**GUIDELINES FOR THE USE OF BROVIAC + HICKMAN LINES**

This protocol is part of a series of Great Ormond Street Guidelines

<table>
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<tr>
<th><strong>ACCESSING THE CATHETER</strong></th>
<th><strong>ACTION</strong></th>
<th><strong>RATIONALE</strong></th>
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<tbody>
<tr>
<td><strong>Reheparinisation:</strong></td>
<td>Equipment required:</td>
<td>To maintain patency</td>
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<tr>
<td></td>
<td>▪ Heparinised 0.9% sodium chloride</td>
<td>To prepare solutions</td>
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<td></td>
<td>▪ Needles</td>
<td>To facilitate access without rupturing catheter.</td>
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<td></td>
<td>▪ 10ml syringes (2,12,22)</td>
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**Access the catheter, assess catheter function and position then reheparinise the catheter by:**

- Attach empty 10ml syringe
- Open clamp
- If local policy withdraw 2ml (Broviac) or 3ml (Hickman) of fluid
- Close clamp
- Disconnect syringe and discard syringe with withdrawn waste. (If local policy)
- Attach the syringe of heparinised 0.9% sodium chloride to the catheter
- Open clamp
- Inject the heparinised 0.9% sodium chloride whilst maintaining positive pressure
- Whilst injecting the last 0.5ml close the clamp (1,12)
- Remove syringe
- Attach a new cap if required
- **All lumens should be reheparinised during the same procedure**

**To remove old heparinised 0.9% sodium chloride**
**If catheter has not been accessed for a week micro-organisms and fibrin may be present**
**To prevent an air embolism and haemorrhage**
**To prepare to reheparinise catheter**
**To enable the system to be accessed**
**To minimise the risk of blood back tracking into the catheter tip, which could cause a blood clot and a blockage in the catheter**
**To maintain patency.**

**Assistance should be sought from an experienced nurse or doctor if any of the following occur:**

- Resistance is felt
- The child reports pain
- If unable to inject 0.9% sodium chloride
- Swelling is observed:

**These signs could indicate:**

- Catheter rupture
- A blockage/fibrin sheath
- Catheter malposition
- Catheter damage
- Thrombosis
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<tr>
<th>ACCESSING THE CATHETER (continued): Assessing Catheter function and position</th>
<th>Equipment required:</th>
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</table>
| Along the skin tunnel  
In the neck area  
- Leakage of fluid from the catheter or exit site. | - An extravasation (16,17,18, 19,20) |
| **Access the function and position of the catheter by:** | **To facilitate access without rupturing catheter**  
**To prepare solutions**  
**To ascertain access** |
| - Using an aseptic non-touch technique  
*Non-injectable cap:* ensure the clamp is closed, remove needle from syringe of 0.9% sodium chloride, remove the cap, clean catheter hub using an alcohol based cleaning solution and allow to dry.  
*Needleless system:* remove needle from syringe of 0.9% sodium chloride, clean the cap using an alcohol based cleaning solution and allow to dry  
- Attaching the syringe of 0.9% sodium chloride to the catheter  
- Opening the clamp  
- Flushing with at least 3ml of solution  
- Closing clamp | **Syringes less than 10ml exert pressures in excess of 25psi**  
**Pressure of between 25-40psi may rupture the catheter, especially if it is occluded** |
| Syringes smaller than 10ml should not be used | **To minimise the risk of infection**  
**To enable the catheter to be accessed**  
**To minimise damage to the catheter/cap**  
**To ensure effectiveness of cleaning agent**  
**To prepare to inject fluid to check catheter function and integrity**  
**To enable the system to be accessed**  
**To check catheter function/position**  
**To prevent an air embolism and haemorrhage.** |

GOS Hospital for Children NHS Trust Clinical Practice Committee  
Skin tunneled central venous catheters
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<th>ACCESSING THE CATHETER (continued): Intermittent Drug Administration</th>
<th>Extra equipment required:</th>
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<td>Along the skin tunnel In the neck area  • Leakage of fluid from the catheter or exit site</td>
<td>• An extravasation (16,17,18,19,20)  • Extra equipment required:</td>
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<td></td>
<td>• Needleless system  • Two 10ml syringes (2,12,22)  • Drugs and required number of needles and syringes  • 0.9% sodium chloride for injection – 10ml  • 5ml of heparinised 0.9% sodium chloride (10ml units/ml)</td>
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<td><strong>Access the catheter, assess catheter function and position then:</strong></td>
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<tr>
<td>• Using a 10ml syringe establish patency  • Attach needleless system to catheter hub</td>
<td>• To check patency and prevent extravasation without causing catheter rupture  • To promote easy access</td>
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<td><strong>Bolus injection into established infusion:</strong></td>
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<td>• Clean end of needleless system with an alcohol impregnated swab  • Allow to dry  • Insert 10ml syringe of 0.9% sodium chloride into cap/needleless system  • Open clamp  • Aspirate blood into extension tubing  • Inject 3-5ml of 0.9% sodium chloride  • Remove syringe  • Insert syringe containing drug  • Inject drug according to manufacturers recommendations  • Remove syringe  • After each drug inject 2-3ml of 0.9% sodium chloride (as before)  • Insert syringe containing 1.5-4ml of heparinised 0.9% sodium chloride  • Inject heparinised 0.9% sodium chloride. The last 0.5ml</td>
<td>• To minimise risk of infection  • To ensure effectiveness of the cleaning agent  • To facilitate access to catheter and to enable the catheter to be flushed  • To facilitate access to catheter  • To confirm patency of system  • To confirm patency of system  • To enable drug(s) to be administered  • To facilitate drug administration  • To meet prescription guidelines  • To enable further access to take place  • To prevent drug interactions  • To enable the catheter to be heparinised  • To maintain patency  • To maintain positive pressure  • To complete access  • To prevent dislodgement  • To administer an accurate dose of drug</td>
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<th>Should be injected whilst closing the clamp</th>
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<td>- Remove syringe</td>
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<td>- Resecure if necessary</td>
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Once the catheter has been flushed accurate doses of drugs may be administered using syringes smaller than 10ml (9)

- Catheter rupture is unlikely

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### ACCESSING THE CATHETER (continued): Intermittent Drug Administration

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To be reviewed December 2006