**ATTENTION: ANIMAL CARE STAFF**

**Post-Operative Care Information - Surgical Models**

**Rat Catheterizations**

<table>
<thead>
<tr>
<th>Surgical Procedure</th>
<th>Catheter Volume* (mL)</th>
<th>Plugged End - Catheter Inside Diameter</th>
<th>Needle Size (Best Fit Inside Catheter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jugular Vein Catheterization (JVC)*</td>
<td>0.05</td>
<td>.025&quot; /0.6mm</td>
<td>22 gauge</td>
</tr>
<tr>
<td>Carotid Artery Catheterization (CAC)*</td>
<td>0.03</td>
<td>.025&quot; /0.6mm</td>
<td>22 gauge</td>
</tr>
<tr>
<td>Femoral Vein Catheterization (FVC)*</td>
<td>0.07</td>
<td>.025&quot; /0.6mm</td>
<td>22 gauge</td>
</tr>
<tr>
<td>Femoral Artery Catheterization (FAC)*</td>
<td>0.06</td>
<td>.025&quot; /0.6mm</td>
<td>22 gauge</td>
</tr>
<tr>
<td>Portal Vein Catheterization via Superior Mesenteric Vein (PVC)*</td>
<td>0.08</td>
<td>.025&quot; /0.6mm</td>
<td>22 gauge</td>
</tr>
<tr>
<td>Bile Duct Catheterization Closed Loop (BDCCL)</td>
<td>0.10</td>
<td>.025&quot; /0.6mm</td>
<td>22 gauge</td>
</tr>
</tbody>
</table>

* Standard Envigo catheter exteriorization is a fixed 2.5cm exposed length between the shoulder blades; catheter is round-tipped, and made of polyurethane. Dimensions apply to standard catheterization option only. Catheter volumes are approximations only.

**Catheter Exteriorization Options**

<table>
<thead>
<tr>
<th>Options</th>
<th>Part No.</th>
<th>Volume (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PinPort™</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culex Catheter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vascular Access Port (VAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Catheter Lock Solution Options**

Heparin/Glycerol solution supplied by:

- **Standard Lock Solution**: Heparin-Glycerol (50:50 ratio)
  - 500 IU Heparin/1 mL final solution in Glycerol
- Heparin-Glycerol Solution (10:90 ratio)
  - 500 IU Heparin/1 mL final solution in Glycerol
- Heparin-Saline Solution
  - 500 IU Heparin/1 mL final solution in Saline
- Other

**Drug Treatment**

<table>
<thead>
<tr>
<th>Drug Treatment</th>
<th>Dosage</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketamine/Xylazine</td>
<td>41.7 mg Ket + 8.3 mg Xyl/kg</td>
<td>IM IP</td>
</tr>
<tr>
<td></td>
<td>200 mg Ket + 10 mg Xyl/kg</td>
<td></td>
</tr>
<tr>
<td>Isoflurane</td>
<td>To effect</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Ketoprofen</td>
<td>3.0 mg/kg</td>
<td>SQ</td>
</tr>
<tr>
<td></td>
<td>5.0 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>IM IP SQ</td>
</tr>
</tbody>
</table>

- Last dose of analgesia given on

**Dietary Supplementation**

- Standard diet *ad libitum*
- Standard water *ad libitum*
- Other

**Notes**
Envigo Surgically-Modified Rat Models: Catheter Maintenance Recommendations

I. PinPort
- Complete heparin maintenance following two to three days acclimation.
- Evaluate patency every two to three days thereafter.
- Maintain positive pressure on syringe plunger when removing the syringe from the harness.

II. Harnessed
- Complete heparin maintenance following two to four days acclimation.
- Evaluate patency every three to four days thereafter.
- Maintain positive pressure on syringe plunger when removing the syringe from the harness.

III. Vascular Access Port (VAP)
- Complete catheter heparin maintenance upon arrival.
- Evaluate patency every three to four days thereafter.
- Complete heparin maintenance following two to three days acclimation.
- Evaluate patency every two to three days thereafter.

Materials Needed Per Catheter for Evaluating Patency
- Trained personnel or commercial animal restraint device
- Two locking, non-traumatizing forceps or hemostatic clamp
- Three 22/23 gauge luer stub adapters (for Std. Option), OR non-coring needles (Huber for VAPs, SN22 for buttons & harnesses) OR three 19 gauge luer stub adapters (for Culex catheters)
- Three sterile 1 mL syringes
- Three 22/23 gauge luer stub adapters (for Culex catheters)
- Sterile locking solution (Standard 500 IU/mL Heparin/Glycerol Locking Solution supplied by SAI Applications, Inc.)
- Sterile saline for injection
- 70% isopropyl alcohol
- Iodine solution
- Sterile gauze sponges
- A second sterile stainless steel catheter coupler

Procedure for Evaluating Bile Duct Catheter Patency
1. For accurate and safe handling of the animal, two trained people or a commercial animal restraint device should be used.
2. Catheter patency checks should be performed immediately upon animal arrival and every 24 hours thereafter.
3. Catheters should be examined for signs of leakage immediately upon arrival and every 24 hours thereafter.
4. Bile flow is from the animal’s left to the right.
5. Wipe the ends of the catheter around the coupler with iodine solution-soaked gauze sponge, followed by a wipe of a 70% isopropyl alcohol-soaked gauze sponge. Discard sponges.
6. Clamp the right side of the catheter loop. Remove the coupler and discard. Bile should flow from the animal’s left side catheter.
7. Insert an adapter on a syringe filled with sterile saline into the right side catheter. Remove the clamp.
8. Slowly inject 0.10 mL of saline into the duodenal end (right side). Reclamp this catheter end before removing the needle/syringe. Discard needle/syringe.
9. Following patency check, the catheter loop (and flow of bile to the intestine) is re-established by joining the two pieces of tubing over a sterile catheter coupler. Ensure there are no air bubbles at the inserted coupler end in the catheter, as bubbles can impede the natural flow of bile.

Vascular Catheterization Post-Operative Care Instructions
Depending on the customer defined surgical model, complete heparin maintenance and aseptic catheter flushing as specified below:

I. Standard Option – Fixed: 2 Scm, Externalized
- Complete heparin maintenance following two to four days acclimation.
- Evaluate patency every five to seven days thereafter.

II. PinPort
- Complete heparin maintenance following three to four days acclimation.
- Evaluate patency every seven days thereafter.

- Follow the specific flushing instructions for PinPorted animals on the sheet provided with your order “Post-Operative Care Information-Catheterizations-PinPort Maintenance.”