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| **PROTOCOL TITLE:** The use of hepatitis C donor kidneys in hepatitis C negative recipients | |
| **APPLICABLE FACILITIES:**  EHC EDH EHH EHI EHN EJCH ELTAC ESJH  EUH EUHM EUHS EUOSH EWWH RJV-ERH RJV-ESOP TEC/ESA | |
| **EFFECTIVE DATE:** 02/26/2020 | **ORIGINATION DATE:** |

**CATEGORY:**

Choose One or More: **Diagnostic/Therapeutic/Preventive**, **Medication Guidelines**  **Teaching**

**LEVEL:**

Choose One: Dependent, **Independent**, or Interdependent

**CONTENT:**

**Protocol**

1. Prior to transplant, recipient must be consented to receive a kidney transplant organ that is positive for HCV.
2. Patients taking phenytoin, phenobarbital, carbamazepine, rifampin, or primidone are not eligible to receive a HCV + organ per protocol.
3. Confirm Hepatitis B status by testing for HBV surface antigen (HBsAg), HBV surface antibody (HBsAb), and HBV core antibody (HBcAb).
   1. If found to be HBcAb positive, refer to Recipient Hepatitis B Testing/Waitlist Management protocol
4. HCV positive donors who are of more advanced age or who are co-infected with HBV (HCV+ HBcAb+ donors) will be considered for this protocol per surgeon discretion.
5. Recipients listed for multiple organ transplants (e.g. simultaneous liver-kidney or simultaneous heart-kidney transplant candidates) will be eligible to receive organs under this protocol.
6. Recipients who receive an organ from an HCV seropositive, but HCV NAT negative recipient will not automatically receive Direct Acting Antiviral (DAA) therapy. They will have an HCV viral load checked on 1 month and 6 months, and receive routine PHS increased risk surveillance labs. If they are found to have contracted HCV by these surveillance labs, DAA therapy will be initiated at that time.

For kidney transplant recipients that are Hepatitis C (HCV) negative that receive a donor organ from a HCV NAT seropositive donor, the following applies:

1. **Laboratory Monitoring:**  HCV PCR run MWF if specimen received by 0500
   1. POD1 and POD3: HCV viral load and genotype
   2. HCV viral load (PCR) at weeks 2, 4, 8, and 12
   3. Check for Sustained Virologic Response (SVR – undetectable HCV viral load) at 4, 12 and 24 weeks after completion of DAA therapy
   4. Labs per PHS high risk protocol
2. **Medication therapy:**

On POD 1-7, start DAA therapy

1. Primary: Epclusa (sofosbuvir/velpatasavir 400/100mg)
   * + 1. **Genotypes**: 1-6
       2. **Dose**: 1 tab po daily
       3. **Duration**: 8 weeks of treatment
       4. **Food**: May be taken with or without food
       5. **Drug Interactions:**
          1. Amiodarone – May cause severe bradycardia. Recommend cardiac monitoring while inpatient. On discharge, BP/HR should be monitored at least weekly.
          2. Acid reducing medications - May decrease effectiveness

1st choice: No acid reducing medications

2nd choice: H2 blocker (i.e. famotidine). Take at same time or 12 hours apart from Epclusa

3rd choice: Antacids (Maalox, Tums, etc) should be avoided or separated from Epclusa by at least 4 hours.

4th choice: PPIs should be avoided. If they cannot, patients should take no more than 20mg of omeprazole (or equivalent) 4 hours after taking Epclusa with food.

* + - * 1. Statins – increase statin level and increased risk of myopathy. Avoid simvastatin and lovastatin. Do not exceed 10mg of rosuvastatin daily or 20mg of atorvastatin daily.
    1. Secondary: Mavyret (glecaprevir/pibrentasvir 100/40mg)
       1. **Genotypes**: 1-6
       2. **Dose**: 3 tablets daily
       3. **Duration**: 8 weeks of treatment
       4. **Food**: Take with food
       5. **Drug interactions**:
          1. Statins – increase statin level and increased risk of myopathy. Avoid simvastatin, lovastatin and atorvastatin. Do not exceed 10mg of rosuvastatin daily. Reduce pravastatin dose by 50%.
          2. Calcineurin Inhibitors (CNIs) – May increase levels of tacrolimus. May significantly increase levels of cyclosporine. Monitor closely.
          3. Mammalian Target of Rapamycin Inhibitors (mTORi) – May increase the levels of sirolimus and everolimus. Monitor closely.

Avoid high dose proton pump inhibitors (PPIs)

1. **Follow up and care coordination**
   1. On POD1: Initiate inpatient hepatology consult.
   2. On POD1-3:
      1. Provider sends EEMR message to The Center for Viral Hepatitis.
      2. The Center for Viral Hepatitis sends outlook notice to schedulers to create an EUHM encounter (created within 24-48 hours of request)
      3. Medication (DAA) ordered from EUHM encounter by clinical team at The Center for Viral Hepatitis.
         1. Outpatient hepatitis pharmacist reviews the HCV medication received from The Pharmacy at Emory. The hepatitis pharmacy team may assist with any insurance authorizations or prior authorizations needed.
   3. Prior to discharge:
      1. Patient given appointment day and time with The Center for Viral Hepatitis
         1. Follow-up should begin at 4 weeks post-transplant, and continue every 4 weeks thereafter for a total of 5 months (or at the providers discretion as clinically indicated)
      2. Patient receives DAA (Mavyret or Epclusa) for outpatient use from The Pharmacy at Emory (or other pharmacy if patient’s insurance requires it)
      3. Patient provided with updated medication list and education on HCV medication (in addition to transplant medications)

**RELATED POLICIES / PROCEDURES**: Hepatitis C protocol, Hepatitis B protocol

**DEFINITIONS:**

**REFERENCES AND SOURCES OF EVIDENCE:**

Mavyret [package insert]. Chicago, IL: AbbVie; 2018.

Epclusa [package insert]. Foster City, CA: Gilead; 2017.

La Hoz et al. AJT 2019;19:3058-70.

Durand et al. AJT 2019;19:2969-70.

De Vera et al. AJT 2019;18:2451-6.

Livitsky et al.AJT 2017; 17: 2790–2802.

Colombo M et al. Ann Intern Med. 2017;166:109-117.

**KEY WORDS:** Hepatitis C, transplant, HCV NAT positive