Objective: Improve care of patients with end stage liver disease who have ascites by increasing providers who perform diagnostic paracentesis.

Reasoning for increasing rate of diagnostic paracentesis:
Spontaneous bacterial peritonitis is associated with high short term and long term morbidity and mortality. Early detection can help improve short term outcomes by initiation of appropriate anti-microbial therapy and albumin infusions.

Implementation beginning 2015

Indications for a diagnostic tap:
A diagnostic paracentesis should be performed on any patient with decompensated cirrhosis who presents with moderate ascites unless they are catastrophically ill and therefore too unstable to perform procedure.

Contraindications:
- Peritoneal metastasis
- Bowel obstruction or ileus
- If patient is in DIC (disseminated intravascular coagulation)

Providers: Who should perform paracentesis?
- Emergency Room medical staff (Residents/Fellows/Attendings) must perform a diagnostic paracentesis on patients meeting above criteria
- If it is not done in ER, it must be signed out (documented in note) to the inpatient medicine team

References:

Note:
Elevated INR is not a contraindication to paracentesis - but is for thoracentesis
INSTRUCTIONS:

Supplies:
Topical skin cleansing agent, sterile gloves, sterile gauze
22 or 25 gauge needle, 10ml syringe, 1-2% lidocaine
18 gauge needle, 60 cc syringe
2 culture bottles (culture)
1 purple top tube (cell count and differential)
1 red top tube (albumin, total protein, ldh, amylase)
Sterile top tube (gram stain)

Directions:

Obtain informed Consent: Bleeding, infection, intra-abdominal organ injury

1) Identify a suitable site to drain – usually left or right lower quadrants, lateral to rectus sheet, 2-3 cm below level of umbilicus.

2) Sterilize the site where needle insertion will take place with skin cleansing agent. If possible apply drape over this area. Put on sterile gloves for remainder of procedure.

3) Using small gauge needle anesthetize the area with 1% lidocaine solution. Follow the tract that is anticipated to drain the ascites fluid. Pull back plunger after inserting every 1-2mm.
   - Coagulopathy is not a contraindication to small volume tap and should not prevent procedure from taking place. Unless patient is in DIC, risk of bleeding is low.
   - Do not insert at site of cutaneous infection, hematoma, surgical scars or visually engorged subcutaneous veins

4) Now using large bore needle with 60 cc syringe gently insert the needle as you pull back on plunger until ascites fluid is aspirated. 40-60 cc of fluid is adequate for all necessary diagnostic testing.

5) Dress the area with sterile gauze.

Ultrasound localization is considered a standard of care for this procedure performed by IM residents due to training and now availability of portable US units (speak to Dr. Ahmad as needed).

1) Position the patient such that fluid will collect in a gravity dependent fashion
2) Low frequency phased or curvilinear to mark location:
   a. US localization criteria:
      i. minimum 1.5 cm fluid layer deep to the inner edge of abdominal wall
      ii. Absence of bowel or other organ in this 1.5cm fluid pace, watched over 30 sec.
   b. Mark the location
3) High frequency linear array probe for ensuring no overlying large vessels at marked location
4) Patient is not to reposition once US localization has taken place (procedure is not done in real-time ultrasound control)
## TESTINGS:

<table>
<thead>
<tr>
<th>Pre-existing Ascites in Cirrhosis patient</th>
<th>New onset Ascites in Cirrhosis patient</th>
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</thead>
<tbody>
<tr>
<td>Cell count with differential (purple top)</td>
<td>Cell count with differential</td>
</tr>
<tr>
<td>Gram Stain (Sterile container)</td>
<td>Gram Stain and culture</td>
</tr>
<tr>
<td>Culture (aerobic/anaerobic bottles)</td>
<td>Album and Total Protein</td>
</tr>
<tr>
<td>Misc: Amylase, LDH, cytology etc</td>
<td></td>
</tr>
</tbody>
</table>

### Large volume paracentesis

**Obtain informed Consent:** Bleeding, infection, intra-abdominal organ injury

- Coagulopathy is not a contraindication to large volume tap and should not prevent procedure from taking place. Unless patient is in DIC, risk of bleeding is low.
- Do not insert at site of cutaneous infection, hematoma, surgical scars or visually engorged subcutaneous veins
- When a patient appears intravascularly deplete (thin frail patient, tachycardia, small IVC, large abdominal ascites), consider discussing the threat of large fluid shifts with your team senior and attending.

1. Identify a suitable site to drain – usually left or right lower quadrants, lateral to rectus sheet, 2-3 cm below level of umbilicus. US localization as describe above.
2. Sterilize the site where needle insertion will take place with skin cleansing agent. If possible apply drape over this area. Put on sterile gloves for remainder of procedure.

**Utilizing the cavity drainage (thoracentesis) kit:**

3. Using small gauge needle anesthetize the area with 1% lidocaine solution. Follow the tract that is anticipated to drain the ascites fluid. Pull back plunger after inserting every 1-2mm.
4. Once region is anesthetized, gently pull overlying skin (intentionally misaligning with underlying peritoneum) insert the needle/catheter apparatus, creating suction as advance
5. Once fluid is aspirated, advance additional 5 mm to ensure bevel is within the fluid
6. Advance the catheter only (over the underlying needle) to the catheter hub
7. Withdraw the needle
8. Turn three-way stop cock towards patient.
9. Attach collection syringe, turn stop cock to face third unused port; withdraw sample to send for testing.
10. Attach tubing (single tubing with needle at end); needle to the suction canister; turn stop cock towards unused port simultaneously with placing needle into the suction.

Always return stopcock to face patient when handling the tubing and syringe.