Peripheral and Central line (Jugular) Placement for the Veterinarian Technician

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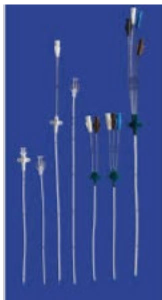
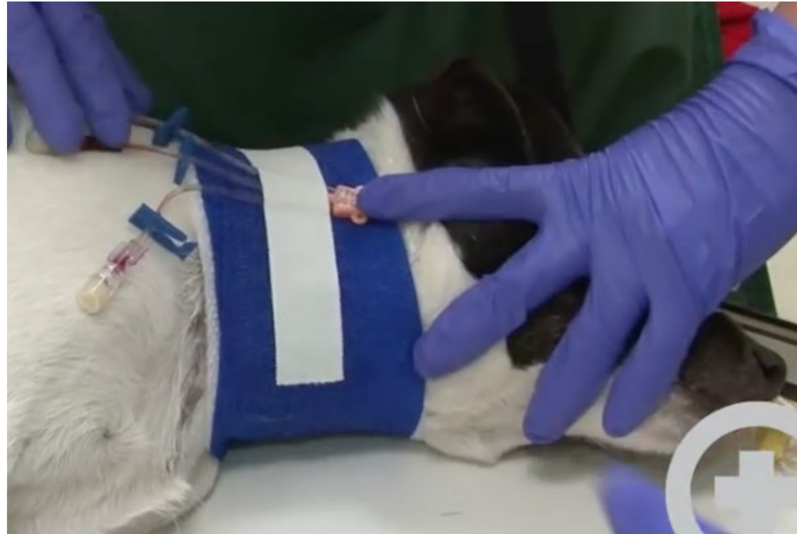
ISVMA 2023

<u>Central line (Jugular) Placement</u>





Sizes

<u>Length</u>

- 8cm for small cat and toy breed
- 13cm most large cats and small dogs
- 20cm medium to large breeds (>60lbs)
- 30cm for giant breeds (Dane/st Bernard)

<u>Diameter</u>

- 5.5 Fr small dogs and cats
- 7.5 Fr Medium to large breed dogs

<u>Lumens</u>

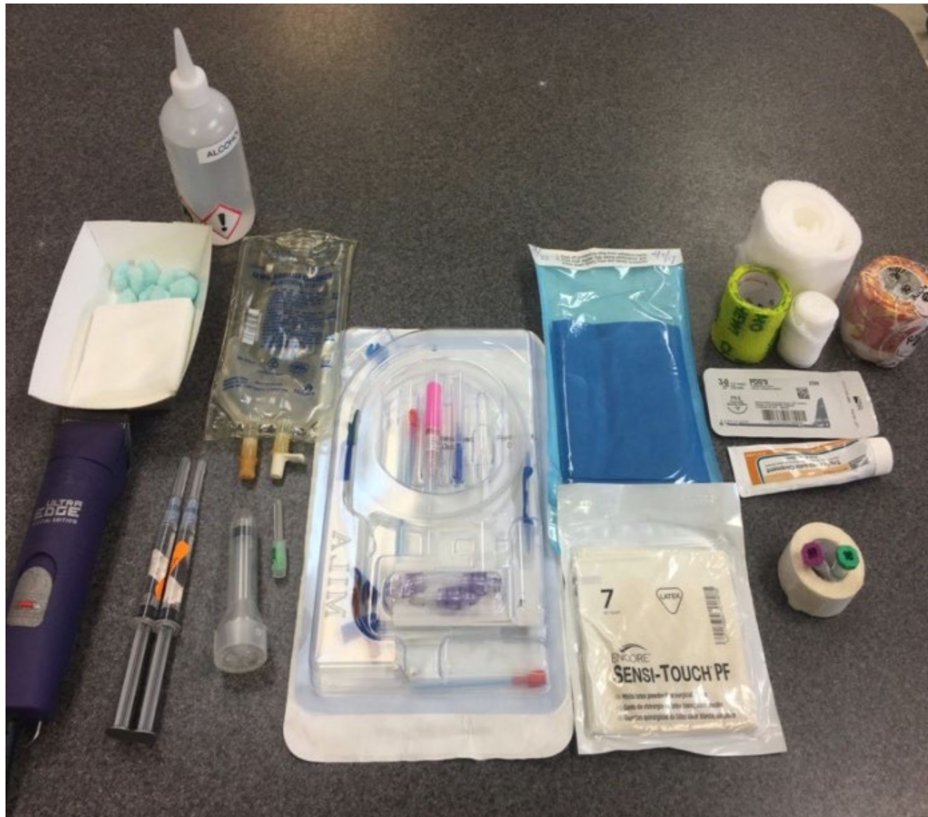
- Double or triple lumens available. Usually use triple lumen when able
- Single reserved for saphenous only

- **<u>You tube videos of placement</u>**
    - **https://www.youtube.com/watch?v=DkOAXb__I7w**
    - **https://www.youtube.com/watch?v=D9CuwSrfs0I&t=4s**

Contraindications for placing central lines

- Coagulopathic patients
- If skin infection present at site
- Traumatic brain injury
- Neck trauma
- Respiratory distress
- Pacemaker

Supplies you'll need



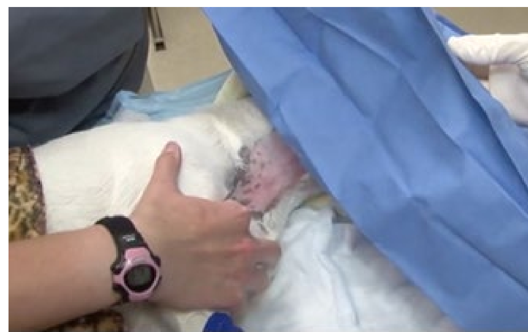
- Mayo stand or surface for sterile space
- Double or triple lumen catheter kit (have backup available but not open)
- Sterile surgical drape
- Clippers
- Chlorhex solution
- Alcohol or saline
- Gauze 4x4 pack
- 11 blade
- Lidocaine (no more than 2mg/kg) give sq at insertion site with 25 gauge needle
- 3-0 non-absorbable skin suture
- Sterile 6ml and 3ml syringes

- Hep saline flush 6mls total to flush ports once placed
- Bandage material (telfa, soft padded material/vet wrap) and triple antibiotic
- 3cc syringe for blood draw if needed
- Blood tubes if needed

Steps

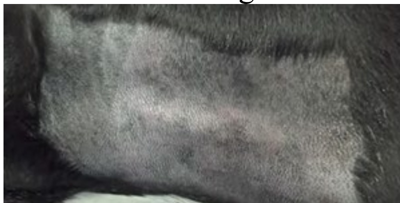
1.

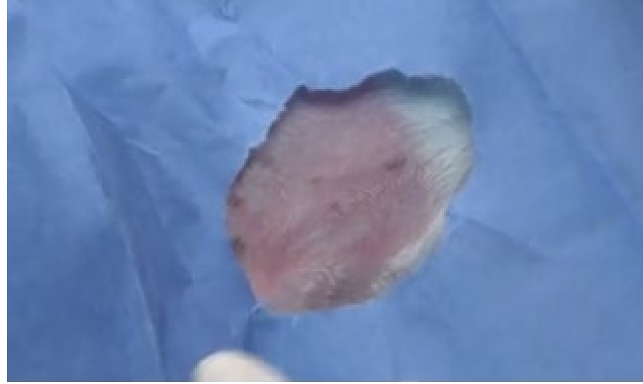
- Make sure all material above is **ready first**
- Patient lateral or dorsal recumbancy and calm
- Patient must be sedated/calm with minimal movement. If critical, flow by oxygen and hooked up to monitoring
- Holder comfortable holding head and jug vein off
- Pre-measure length needed from insertion site on neck to approximately 3rd-4th rib.
- Give lidocaine block (ask DVM first), up to 2mg/kg SQ at insertion site



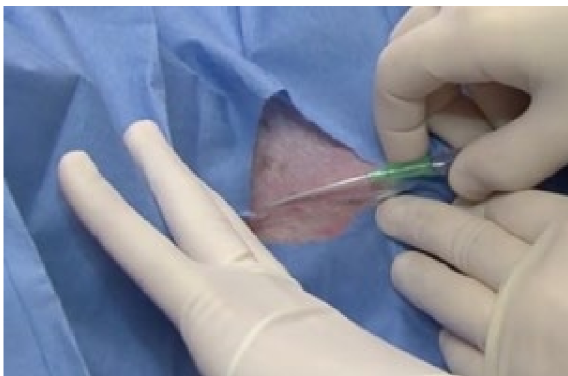
2. ASEPTIC skin prep with regular gloves. Clip wide margins and then use chlorohex then alcohol wipe x 3

- Open all supplies onto sterile field
- Put on sterile Gloves
- Drape prepped area on skin
- Then **flush all ports of lumens/catheter with saline and clamp lines**
- Tent skin at insertion site (pick up and move skin away from vessel) then use the 11 blade to make gentle stab incision, should be no longer than 1 cm.

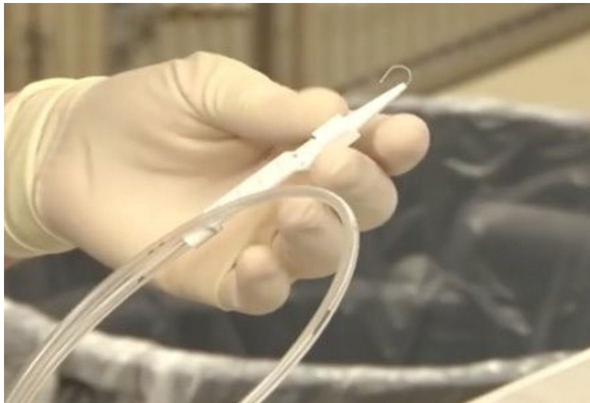
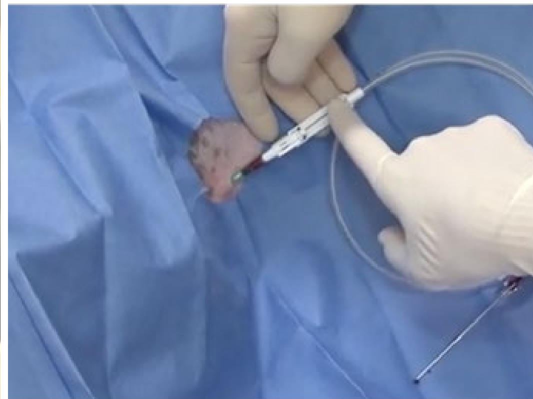




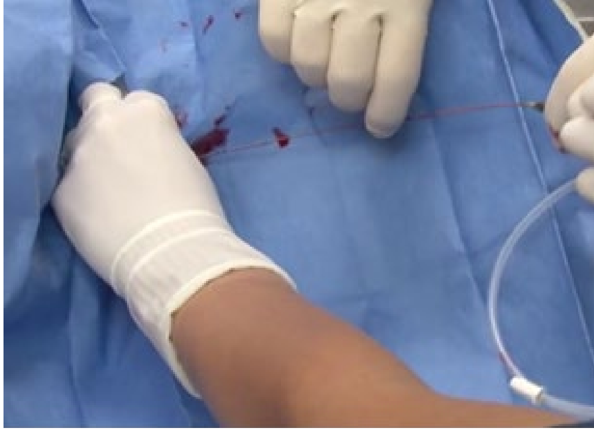
3. Place an over the needle short catheter into jugular vein. Remove stylet from catheter

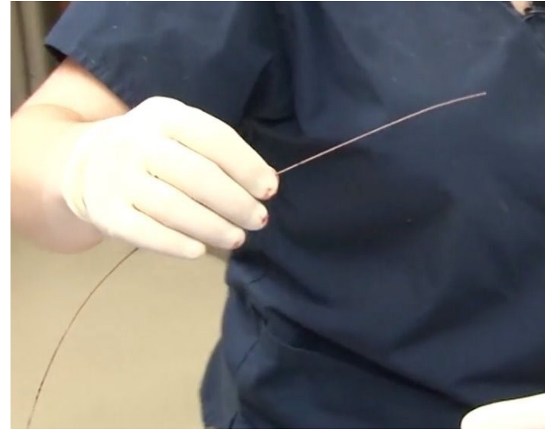


4. Then keeping the guide wire in sheath provided, advance it into short catheter. You should not need to advance it any more than 10cm which is the distance between 2 black marks on wire. DO NOT ADVANCE the whole guide wire

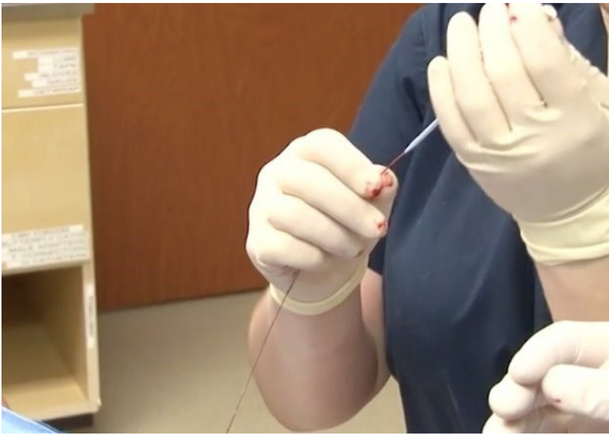
 

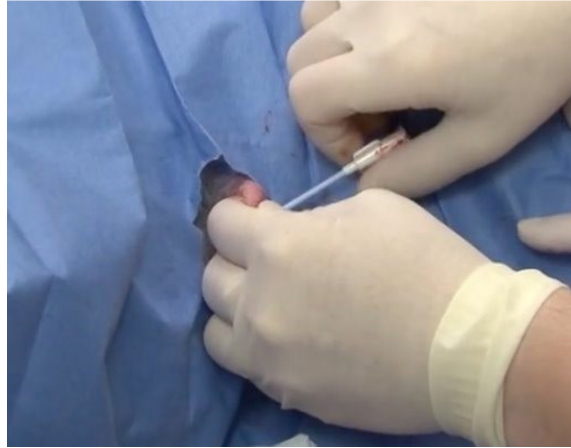
Once guide wire where you want it, carefully remove the wire **sheath** AND short IVC over the guide wire **WITHOUT** removing the guide wire

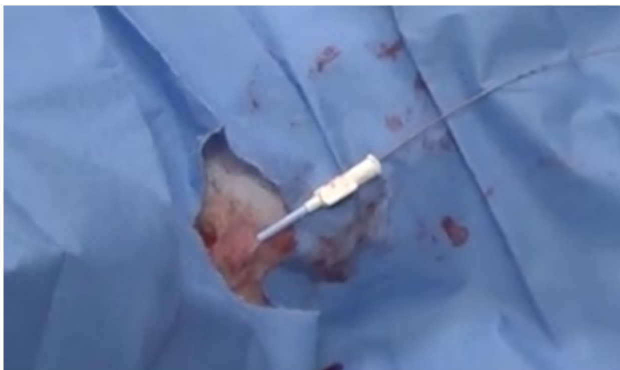




4. Then pass the blue dilator over the guide wire into the patient. Use the smallest dilator diameter first. It should go all the way but if to much resistance, then at least half way. If can't get past skin, may need to lengthen stab incision





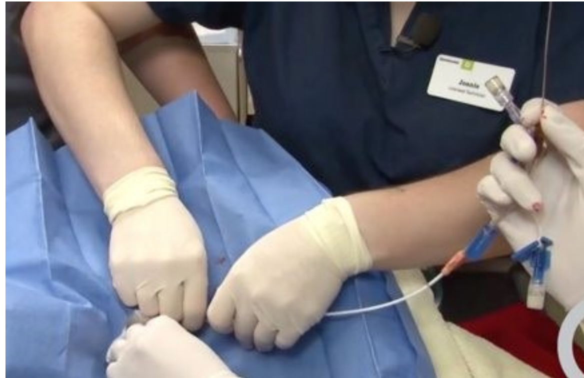


5. Remove the dilator **(NOT THE GUIDEWIRE**) and be prepared that moderate bleeding from insertion site will occur so use the 4x4 gauze to apply light pressure.

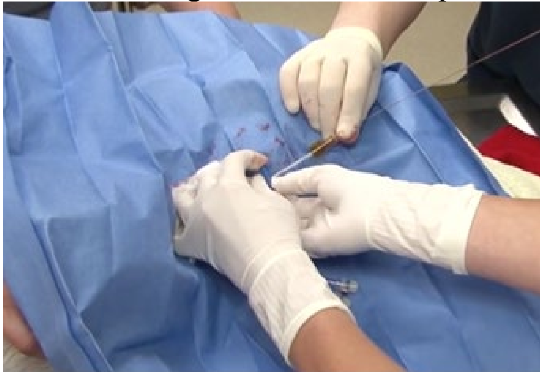
Then pass the central line catheter over the guidewire and into the patient while keeping the guidewire in place.

6.

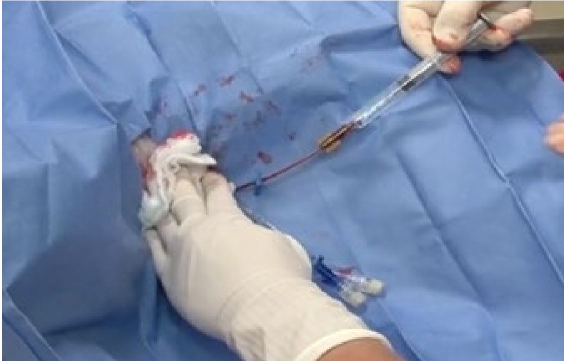
- The guidewire should start to appear in the lumen of the brown port. When it reaches the clamp, unclamp and continue to advance the catheter until the guide wire is out of the brown port and still in the patient.
- Once the IV catheter is in at least half way, you make need to start pulling wire back slowly while advancing IVC the rest of the way.



7. Remove the guidewire and clamp the line

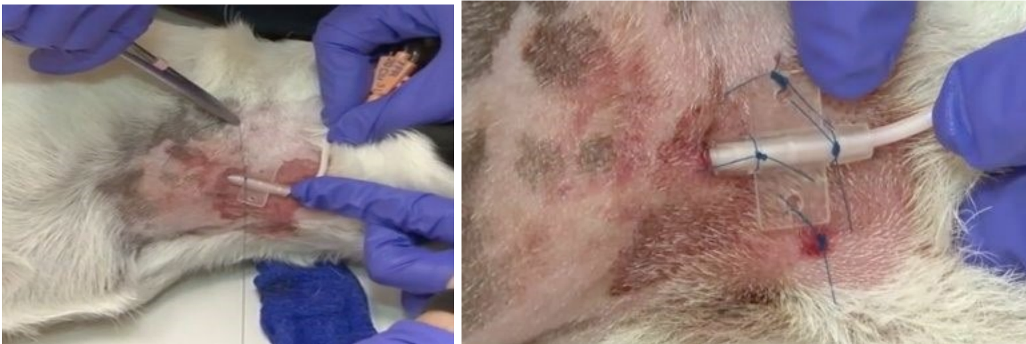


8. Aspirate all ports to make sure see blood in the line and then flush All ports with the sterile saline and reclamp.

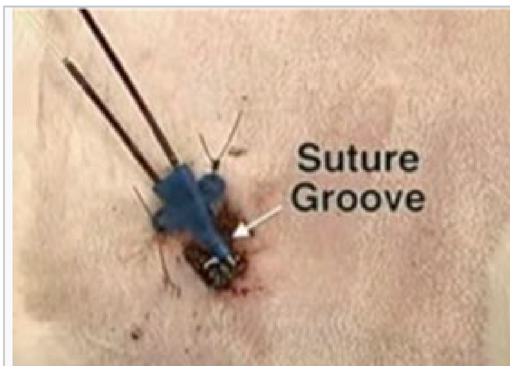


9. Add caps to all the lines after making sure port is free from any blood

- If not able to seed whole catheter into skin, then use adaptor to put over catheter as close to insertion site as possible.
    - Adapter may be clear like one below or a white part
- Place encircling suture over the adapter and around catheter to secure catheter to adaptor itself
- Attach blue cover to adapter after that. Should snap on,

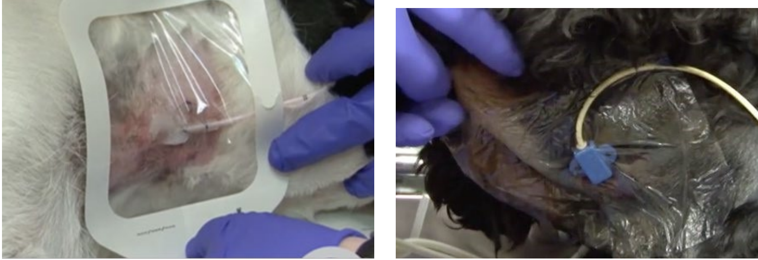


- Then Suture actual Catheter to skin using 3-0 Ethilon (one in each whole on the wings at catheter base).

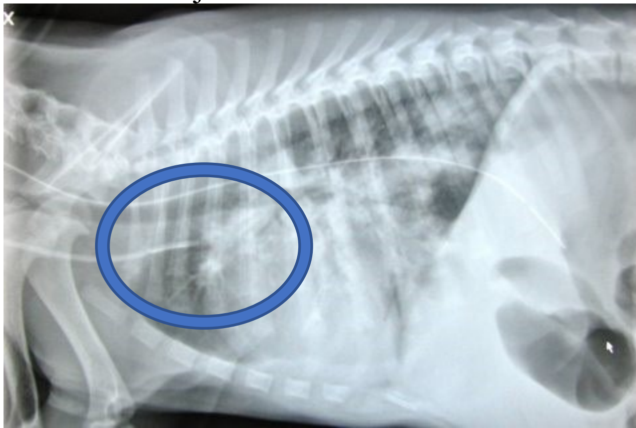


10.

- Clean around skin and aseptic area until all blood removed and then pat dry with gauze
- Apply BNP ointment to insertion site
- Place tegaderm over IVC at insertion site



11. Once IVC secured to patient, take Post placement lateral thoracic radiograph (Right or left is fine).
Desired area is just cranial to the heart.



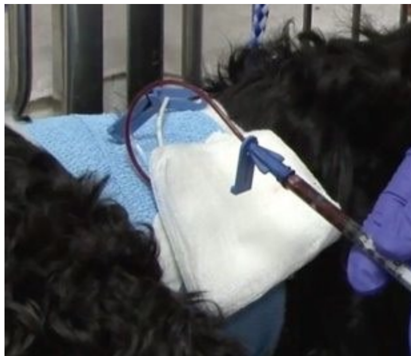
12. Apply light simple neck wrap with one layer of roll gauze and then vetwrap

- Tape ports INDIVIDUALLY to vetwrap.

Central Line Blood draws

Use the 3 syringe technique to obtain blood samples

- Unclamp brown port of multi lumen IVC
- Use 3mls of heparanized saline (1ml/250mls saline) to flush 2.5mls into patient and then remove 3mls of patients blood in same syringe. (put this "presample" syringe aside
- Change syringe out for appropriate size syringe and Aspirate blood volume enough for labwork needed.
- Return "presample" to patient via IVC and flush with hep/saline and reclamp line if not in use



Heparinized Saline

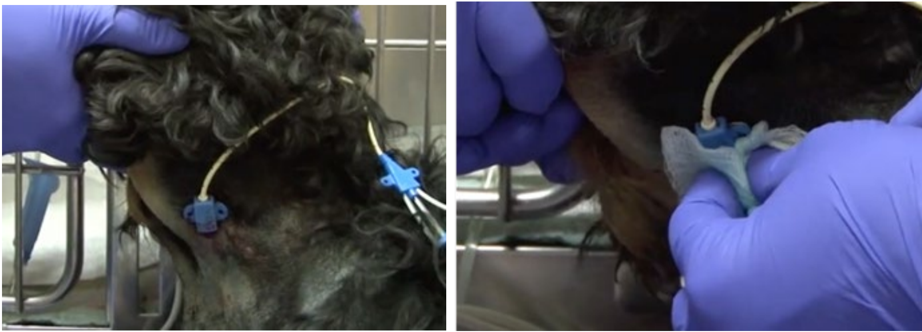
For central lines and arterial lines, the IVC should be flushed every 6 hours with heparinized saline.

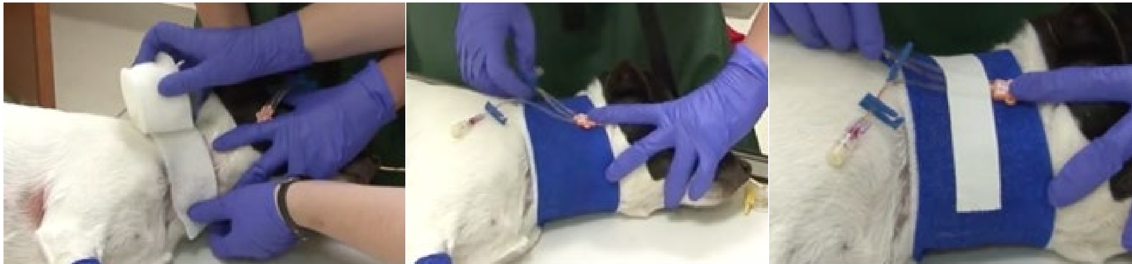
To make hep saline bag for individual patient , follow below

- Mix 1ml of heparin (1000IU/ml) with 250mls of saline
- Label the bag with date/time
- Use for that patient only
- Discard bag after 24 hours
- Do NOT flush more fluid then needed to fill line/clear hub
- If patient <5kg, then dilute the hep saline 1:1 with plain saline

<u>**Maintenance of Central IV Catheter**</u>

- Flush all ports with minimal amount of hep saline needed q8hr if in use and q6hr for those ports not in use to keep patent
- Alcohol swab ports q6hr or before giving IV injections
- Chlorhex and saline scrub all lines q8-12hr from ports
- Minimize times disconnecting
- No NECK leads
- Change fluid lines q24hr or if they get soiled
- Keep patient clean!!!
- **Change bandage q24hr**
- **Hep saline flush all ports q6hr** = (1 ml (1000IU) of heparin to 250mls bag of saline)





Monitoring for central vein catheter complications

- Check swelling of face and neck in front of IVC
- Body Temp – if fever without known source, consider exchanging IVC
- Swelling above or around IVC
- Discharge from insertion site

Heparinized Saline

For central lines and arterial lines, the IVC should be flushed every 6 hours with heparinized saline.

To make hep saline bag for individual patient , follow below

- Mix 0.25ml of heparin (1000IU/ml) with 250mls (or 1ml with 1L) of saline
- Label the bag with date/time

- Use for that patient only
- Discard bag after 24 hours
- Do NOT flush more fluid then needed to fill line/clear hub
- If patient <5kg, then dilute the hep saline 1:1 with plain saline