

POSTTRANSPLANT TREATMENT AND MEDICATIONS

Methylprednisolone (Solu-Medrol®)/Prednisone	Day 1: 2 x 50 mg Day 2: 2 x 40 mg Day 3: 2 x 30 mg Day 4: 2 x 20 mg Day 5: 2 x 10 mg Day 6 to end of third week: 20 mg Week 4: 17.5 mg Month 2: 15 mg Month 3: 10 mg Month 4: 7.5 mg Month 6: 5 mg which is then titrated down to 2.5 mg at a time every two weeks until discontinued **Specific patients may be tapered off at 6 months
Tacrolimus (Prograf®)	Day 1: 2 mg PO BID and titrated to maintain a tacrolimus level of 12-15 ng/dl and then blood levels of, Week 2: 12-15 ng/dl Week 4: 10-12 ng/dl Month 9: 8-10 ng/dl Month 12: 5-8 ng/dl
Cyclosporine (Neoral®, Gengraf®)	Week 1-4: 250-300 ng/dl Week 4: 250 ng/dl
Mycophenolate Mofetil (CellCept®)	Day 1 to Month 5: 500 mg BID Month 6: 250 mg BID Month 9: 250 QD and then discontinued one year post transplant **Used only if patient is intolerant to other medications or in case of calcineurin nephrotoxicity
Sirolimus (Rapamune®)	6 mg PO loading dose, then 2 mg PO/day
Ganciclovir (Cytovene®/ Valganciclovir (Valcyte®)	Start on Day 3 and continue until for 3 mo
Trimethoprim/Sulfamethoxazole (Septra®)	Dosed MWF beginning on Day 3 for 12 mo. If a patient is allergic then he/she receive a Pentamidine treatment monthly for one year
Clotrimazole (Mycelex®)/ Mycostatin (Nystatin®)	Begin Day 3 and continue for 3 months
Pepcid®	Initiated Day 0 and dosed BID until one month post transplant at which time it is reduced to daily dosing if no history of PUD/GERD
Calcium + Vitamin D	500 mg PO TID initiated one month post transplant
Actonel®/Fosamax®/Miacalcin® spray	Resumed or initiated if osteopenia or osteoporosis diagnosed

Our basic immunosuppressive protocol is steroids and tacrolimus

GRAFT DYSFUNCTION WORK-UP

If the patient presents with any of the following fever, jaundice, ascites, elevation of liver tests we recommend that the transplant hepatologist be contacted immediately. We may request that the following tests be performed either locally or at LLUMC.

1. Doppler ultrasound of liver /MRI/MRA/MRCP to evaluate for bile duct stricture, vessel patency; or ascites
2. Liver biopsy to evaluate for rejection; recurrent disease; preservation injury; other conditions that may exist.

ACUTE CELLULAR REJECTION PROTOCOL

Methylprednisolone (Solu-Medrol®) Give 500 mg IV per day for three days in a peripheral vein. **Anti-thymocyte globulin (Thymoglobulin®)** (1.5 mg/kg via central venous catheter daily x 5 days) can be given in event of steroid resistant rejection. A follow-up liver biopsy should be if liver tests are not normalizing 3-5 days after completion of the treatment.

TREATMENT OF RECURRENT HEPATITIS C

The decision to treat the patient for hepatitis C after liver transplantation is individualized based upon recurrence of the disease, time from transplantation, elevation of liver tests, Immunosuppression level, and the liver biopsy. Treatment is individualized by genotype, biopsy results, and viral load. At this time we are using Pegylated interferon and ribavirin. In conjunction with our nurse practitioner we provide individualized patient education and monitoring through an education class and close evaluation for 6 months to 1 year for efficacy of treatment.

HEPATITIS B IMMUNE GLOBULIN (HBIG) PROTOCOL

HBIG is now standard therapy for patients undergoing transplantation for acute or chronic hepatitis B. Intravenous use of HBIG for this indication is not experimental, but off label. The first dose is given in the operating room during the anhepatic phase of the surgery. The dose is 10,000 IU (35 ml when concentration is approximately 250 IU/ml). Patients will then receive a daily dose for the first 7 postoperative days and then as needed as an outpatient based upon blood levels. The goal is to maintain anti-HBs level > 150 mIU/ml. Intramuscular doses of 5-10 ml according to HB surface antibody level done on an outpatient basis.

Intravenous HBIG:

- Dose: 35 ml (approximately 10,000 IU) every day through POD 7 then monthly
- Dilute each dose in 200 cc of normal saline
- Run each dose over 3-4 hours

Premedications:

- Acetaminophen: 650 mg po/pr
- Diphenhydramine: 25-50 mg po/IV
- Meperidine: 50 mg IV for patients with a history of significant muscular or back pain with previous HBIG

Monitoring:

- Hepatitis surface quantitative antibody monthly (maintain a level > 150 mIU/ml)
- May calculate anti-HBs clearance to aid in determining redose timing and development of recurrent HBV infection
- HBsAg every 2 months for the first year and then less frequently (3-4 times/year)

ANTIVIRAL THERAPY

Antiviral Therapy with:

- Lamivudine: 100 mg PO daily/Adefovir: 10 mg PO or Enteivir 0.5mg PO daily
continued **indefinitely**.

Monitoring laboratory tests include:

- Monthly HBV DNA (quantitative) in addition to regular laboratory testing during initiation of Lamivudine
- HBV DNA PCR qualitative testing done when undetectable virus level by quantitative assay
- After viral suppression achieved (HBV DNA-) follow HBsAg and HBeAg assays every month and recheck HBV DNA (qualitative) only with evidence of increase in liver enzymes
- Adjust dose for patients with renal impairment

PROCEDURAL ANTIBIOTIC PROPHYLAXIS PROTOCOL

I. Infective Endocarditis Prophylaxis (SBE) - per LLUMC guidelines

- Amoxicillin 3 gm PO 1 hr before procedure and 1.5 gm PO 6 hours after the first dose

For: Dental procedures
Upper and lower GI procedures
Genitourinary tract procedures
Joint replacement

If: Mitral valve prolapse with regurgitation, murmur or auscultation
Previous rheumatic heart disease
Prior endocarditis
Mechanical valve

- If allergic to penicillin use:

-Clindamycin 300 mg PO 1 hr before and 6 hours later for dental and upper GI procedures

-Ciprofloxacin 750 mg PO 1 hr before and 6 hours after first dose for lower GI procedures (colon, rectum, bladder)

-Cefotaxime 1 gm IV before cholangiogram; repeat in 12 hours for T-tube cholangiogram/biliary tract manipulations (i.e. ERCP)

I. Liver Biopsy Prophylaxis

- Cefotaxime 1 gm IV before procedure or Levofloxacin 250-500 mg PO or IV before procedure

III. Biliary Tract Procedures

- Cefotaxime 1 gm IV before procedure
- Ciprofloxacin 750 mg PO 1 hr before and 6 hours after first dose if patient is allergic to PCN and/or cephalosporin

DIABETES MELLITUS PROTOCOL*

Patient will be monitored postoperatively for the development and management of diabetes mellitus. Dietary consultation and when appropriate, referral to the endocrinologist/Diabetes Treatment Center, will be initiated.

SKIN CANCER PROTOCOL*

Patients will be counseled regarding the need for skin cancer prevention methods, e.g. sunscreen, minimal exposure, use of hats. When appropriate, referral to dermatology service will be initiated.

OSTEOPOROSIS PROTOCOL*

Patients will be screened for osteopenia and osteoporosis using bone mineral density scans. Treatment with Fosamax®, Actonel®, or Miacalcin® spray will be initiated along with calcium plus Vitamin D as needed. Yearly repeat bone mineral density will be obtained to follow for disease progression or improvement. When necessary, referral to the Loma Linda Osteoporosis Center will be initiated.

TRAVEL/IMMUNIZATIONS

Patients will be discouraged from international travel for the first 3 months post-transplant. After three months they are to alert their coordinator regarding foreign travel and receive education on vaccinations (**no live vaccines**), dietary and sanitary issues, medications (need to carry extra doses), etc.

Patients will need to receive boosters or additional vaccinations : Flu vaccination yearly, pneumovax every five years, HBV booster at 7 years following initial series.

*** At 3 months post-transplant, patients are transitioned to their Hepatologist/Gastroenterologist for long-term care and follow-up.**

Patients will be monitored long-term for the following issues:

- **Management of graft function**
- **Immunosuppression**
- **Recurrent liver disease**
- **Complications**