UCMC – Liver Transplant Immunosuppressive Protocol

Protocol	Steroids	Antimetabolite	Calcineurin Inhibitor (CNI) [5-8]	Antibody
STANDARD *Includes all recipients (including SLKT) and all types of donors (including SPLIT)*	Taper[3,4] Initiate PRE-op	Mycophenolate mofetil (MMF) 500mg po q 12h[5] *Initiate on POD#0*	XR (extended release) tacrolimus 4-6 mg/dose q 24h (initiate by POD#1) **OR** IR (immediate release) tacrolimus 2-4 mg/dose q 12h (initiate by POD#2) *Target Levels:* POD #0-30: 10-12 ng/mL POD #31-180: 8-10 ng/mL POD #> 180: 3-8 ng/mL	None
CNI Delay *Includes recipients* *1) Renal dysfunction[1]* *2) Altered mental status (physician discretion)*	Taper[3,4] Initiate PRE-op	Mycophenolate mofetil (MMF) 500mg po q 12h[5] *Initiate on POD#0*	XR (extended release) tacrolimus 4-6 mg/dose q 24h (initiate by POD#5-7) **OR** IR (immediate release) tacrolimus 2-4 mg/dose q 12h (initiate by POD#5-7) *Target Levels:* Per STANDARD category but may consider reduced target levels in ther early post period in setting of ongoing renal dysfunction	Basiliximab (Simulect®) 20mg IV 2 doses: POD #1 and POD #4
EARLY mTOR CONVERSION[2] *Includes recipients characterized as* *- HCC HIGH RISK* *-Cholangiocarcinoma* *-Intrahepatic cholangiocarcinoma* *-Metastatic colorectal cancer*	Taper[3,4] Initiate PRE-op	Mycophenolate mofetil (MMF) 500mg po q 12h[5] *Initiate on POD#0*	Initiate tacrolimus according to STANDARD protocol (see above) Consider convert to everolimus POD#30-60: Refer to mTOR conversion guideline[8]	None

[1]Renal Dysfunction

- PRE-OP: renal replacement therapy (RRT), SCr ≥ 2.0mg/dL, or eGFR < 60 mL/min/1.73m^2
- POST-OP: RRT (including intra-op CRRT), SCr ≥ 1.5 mg/dL or 1.5x baseline within 24 hours of transplant

[6]IR Tacrolimus initiation in setting of renal dysfunction

- Consider initiating low dose (i.e. 1-2mg q 12 hours) and maintaining reduced serum levels.
- May need to augment adjunctive immunosuppression (physician discretion)

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- SLKT: concern for delayed/slow kidney graft function

[2]mTOR conversion: refer to mTOR conversion guidelines for details regarding contraindications, dosing, monitoring and toxicities

[3]STEROID Taper

POD	0	1	2	3	4	5	6	7
Methylprednisolone IV	500	250	125	60	--	--	--	--
Prednisone PO	--	--	--	--	50	40	30	25

POD 8-20: Prednisone 20mg po
POD 21-30: Prednisone 15mg po
POD 31-45: Prednisone 10mg po
POD 46-60: Prednisone 7.5mg po
POD 61-75: Prednisone 5.0mg po
POD 76: Prednisone 2.5mg po x 2 weeks then DISCONTINUE[2]
[AIH – stay on 5mg daily indefinitely

[4]CRITERIA for STEROID discontinuation:

- Tacrolimus trough at target & stable (at least 2 readings)
- No history of allograft rejection (physician discretion)
- ESLD not secondary to AIH

[5]Mycophenolate dose adjustments

- GI adverse events: may change frequency to QID and give with meals
- WBC: ↓ dose by 50% when WBC 2-3; Hold when WBC < 2
- Active Infection: doses may be held (physician discretion)

[7]IR Tacrolimus is preferred agent, with CYCLOSPORINE a second line option (physician discretion). CYCLO target levels (ng/mL): POD 0-30: 150-200
POD 31-180: 100-150
POD > 180: 75-125

[8]IF unable to take PO IR tacrolimus change formulation based on clinical situation

- Able to tolerate enteral administration: administer tacrolimus suspension
  - Dose is the same as PO dose
- Strict NPO: administer sublingual (SL) tacrolimus
  - Dose is approximately 50% of PO dose
- Strict NPO and unable to take SL: consider IV tacrolimus or cyclosporine.
  - Use with caution due to adverse effects, anaphylactic reactions and need for dedicated line
  - IV tacrolimus or cyclosporine dose is approximately 1/3 of PO dose (discuss dosing with transplant pharmacist)

[9]Extended-release tacrolimus (Envarsus XR)

- May consider if:
  - Suspected tacrolimus peak-related ADE's (e.g., tremors)
  - Financial difficulties requiring manufacturer patient assistance program
- Dose is approximately 80% of total daily IR Tacrolimus dose (conversion factor may differ in select situations, discuss dosing with transplant pharmacist)
- Monitor Envarsus XR with 24-hour tacrolimus trough levels; target levels same as with IR Tacrolimus (see above)