, University of Maryland, New York Presbyterian, Mayo Clinic Arizona, Henrico Doctor's Hospital, Pinnacle Health Systems and Saint Barnabas Medical Center. The diverse health care delivery systems include academic medical centers, private hospitals, public hospitals and health maintenance organization owned hospitals.

Proposed Model

The resulting financial model (Table 1) follows CMS guidelines and is composed of seven principles. The first states that the donor and the donor's health care plan should never be billed. The remaining six describe how the costs of each phase of the donation process should be paid or accounted for.

The preoperative donor evaluation should be completed by the hospital performing the donor operation and accounted for on the OACC of their Medicare cost report. This is true even when the donor operation is being performed in a hospital separate from the recipient operation. The donor hospital bills the recipient hospital for the organ donor recovery using the Medicare cost report determined, hospital specific cost-per-day and the Medicare cost report determined, hospital specific cost-to-charge ratios. The anesthesiologists, surgeons and other physicians involved in the donor nephrectomy will bill (1) the recipient's Medicare account if Medicare is the primary coverage; or

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Table 1: Financial model for standard kidney living donor-paired exchange

(1) General: In all cases the donor shall not be billed for transplant-related medical services including donation evaluation, inpatient stay for donation and postdonation complications per Medicare standards. Out-of-state Medicaid/Medi-Cal patients are not covered by this agreement. All claims must be submitted to the recipient hospital within 120 days from the last day of service. Acknowledgment is due upon receipt of claims. Claims payment is due as soon as possible and no later than 90 days from the receipt of an accurate claim
(2) Pretransplant donor evaluation services: The donor hospital shall provide pretransplant donor evaluation services. The donor hospital shall allocate all costs for the donor evaluation to their Medicare cost report. Physicians participating in the donor evaluation shall bill the donor hospital
(3) Organ transportation: Transportation of the donor organ to the recipient hospital shall be coordinated by the donor hospital's organ procurement organization who will bill the recipient hospital for the costs associated with transporting the organ
(4) Recipient inpatient services: The recipient hospital shall bill for services as customary with claims submitted to the recipient's insurance. The physicians shall bill the recipient's insurance for services rendered
(5) Donor complications: If Medicare is primary, physician services shall be billed to Medicare. If Medicare is not primary, then physician services shall be billed to the recipient's insurance unless there is a global arrangement. Technical services are billed to the recipient hospital
(6) Hospital donor nephrectomy: The donor hospital shall bill the recipient hospital for the donor organ recovery by billing the recipient hospital with a copy of their most currently filed Medicare Cost Report, worksheet D-6, part I, which will document the cost per day and the appropriate cost to charge ratios along with a worksheet that reduces the donor hospital bill from charges to cost. This will document the cost of the case which is the amount to be paid by the recipient hospital
(7) Physician donor nephrectomy: Physicians shall bill the recipient hospital or recipient's insurance for services rendered according to the following:
• If Medicare is primary, physicians shall bill Medicare utilizing the recipients Medicare number
• If the recipient center has a "global" or "case rate" arrangement, the donor physicians shall bill and receive payment from the recipient center at 150% of Medicare participating. Anesthesiology shall bill and be reimbursed at $65.29/ASA unit
• If the recipient center does not have a "global" or "case rate" arrangement, the recipient center will work with the donor center to ensure the donor physicians get paid appropriately

(2) if the recipient hospital has a global or case rate arrangement, the donor physicians will bill the recipient hospital at 150% of the Medicare allowable amount; (3) if there is no global or case rate the financial model allows billing the recipient's health plan, or billing to the recipient's facility as negotiated between centers.

If the organ is shipped from one hospital to another, the donor hospital's organ procurement organization (OPO) (or the responsible shipping agency) will bill the recipient hospital for the costs associated with transporting the organ similar to the way a deceased donor organ is shipped from one OPO to another.

The financial model (Table 1) is currently used by over 50 transplant centers across the country participating in the NKR and has facilitated 147 transplants; four were part of simple exchanges and the rest part of chains. A total of 107 grafts were shipped from one institution to another. Prior to implementation of the financial model 3 scheduled chain transplants were cancelled because institutions were concerned about their financial risk. Since implementation, no scheduled transplants were cancelled for financial reasons.

This model meets current federal guidelines for Medicare-entitled recipients and donors for both billing and cost reporting. It also provides for the reimbursement at facility cost (using the most currently filed Medicare Cost Report, worksheet D-6, part I [costs per day and cost to charge ratios]), consistent with regulatory requirements and intentions. The NKR now requires that participating centers agree to the financial arrangement as detailed in the financial model (Table 1).

Discussion

The ad hoc committee, representing centers with diverse financial organizations, faced multiple challenges in developing a consensus financial model that was consistent, fair and logical. However, with a common goal to increase the number of high-quality successful living donor transplants while reducing the risk of imposing inappropriate financial liabilities on donors, recipients and providers, committee members were able to develop a document that provided billing guidelines suitable for all programs.

Challenges included diverse audit guidelines that fiscal intermediaries for CMS gave on how transplant centers should account for organ acquisition services on their cost report. In addition, the accounting for the "true" cost of technical services for inpatient donation was complicated because they varied by location. Transplant centers questioned why they would pay other centers more for a living donor organ than their cost for recovering a live donor organ at their center. Similarly, the reimbursement for American Society of Anesthesia (ASA) units varied dramatically from payer to payer. Finally, the structure of case rate contracts varied from center to center.

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Obstacles to developing a consensus included the differences in fiscal intermediary interpretations, variability in the intermediary auditing procedures, lack of complete clarity/consistency in the CMS OACC criteria as found in the previously mentioned OIG report (7), divergent billing practices among transplant centers, varying degrees of participation of regional OPOs, the reluctance to change billing practices, concerns about reimbursement mechanisms and the ability to receive timely payments.

One breakthrough came with the decision to account for true "cost" of technical services and inpatient donation. The group concluded that the most accurate way to access the "true costs" was to use the cost per day and the appropriate cost to charge ratios from the Medicare Cost Report, worksheet D-6, part I. Since costs, not charges, needed to be captured, each facility is to be reimbursed on their own cost report data based on the CMS end-stage renal disease guidelines. We have seen costs ranging from $7923 to $26 917 depending on the facility. Costs within the same facility have even differed by $10 000 depending on the clinical course of the donor. Although these costs for living donor nephrectomy varied dramatically from region to region, the centers realized that they compared favorably to the OPO standard acquisition charge (SAC) for a deceased donor, enabling them to accept the variations in living donor reimbursement.

Anesthesia ASA unit reimbursement varies by payer and facility; therefore, each facility involved in the working group agreed to check their average reimbursement per ASA unit. A group average was used to determine the $65.29/ASA unit standardized reimbursement within this financial model. While this reimbursement has been satisfactory for programs participating in the NKR chains, other mechanisms may exist to calculate a fair value.

A common concern was how to account for the costs of donors, including NDDs, whose kidneys will be shipped to another institution. Using the model we have presented, the institution that is working up such a donor and shipping the graft to another institution as part of a multicenter chain places the initial donor work up costs onto their OACC because there is an intent to transplant that we believe to be in compliance with the Medicare regulations. Once a recipient in a chain is identified, additional evaluation studies requested by the actual recipient center are billed to the recipient's center OACC. The professional fees for the donation are billed in accordance to the agreement (Table 1, point 7).

Donors, nondirected and directed, who are ruled out are handled similarly to standard living donors who are ruled out. They are worked up and paid for by the intended recipient center. The costs are included in the OACC.

The Medicare Intermediary Manual HIM 10 Section 140.2—identifying suitable live donors, (Rev. 1, 10-01-03), A3-3178.2, RDF-231, states that "those who are willing and medically able to donate a kidney are tested to determine whether they are of the same blood type as the recipient. After blood typing, the recipient and the donors are tissue typed. Only those candidates with blood and tissue types similar to the recipient are considered further."

This is currently what is happening in living donor transplant programs and in paired kidney donation. There is no indication that a potential donor must be a family member, or someone brought in by the recipient, only that "those willing and medically able to donate a kidney are tested to determine whether they are of the same blood type as the recipient."

Medicaid patients are currently not included as part of this model since state funded Medicaid programs will not reimburse for professional fees in other states. Some centers have treated these patients as if they were part of a global contract and billed the recipient hospital for the professional costs.

Another potential weakness in this model is when the donor hospital is not contracted with recipient's payer. This is addressed by point 7 in Table 1. "If the recipient center does not have a 'global' or 'case rate' arrangement, the recipient center will work with the donor center to ensure the donor physicians get paid appropriately." Unfortunately, if such discussions are not successful, the potential match should be turned down unless the donor is willing to travel to the recipient center.

In fact, many of the challenges presented above might be eliminated if the donors traveled to the recipient hospital as is favored in other paired exchange programs. However, the NKR medical board felt that more donors would be willing to donate a kidney as part of a chain if they did not need to travel great distances to donate. In addition, recent data suggests that shipped living donor kidneys have acceptable outcomes (9). Therefore, to maximize the number of living donations, our opinion is that all the centers should agree to a common model that includes all potential donors, even those unable or unwilling to travel.

Although over 147 chain transplants have been facilitated by this model, several obstacles were encountered. (1) Some facilities had difficulty completing the cost to charge ratio template to convert their charges to cost for billing of technical donor services. Therefore, financial coordinators and administrators collaborated to clarify how to bill for these services using the cost to charge ratio. (2) Facilities were slow to bill out the donor charges to the recipient center. Therefore, the financial model was updated to require billing within 120 days. (3) At some facilities the financial team did not participate in the evaluation of the match offer leaving them insufficient time to complete the financial process prior to incurring charges. To address this, the recipient health care plan information

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and facility contact information is entered into the registry database, and facilities are encouraged to include the financial team in the match acceptance process.

An alternative strategy to the one in our model would be to calculate a SAC fee for living donor nephrectomies. However, SAC fees would also vary from facility to facility and be significantly less transparent than our model's method of accounting for the cost of the nephrectomy based on Medicare determined days and charges.

While this financial model addresses some of the major financial challenges of PDEs, many additional challenges still exist, including registry fees, cost of donor travel and indirect costs of supporting such a program. In addition, the ad hoc committee did not have any participants representing an independent physician practice organization whose specific reimbursement concerns may not have been addressed by our plan.

Conclusions

Innovative strategies such as PDE, which increase availability of high quality renal grafts, challenge the current billing and regulatory policies for living donor kidney transplantation. The model we present transparently accommodates for the financial complexity of these donor exchanges even when the donor graft is shipped to the recipient hospital. It provides a mechanism for capturing costs of the donor services and supports the financial sustainability of transplant programs. While we believe that this model is compliant with CMS regulations, other interpretations of the regulations and guidance documents are likely to exist and may motivate updates and/or clarifications of these regulations.

Such a model should be considered by other chain and PDE programs and the United Network for Organ Sharing national kidney donor exchange program to ensure financial stability and process consistency.

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Disclosure

W.V. is a paid consultant on transplant financial issues; G.H. is the founder and President of the NKR, a nonprofit organization that charges fees to transplant centers to facilitate chain transplantation. D.A.M. and A.T. are Financial Managers, N.F. is an Administrative Director, C.C. is a reimbursement specialist, and E.L. is a contracting manager, all in transplant programs. S.B., J.L.V., J.P.R. and M.L.M. are transplant surgeons. B.M.S. is the Immediate Past (Retired) Chief Medical Officer for Centers for Medicare & Medicaid Services.

References

1. Woodle ES, Ross LF. Paired exchanges should be part of the solution to ABO incompatibility in living donor kidney transplantation. Transplantation 1998; 66: 406–407.
2. Segev DL, Gentry SE, Warren DS, Reeb B, Montgomery RA. Kidney paired donation and optimizing the use of live donor organs. JAMA 2005; 293: 1883–1890.
3. Rees MA, Kopke JE, Pelletier RP, et al. A nonsimultaneous, extended, altruistic-donor chain. N Engl J Med 2009; 360: 1096–1101.
4. Montgomery RA, Gentry SE, Marks WH, et al. Domino paired kidney donation: A strategy to make best use of live non-directed donation. Lancet 2006; 368: 419–421.
5. Roth AE, Sonmez T, Unver MU, Delmonico FL, Saidman SL. Utilizing list exchange and nondirected donation through 'chain' paired kidney donations. Am J Transplant 2006; 6: 2694–2705.
6. Gentry SE, Montgomery RA, Segev DL. Kidney paired donation: Fundamentals, limitations, and expansions. Am J Kidney Dis 2011; 57: 144–151.
7. Levinson DR. Review of organ acquisition costs claimed by certified transplant centers A-09-05-00034. Services. DoHaH, (ed). Office of Inspector General, 2006.
8. Butt FK, Gritsch HA, Schulam P, et al. Asynchronous, out-of-sequence, transcontinental chain kidney transplantation: A novel concept. Am J Transplant 2009; 9: 2180–2185.
9. Segev DL, Veale JL, Berger JC, et al. Transporting live donor kidneys for kidney paired donation: Initial national results. Am J Transplant 2011; 11: 356–360.
10. The Provider Reimbursement Manual. Part 1. In: HHS. US Depart. of HHS, 1983: 27–66.