## Appendix A

### 30.80.03 Instillation of Medication into Peritoneal Dialysis Solution

<table>
<thead>
<tr>
<th>INTRA-PERITONEAL*</th>
<th><strong>Lidocaine without epinephrine</strong></th>
<th><strong>Metoclopramide</strong></th>
<th><strong>Sodium Bicarbonate</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indication</strong></td>
<td>Abdominal cramps or pain only after investigations support that the pain is related to the dialysate solution. Avoid risk of masking pain related to other causes (e.g. infection). Not indicated if the source of pain is unknown.</td>
<td>Control of nausea or diabetic gastroparesis if the oral route is not tolerated or not beneficial.</td>
<td>Abdominal pain or cramps felt to be related to pH of dialysate.</td>
</tr>
<tr>
<td><strong>Dose</strong>**</td>
<td>2.5 mL/L (50 mg per 2L exchange)</td>
<td>5 mg/L (10 mg per 2 L exchange)</td>
<td>2 – 5 mL/L (4 – 10 mmol per 2L exchange)</td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>Injectable lidocaine 1% (10 mg/mL): 2 ml, 5 ml, 10 ml, 20 ml vials.</td>
<td>Injectable metoclopramide (5 mg/mL): 2 ml, 10 ml vials.</td>
<td>Injectable sodium bicarbonate 8.4% (1 mmol/mL): 50 ml vial. Discard vial 24 hours after initial puncture</td>
</tr>
<tr>
<td><strong>Compatibility</strong></td>
<td>Use only with standard solution (Dianeal). Dose and compatibility based on practice. Use immediately after preparation.</td>
<td>Use only with standard solution (Dianeal). Dose and compatibility based on practice. Use immediately after preparation.</td>
<td>Compatible with Dianeal 1.5%, 2.5%, 4.25% (based on compatibility studies) Stable for 24 hours at room temperature or 5 hours at body temperature (32-38 °C) Current site practice: compatible in 0.5% Dianeal (not verified by compatibility study)</td>
</tr>
<tr>
<td><strong>Caution</strong></td>
<td>Systemic absorption is unlikely but may occur. Monitor for CNS (disorientation, confusion, psychosis, tremors, convulsions, respiratory arrest) and Cardiovascular (myocardial depression, hypotension) adverse effects. Epinephrine can cause abdominal vasoconstriction, which may decrease the effectiveness of the dialysis so lidocaine mixed with epinephrine is not indicated.</td>
<td>Clinically significant systemic absorption has been reported with long term use (&gt; 6 months). Monitor for extra-pyramidal symptoms (e.g. tremor, bradykinesia, dyskinesia).</td>
<td>Addition of sodium bicarbonate to the dialysate increases the sodium concentration and may increase risk of developing sodium overload with hypertension.</td>
</tr>
</tbody>
</table>

*Physician’s order is required prior to administration of intra-peritoneal drugs

** Inject into dialysis solution before infusing

References attached.
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<table>
<thead>
<tr>
<th><strong>INTRA-PERITONEAL</strong></th>
<th><strong>Heparin</strong></th>
<th><strong>Insulin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indication</strong></td>
<td>Presence of fibrin in dialysate bags, for slow drainage and for hemoperitoneum</td>
<td><strong>NOT RECOMMENDED</strong></td>
</tr>
<tr>
<td></td>
<td>Confirmation of catheter patency</td>
<td></td>
</tr>
<tr>
<td><strong>Dose</strong></td>
<td><strong>500-1000 units/L</strong></td>
<td>Most Canadian PD units use subcutaneous insulin and not IP insulin.(^2)</td>
</tr>
<tr>
<td></td>
<td>- To each bag until effluent clears</td>
<td><strong>Disadvantages:</strong></td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>1000 units/ml (10 ml vials)</td>
<td>- More difficult to adjust when timing of meals or CAPD schedules altered</td>
</tr>
<tr>
<td><strong>Compatibility</strong></td>
<td>Dextrose (Dianeal) – compatible (in vitro)</td>
<td>- Increased risk of peritonitis(^3,4)</td>
</tr>
<tr>
<td></td>
<td>Icodextrin (Extraneal) – compatible (in vitro)</td>
<td>- Higher total insulin dose(^3,5)</td>
</tr>
<tr>
<td></td>
<td>Nutrineal PD4 in Viaflex - compatible (in vitro)</td>
<td>- High variability in peritoneal insulin absorption that is not related to membrane transport status.(^6)</td>
</tr>
<tr>
<td><strong>Caution/Safety Notes</strong></td>
<td>Limited animal and ex vivo studies suggest that heparin may have dose-dependent adverse effect on peritoneal mesothelial cells. The use of the smallest effective dose is therefore recommended. Doses of 500 to 1000 units per liter of peritoneal dialysate do not appear to cause peritoneal toxicity.</td>
<td>- Lower HDL and higher triglyceride levels(^5)</td>
</tr>
<tr>
<td></td>
<td>Although intraperitoneal instillation of heparin does not affect systemic coagulation parameters or increase bleeding risk, heparin may still reach the systemic circulation. This is believed to occur by lymphatic absorption or with peritonitis due to increased peritoneal membrane permeability. IP heparin is therefore contraindicated in patients with heparin-induced thrombocytopenia (HIT).</td>
<td><strong>NOTE:</strong> Dextrose-containing dialysate can significantly raise the blood sugar. All patients who are starting PD should have their blood sugars monitored during the initiation phase with antihyperglycemic therapies adjusted appropriately. Note that when switching from PD to HD, a patient may require a significant decrease in antihyperglycemic therapy at time of switch.</td>
</tr>
</tbody>
</table>

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References attached
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References:

Intra-peritoneal lidocaine

2. Holley JL, Schmidt RJ. Noninfectious complications of continuous peritoneal dialysis. UpToDate Online 17.3.
6. Lidocaine Adult Parenteral Drug Monograph, WRHA.

Intra-peritoneal metoclopramide


Intra-peritoneal Sodium Bicarbonate

4. Holley JL, Schmidt RJ. Noninfectious complications of continuous peritoneal dialysis. UpToDate Online 17.3.

Intra-peritoneal heparin

5. University Health Network Division of Nephrology Housestaff/ACNP Guidebook, June 2007, Toronto, Canada.
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Intra-peritoneal insulin