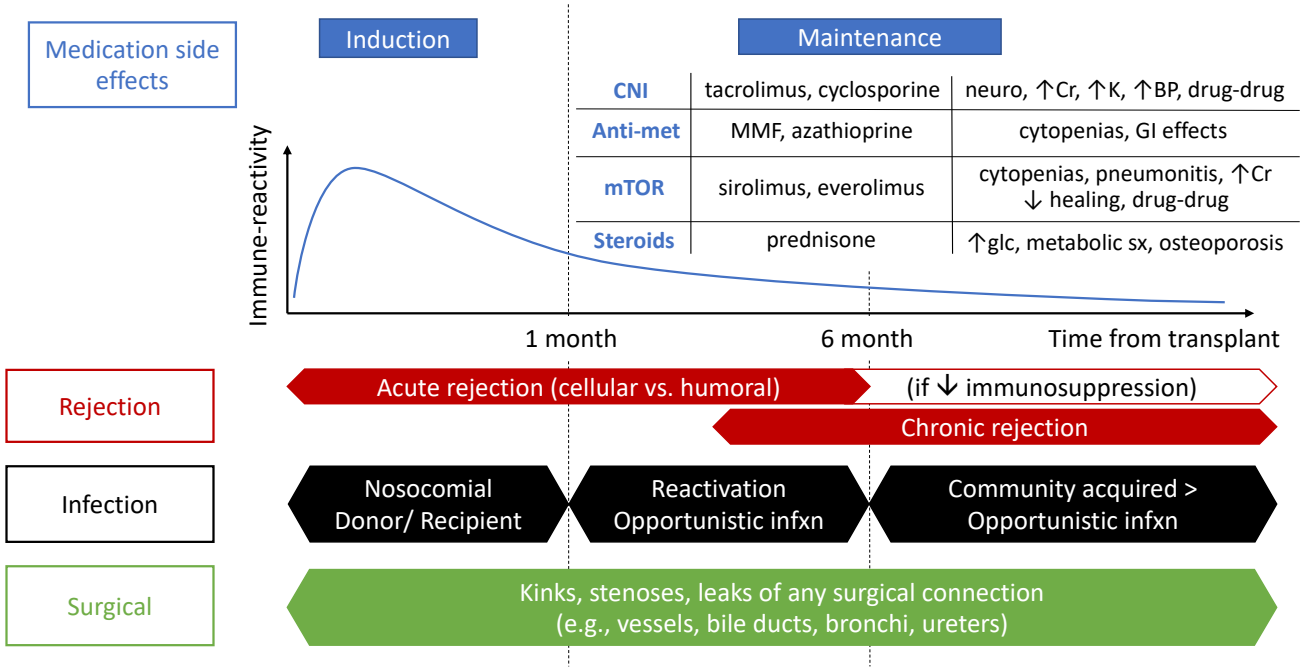
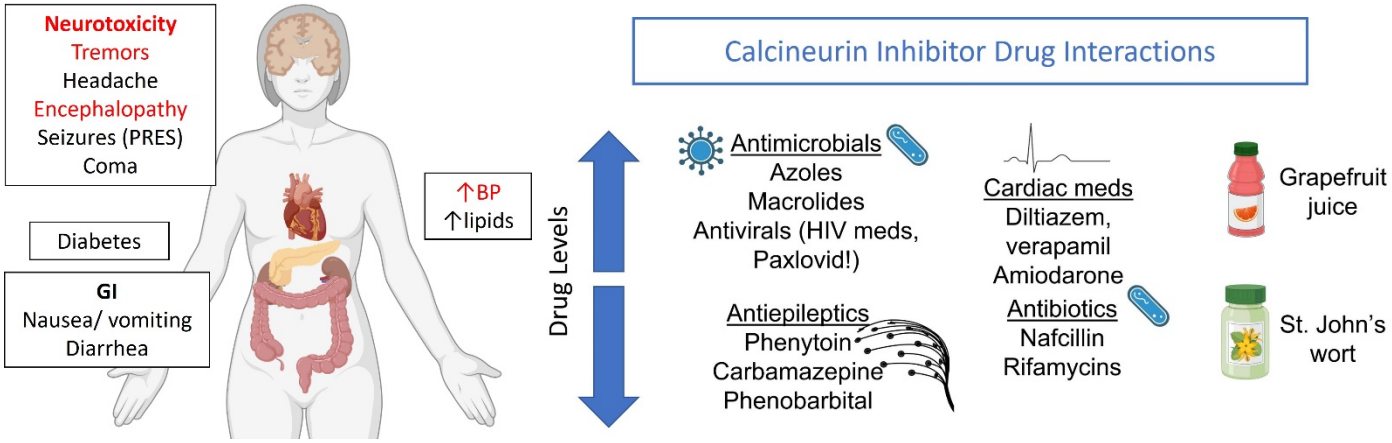
Complications after transplant



Calcineurin Inhibitor Toxicity and Drug Interactions



Take Home Points

1. Have a low threshold to call the Transplant Center early!
2. Evaluate graft dysfunction like native organ dysfunction. Additionally, consider 4 main complications: immunosuppressant side effects, rejection, infection, and surgical complications.
3. Time since transplant (a surrogate for level of immunosuppression) impacts the risk of certain infections.
4. Maintain a high level of suspicion for infection. Immunosuppression can blunt classic symptoms of infection.
5. Do not routinely hold immunosuppression. Dose CNIs consistently and time troughs (~12 hours after last dose).
6. Many drugs affect CNI levels. CNI toxicity may present with neurotoxicity and nephrotoxicity.

Yilin Zhang, MD & Jesse A. Levin, MD

Clinical Pearls

Immunosuppressant Medications

- **Calcineurin inhibitor (CNI) levels can ↑ in acute illness and can cause neurotoxicity and nephrotoxicity.**
- Calcium channel blockers and azoles (among others) ↑ CNI levels. Antiepileptics ↓ CNI levels.
- **Avoid nirmatrelvir-ritonavir (Paxlovid) in patients on calcineurin inhibitors!**
- mTOR inhibitors also have many drug-drug interactions, and they impair wound healing.
- Myelosuppression is greatest with valganciclovir > MMF >> TMP/SMX > CNI.

Infectious Disease

- Consider donor-derived infections in the early post-transplant period**.**
- **Note Donor/Recipient CMV status!** CMV can reactivate and cause multi-organ dysfunction.
- **Treatment for recent rejection (any ↑ immunosuppression) shifts risk profile for infections and malignancies.**
- ↑ immunosuppression increases risk of infection-related malignancies (Post-Transplant Lymphoproliferative Disease [PTLD], squamous cell cancer, etc.)
- Skin lesions can also be due to opportunistic infections – Nocardia, Cryptococcus, other fungi, etc.

Liver Transplant

- **Obtain a liver duplex (vascular/Doppler) ultrasound in the evaluation of new liver dysfunction.**
- Increased vascular resistance on duplex may be an early sign of rejection.
- Acute rejection is most common in the first 6 months but can occur later with underimmunosuppression.

Renal Transplant

- Treat symptomatic UTI as complicated UTI. Remember to assess for (lower quadrant) graft tenderness.
- **Routinely treating asymptomatic bacteriuria is no longer recommended.**
- Obtain a duplex of the transplanted kidney in the evaluation of acute kidney injury.

Lung Transplant

- **Have a low threshold to check an extended respiratory viral panel.**
- Lung transplants are the most likely to reject of all solid organ transplants.
- Dry lungs are happy lungs! Lung transplants are prone to pulmonary edema due to lack of lymphatics. **Manage volume judiciously! Have a low threshold to diurese.**
- Signs and symptoms of acute rejection are nonspecific and can mimic infection.
- Consider prior colonization of lungs and sinuses to guide antibiotic choice.

Heart Transplant

- Transplanted hearts are denervated. Patients have chronic tachycardia.
- Ischemia does not always produce chest pain (due to denervation).
- Heart transplant patients are typically managed by Transplant Cardiologists (even at UW). **Involve the Transplant Team early!**