

FELINE RENAL TRANSPLANTATION

PetCare Veterinary Hospital
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General information for referring veterinarians and owners of potential renal transplant candidates:

Renal transplantation is a clinical treatment for renal failure that is offered by the Surgical Referral Service of the PetCare Veterinary Hospital. It is important to recognize that renal transplantation is a treatment for renal failure and not a cure. The goal of renal transplantation is to provide good quality of life to a cat that would otherwise be unable to survive.

Typically, renal transplantation is performed on cats that are in chronic renal failure and are losing weight and/or becoming anemic in spite of medical management (low protein diet, subcutaneous fluids, medications, etc.). Transplantation is generally not recommended for animals that are able to maintain body weight and normal red blood cell counts despite their renal insufficiency. Also, transplantation is rarely performed on an emergency basis and never as a “last ditch” effort. Cats that are in acute or oliguric/anuric renal failure (i.e. due to ethylene glycol toxicity) usually require a period of intravenous fluid diuresis or dialysis to stabilize them prior to transplantation. Due to all the inherent risks with transplantation it is not considered a prophylactic procedure and those cats that are doing well with medical management are not considered candidates for transplantation. It is important that all potential candidates be medically stable, good anesthetic candidates and in good body condition.

There is no age restriction for transplantation as long as the cat is in good condition and all other criteria discussed below are met. Presently, the success rate for long-term survival (> 1 year) is approximately 80%. This means that 1 in 5 cats (20%) may die in the first year following transplantation. The reasons for this mortality rate include:

1. Problems with owner compliance in giving oral cyclosporine and obtaining routine testing for their pet. This results in cyclosporine blood levels that may be too high or too low.
2. Infections
3. Acute rejection of the kidney.
4. Other unforeseen problems such as heart disease, liver failure, pancreatitis, cancer, diabetes, etc., which can cause significant morbidity and/or mortality.

The longest survival time attained after renal transplantation in the cat was 14 years. The average life expectancy following transplantation is 3-6 years.

The cost (barring major complications) for renal transplantation is expected to range from \$18,000 to \$25,000 which includes diagnostic tests prior to surgery, hospitalization and treatment, general anesthesia, surgery and post-operative care for the donor and the recipient. If a cat requires hemodialysis prior to transplantation this could potentially add \$3,500-\$6,500 dollars to the estimate. Hemodialysis is available at the University of California, Davis. The cost of the immunosuppressive drugs (cyclosporine and prednisolone) ranges from \$30-\$60 per month. You will be required to purchase injectable and oral cyclosporine for your cat prior to transplantation. Routine cyclosporine assays, initially required weekly and then decreasing to once every 3 months, cost \$125 per assay. These blood samples may be drawn by your regular veterinarian and sent overnight by Federal Express to PetCare. Transplant recipients will require twice daily medication for the rest of their lives in pill form only.

Renal transplant patients are typically in the hospital for 10-14 days from the time of admission. Owners of a transplant recipient are required to adopt the donor cat and provide a life-long home. The donor cat is chosen from colony cats at UC-Davis or local Sonoma County shelters based on a blood cross-matching test. In 1995, we published a study on the survival of our first 16 donor cats at UC-Davis. The study was performed between 3 and 5 years from the time of surgery. The red blood cell counts and renal function of the donor cats were compared to an age and sex matched group of cats that had not undergone renal donation. All but one donor cat had normal red blood cell counts and normal renal function. Renal function in the donor cats was not statistically different from the age and sex matched cats that had two kidneys. We can conclude from this that the length of life and the quality of life of the donor cat should be the same as for any cat.

A major complication that can arise after transplantation is acute rejection, which requires rapid and aggressive emergency treatment to prevent loss of the new kidney. Many times rejection episodes occur in the first few months following transplantation and can be linked to difficulties with owner compliance in giving the medications appropriately and/or failing to have cyclosporine assays performed on a regular basis. Another potential complication that can occur is infection. Transplant cats are immunosuppressed and therefore are always at higher risk for any kind of infection. Cats that have undergone renal transplantation must not be boarded in crowded boarding facilities and any contact with animals from outside the owner's home should be minimal. Cats that have undergone transplantation are at a higher risk (approximately 10%) for developing cancer than the average population, mostly squamous cell carcinoma and lymphoma.

It is imperative, if you are considering transplantation for your cat, that you have access to 24-hour emergency veterinary care and a referring veterinarian who is willing and able to help with the process following transplantation. This will mean weekly visits initially, blood tests, submitting cyclosporine assays via

Fed-Ex and being able to hospitalize and treat your cat in the event of an emergency.

There are further criteria that potential transplant recipients must fulfill before being considered as acceptable candidates. In general, although each case will be given individual consideration, all candidates must be free of **ANY** systemic disease other than renal failure. Cats that have clinical histories that are suggestive of urinary tract infections (or a positive urine culture at the time of work-up for transplantation) must first be treated with appropriate antibiotics and then undergo a cyclosporine “challenge” prior to consideration for transplantation. Candidates that have any history of inflammatory bowel disease (i.e. vomiting, diarrhea, weight loss) may have a higher incidence of kidney rejection. Also, it is very important that transplant candidates are **NOT FRACTIOUS**. With the amount of intensive care and handling required for renal transplantation, a cat that is fractious and unable to be handled easily will not be considered for transplantation.

The following tests should be performed with your referring veterinarian prior to contacting PetCare to set up an appointment. Before making an appointment for final evaluation for transplantation we require that a case summary and the results of all tests be faxed to us for assessment:

1. complete blood count
 2. serum biochemistry profile
 3. urinalysis via cystocentesis
 4. urine protein:creatinine ratio
 5. urine culture and sensitivity
 6. echocardiogram++
 7. thoracic radiographs ++
 8. neoplasia titers
 9. abdominal ultrasound ++
 10. FELV/FIV tests
 11. thyroid (T4) level
 12. blood type
 13. toxoplasmosis titers (IgG and IgM)
 14. blood pressure measurements
- ++These tests are best performed or reviewed by a board certified cardiologist/radiologist

Optional tests include:

Kidney biopsy
Intestinal biopsies

Test results and exam findings that would **PRECLUDE** transplantation include:

1. Clinically relevant cardiac disease
2. FELV positive status

3. active FIV (antibody + cats will be considered if they don't have aids related complex)
4. urinary tract infection* (see notes above)
5. clinically relevant inflammatory bowel disease
6. uncontrolled hyperthyroidism
7. neoplasia
8. diabetes
9. poor body condition/cachexia
10. fractious temperament

If you think your cat may be a candidate and are interested in transplantation please speak with your referring veterinarian who can then proceed with the testing listed above. Once this has been completed please fax the information packet to PetCare along with your name, address and phone numbers and you will be contacted as soon as possible after it is received and reviewed. The final consultation does not guarantee that your cat will receive a transplant. Some of the tests listed above may be repeated at PetCare to make sure your cat is safe for the procedure and is a candidate.

Surgeons at PetCare reserve the right to refuse to perform transplantation for any cat at any point in the evaluation process. Renal transplantation can place an enormous financial, emotional and physical burden on the owners of a transplant recipient and requires a commitment and devotion to care for both the recipient and the donor that cannot be underestimated.

To make an appointment or if you have further questions, please contact:
Dr. Clare Gregory at PetCare
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