Cystic Fibrosis
Home Intravenous Therapy (IV)

Information for Parents and Carers
Introduction
This booklet has been compiled for parents/carers administering intravenous antibiotics at home.

Contents
• Your CF Team contact numbers
• General principles of administering IVs through a peripheral long line, peripheral IV cannula or port-a-cath using the ‘non-touch technique’
• Procedure and setting-up (photograph)
• Flushing between antibiotics and final flush
• Administration times
• Safe disposal of sharps and IV components.
• Bionectors (a needle less system)
• Emergency pack
• Troubleshooting
• Parent/carers competency sheet

Contact Numbers
If you have a problem or query about home IV therapy, please feel free to ring your CF team. Remember at weekends, evenings or bank holidays, nursing staff on ward 10 are available for advice and support.

Rhona Webster, CF Children’s Community Nurse
Mobile 07789 505330 (Monday to Friday)

Children’s Community Nursing Team
01493 453175 (Monday - Friday)

The Children’s and Young Person’s Unit (Ward 10)
01493 452010 (24 hours a day)
You may have lots of questions about giving intravenous antibiotics, especially if it is the first time your child has had them.

Your child may:

• have the whole course of treatment in hospital

• attend ward 10 morning and evening for treatment (or perhaps the community nurse(s) doing one in the morning at home and the other in the evening in hospital)

• have morning and evening treatment at home by you. Your CF nurse will ensure you have received full training or update before this happens so that you feel confident to do it at home (or will sometimes ask ward 10 /another community nurse to do this with you).

We appreciate that each family is different and giving IV antibiotics at home adds to the many things you already have to do. It can mean approximately two extra hours of care per day during IV treatment at home although your child does not need to be present for all of the process.

The benefits to doing treatment at home are that your child spends less time in hospital and can continue to do things like go to school, in some situations. If you decide to give home IV therapy but it proves too difficult to manage, you are welcome to return to hospital at any stage of the treatment. Some parents find their child nervous with them learning to do something new for the first time but this will subside as the parent and child grow more confident with treatment.

Remember, giving IVs at home is not compulsory and hospital care is always available if you prefer it. Please feel free to discuss this at any time with your CF team.

The aseptic ‘non-touch technique’ is a safe way of giving intravenous antibiotics. Nurses giving IVs in our hospital have been trained to use this technique.

The ‘non-touch technique’ used for intravenous therapy is a safe way of preventing accidental infection of a person’s cardiovascular system by not touch-contaminating the key components used in the process of delivery (for instance, the tip of a syringe connecting to the IV line when injecting). So you will be taught how to:

• Minimise the risk of accidentally introducing infection into a vein (even though you are injecting an antibiotic!) by keeping everything very clean. You will be shown how to avoid touching the key parts/components of syringes, needles, extension sets etc and how to set up your tray or clean area.
• Prevent injecting air into a vein by learning to ‘prime’ syringes, flushes and extension sets carefully and also checking your child’s line for large air bubbles. You will be shown how to minimise these before administering the antibiotics and flushes.

• Minimise the risk of line blockage (sometimes caused by two drugs reacting with each other or by back flow of blood down your child’s line when the clamp is off) by learning to use the clamps correctly and showing you how to flush before, between and after administering antibiotics, using the optimum amount of flush of 3-5ml (Trust guidelines).

• Minimise the risk of collapse of a vein or reactions of rapidly injecting an antibiotic. Some antibiotics can be injected by bolus over 3-5 minutes whereas some need to be infused over 20-30 minutes. You’ll be taught how to use an infusion pump loaned from ward 10 for the duration of treatment.

• Using a needleless system (bionectors)

• Only use 10ml size syringes for flushes (and larger syringes for infusions) and why.

• Emergency treatment (how to use an epipen)

• Troubleshooting problems

• And finally, completing a ‘competency’ form with you

Your CF nurse, community or Ward 10 nurse will show you the ‘non touch technique’.

Remember, wherever possible, we will arrange for our pharmacy production unit to make up your child’s IV courses so that there is the minimal amount of ‘mixing’ of antibiotics at home. However, please be aware that this service is not available at the weekends or bank holidays so this may delay the pharmacy producing it until the next working day. In these instances, you will be shown how to mix up an antibiotic until they can be made up for you.
Using the ‘non-touch technique’ to prepare antibiotics

1. Have a **work surface** in a well lit room (such as a kitchen unit which you don’t use for food preparation/dirty jobs). Clean down with detergent and hot water.

2. Prepare your **clean area** (a plastic tray is ideal for this) by cleaning with detergent (fairy liquid) and hot water and drying with kitchen roll or a clean tea towel. Wash and dry your hands thoroughly then gather up the correct amount of components you will need and place them on your **clean work surface**. You will need 10ml syringes for flushes; 20/50mls syringes if infusing antibiotics and making up yourself ; needles, bungs, ampoules of flush, extension set(s) if infusing an antibiotic, alcohol wipes and alcohol spray. Check drug and diluents are correct including the expiry dates.

Don’t worry, your nurse will show you how to count everything out to begin with. You will also be given luer lock syringes to provide a more secure connection to your child’s line.

3. Put gloves on (to protect you from getting antibiotics on your skin).

4. Open syringe packets half way and place on your tray, your **clean area**. Open bung packets and keep bungs in packets ready to connect to prepared syringes. Open needle packets. Take syringe out of its packet and attach to each needle required. **Avoid touching ‘key parts/components’** (your nurse will show you this). Loosen needle sheath but leave on for protection. Repeat for each syringe and needle needed per flush and per antibiotic if mixing yourself.

5. Spray the bottles of antibiotic/diluent (if mixing yourself), saline flush and hepsal (if using) with alcohol spray. You may be shown how to use an alcohol wipe instead and also how to snap off the top of glass ampoules safely using a wipe. Allow all to dry thoroughly before handling – usually about 10-20 seconds. This allows the alcohol to evaporate and kill any germs. Remember to be careful not to handle/touch the **tops** of the bottles, which are the ‘key’ parts/components for the non-touch technique. The sides of vials/antibiotic bottles are ok to handle as they are not key components.

6. Mix the diluent(s) with the antibiotic(s) as instructed by your nurse. Gently rotate these until all of the powder is completely dissolved. The final solution should look clear and particle-less. Draw these back into the syringes (separately if doing two antibiotics) and expel air bubbles by holding the syringe upwards with the needle tip pointing up and tapping the syringe to encourage bubbles to rise (gravity!). Gently depress the plunger until any bubbles are expelled and fluid appears at the needle tip. Very carefully, unscrew the needle **base** from the hub of the syringe and place the needle carefully in sharps bin supplied.
7. Attach bung in packet to syringe hub, making sure not to touch the ‘key parts’. If the antibiotic is to be infused, attach the extension set and prime the line ensuring there are no air bubbles in the line (someone will show you how to do this).

Preparation of flushes of saline (sodium chloride 0.9% vials)

Saline flushes are used before, between and after giving an antibiotic.

- Flushing before is to check your child’s line is patent (3-5ml volume is usually needed to check this).
- Flushing between antibiotics is to prevent two antibiotics reacting against each other (5ml).
- Flushing after the last antibiotic to keep the line patent (5ml).

N.B. If you are flushing through the curly extension set after an antibiotic infusion then an additional 2ml of flush is needed.

1. Check ampoules are saline and also the expiry date on the side. Spray with alcohol (or use wipe) and place on your tray. Allow alcohol to evaporate (about 10-20 secs) to kill germs.

2. Twist top off plastic ampoules of saline being careful not to touch the ‘key component’. Draw up 5ml of saline using your prepared needle and syringe.

3. Hold syringe upright and expel all air bubbles until saline drop is evident at tip of syringe.

4. Carefully remove needles as before and dispose of in sharps bin. Carefully attach bung to prevent touch contamination until ready to administer.

5. Repeat the process for each syringe of flush needed.

Preparing ‘hepsal’ flush (heparinised saline 10units/ml 5ml vial)

The hepsal ‘lock’ is used after the last saline flush is given

1. As above but attach the filter needle (because you are breaking a glass vial)

2. Check the hepsal glass ampoule (are always 5ml) and expiry date on the side.

3. Using alcohol wipe, clean around ‘key part’ of bottle top and then gently

4. Snap off top of glass vial at weak spot (indicated by dot on side of vial)

5. Draw up all 5ml flush. Hold syringe upright and expel air bubbles by
ensuring a fluid drop is evident at tip of syringe.

6. Carefully remove needle from hub and dispose of in sharps bin (and glass).

7. Attach bung carefully watching key parts (it’s advisable to keep bung in its packet to distinguish it as hepsal from other saline flushes on your tray).

N.B. Children with a port-a-cath or long line MUST have a hepsal ‘lock’ afterwards i.e. twice a day after last saline flush. Children with a peripheral line usually only need a saline flush. Check this with your CF nurse if unsure.

ARRANGE ANTIBIOTICS AND FLUSHES ON TRAY AS BELOW

![Image of tray with medications]
Administering the antibiotics

• Change gloves to a new pair.

• Leave clamp on. Using an alcohol wipe, clean all around the bionector THOROUGHLY. Allow alcohol to evaporate.

• Take 1st syringe (1st saline flush) from tray and remove bung carefully avoiding key component. Ensure tip of syringe has fluid droplet visible at top. Insert syringe tip into bionector. Now open clamp.

• Gently administer the flush to check line is patent (3-5mls until satisfied line ‘feels’ patent). Close clamp.

• Disconnect this syringe and dispose of.

• Connect extension set of 1st antibiotic for infusing into bionector. Place antibiotic syringe into infusion pump and set the rate to give the total volume of drug in syringe over 20-30 minutes (or as instructed by your CF nurse). Once set up press start button and undo all clamps. If giving a bolus of drug then inject slowly over 3-5minutes (as instructed by your CF nurse).

• Whilst administering all drugs, carefully observe your child for signs of discomfort at IV site, redness, blanching of skin at site, swelling or leakage. If any of these occur, stop administering, clamp line and check troubleshooting guidelines. Contact the team for advice.

• Once administered, clamp line. Take 2nd saline flush and attach to bionector. Undo clamp and administer 5ml of flush. Close clamp.

• Repeat process for 2nd antibiotic (if doing this time).

• Repeat saline flush (5ml) with next prepared syringe.

• Finally, connect hepsal flush, undo clamp and administer the 5mls of ‘lock’ (if using a port-a-cath or long line).

• Close clamps and secure the line carefully to prevent accidental dislodgement.

• Dispose of components carefully.
Administration times and information on treatment

Your child will always be prescribed two antibiotics for their treatment and treatment is usually a 14 day course.

The first antibiotic is usually given twice a day, for instance, in the morning and in the evening (8am and 8pm or 9am and 9pm for example) so that your child can go to school still in the daytime if up to it.

The second antibiotic is usually once a day (8am/9am).

It’s important to keep to the same sort of times each day throughout the course of treatment but times may be adjusted slightly for, say, the weekend by about one hour either way.

Ward 10 or your CF team will discuss this with you and help you decide on the best times to give them, which suits you and your child's home life, nursery or schooling needs.

We will also need to discuss if blood tests (usually a finger prick blood sample) is needed to check if a drug’s dose is correct. Unfortunately, these sometimes need to be done either in the morning or evening. Your CF nurse can arrange to do these in the daytime or she may arrange for you to have this done in ward 10 in the evening if required.

It is therefore important to discuss this before initiating a course of therapy. You must also inform your child’s nursery or school about IV treatment so that if your child goes to nursery/school they can follow the guidance on your child’s Healthcare Plan particularly in relation to the safety aspects for your child.

Your CF nurse can also speak to the nursery/school for you if there are attendance issues and coming in to school later than the other pupils because they are on IV therapy.
Safe storage and disposal of sharps/components

- Keep all components of IV therapy in a dry, safe place out of the reach of all small children (and pets).

- Arrangements will be made for enough equipment and drugs to be issued from the hospital to complete the course of treatment. Any shortfalls in components needed for the duration of treatment can be arranged via your CF nurse/community team.

- A ‘sharps box’ will be supplied for the safe disposal of all sharps including needles and glass vials. It is usually ok for used syringes, saline plastic bottles, paper and extension sets etc to be disposed of in your ordinary bins. Please discuss this with your CF nurse if you are unsure.

Bionectors

Bionectors (needle less system) are used on the end of the port-a-cath or sometimes on the end of your child’s long line or peripheral line.

These should be changed after 100 ‘accesses’ (you’ll be doing about 12 a day) or 7 days whichever is sooner (Trust Guidelines). Your CF nurse or ward 10 will give these to you with your other supplies.

An ideal time to change the bionector is when you are about to give the IV’s and can set it up on your clean tray with your 1st flush.

Spray the bionector packet with alcohol spray and place on your tray. Use the non-touch technique to open the outer packet and attach it to the 1st saline flush. **Prime** the bionector and carefully keep ready on tray to attach to your child’s line as described in the ‘administration’ section. Follow above cleaning instructions of the current bionector and then remove the old bionector (ensuring the clamp is still on) Screw on new bionector and perform your flush sequence.
Instructions on using ‘Epipen’

Your CF NURSE will discuss if you need an emergency pack prescribed to have at home for your child during IV therapy.

An emergency pack contains oral antihistamines (to take for a mild reaction) and an epipen (an adrenaline injector) to administer for a ‘severe reaction’.

It is usual for our local CF children to have their 1st doses of IV antibiotics on ward 10. Thankfully, reactions are rare but signs and symptoms and treatment are always discussed with you before starting the IV therapy.

<table>
<thead>
<tr>
<th>Reaction</th>
<th>Symptom</th>
<th>Action</th>
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<tr>
<td>Mild</td>
<td>Mild nettle like rash</td>
<td>Seek advice from CF team/ward.</td>
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<td></td>
<td>Runny nose, itchy feeling, red eyes</td>
<td>Give chlorphenamine (piriton) tablet/syrup as prescribed for your child</td>
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<tr>
<td>Severe</td>
<td>Difficulty breathing</td>
<td>Stop injecting IV antibiotic.</td>
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<td></td>
<td>Swelling of face or mouth</td>
<td>Use epipen injection as instructed</td>
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<td></td>
<td>Chest ‘tightness’</td>
<td>Dial 999</td>
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Administering an epipen

- Remove epipen from its protective yellow case
- Remove the grey safety cap
- With one hand, grip the pen and hold black tip near outer thigh (about 10cms away).
- Swing and jab firmly into outer thigh. Listen for the click.
- Hold the epipen in position for 10 seconds (you can do this through clothing if needed) to ensure the full dose of adrenaline is injected.
- Remove epipen and massage the thigh area.
- Keep used epipen safely (do not try to retract needle) to show to ambulance crew.

Your CF nurse will give you these instructions in a laminated card to keep with your Epipen.
**Troubleshooting**

Problems with giving IV’s through all lines.

A  **Infection in the vein/entrance site?**

Observe for redness, pain or swelling at insertion site and/or a red ‘tracking’ along skin line site

**Action** – Stop giving IV. Phone CF nurse/ward 10 for advice

B  **Leakage?**

From line connection? Occasionally lines puncture near the insertion site.

Observe for wetness into gauze under connection when giving 1st saline flush.

**Action** – Stop giving IV and contact team.

C  **Blockage?**

Unable to flush saline through line during 1st flush check?

**Action** – Check you’ve undone all the clamps? Check for any signs of kinking in lines and remedy. Repeat flush check. Still not working? Gently push and pull syringe barrel with saline flush in. Still blocked? Try again using your hepsal syringe. Still blocked? Phone CF team/ward 10 for advice.

D  **Line Blown?**

- Line may rupture due to excess pressure.

Observe for lessening of usual resistance when antibiotics given. Child may complain of pain, redness, swelling near line site.

**Action** – Stop giving IV. Phone CF team/ward10 for advice

Do not remove lines at home as sometimes they can be repaired in hospital
### IV antibiotics at home (write in for parents)

<table>
<thead>
<tr>
<th>Medication name</th>
<th>Dose (mg)</th>
<th>Dose (ml)</th>
<th>Syringe size</th>
<th>Amount of diluent to add (if mixing at home)</th>
<th>Times to give</th>
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<tbody>
<tr>
<td>Saline flushes</td>
<td>-</td>
<td>5ml</td>
<td>10ml</td>
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<tr>
<td>Hepsal flush</td>
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<td>5ml</td>
<td>10ml</td>
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### Changes to medication? (following a blood test).
Parent write in

<table>
<thead>
<tr>
<th>Date</th>
<th>Medication name</th>
<th>Dose (mg)</th>
<th>mls = actual amount of antibiotic told to give</th>
<th>Who informed you?</th>
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Parents checklist for giving IVs at home

This sheet is to help you see how you are progressing to do it on your own at home.

Please fill in with your nurse

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<tr>
<th>Item</th>
<th>1</th>
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<th>5</th>
<th>Competent Parent</th>
<th>Signature of Nurse</th>
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<tbody>
<tr>
<td>1. Cleaning of work surfaces and 'clean area'</td>
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<td>2. Washing hands and putting on gloves</td>
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<td>3. Gathering up components for giving IV's</td>
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<td>4. Checking drugs/flushes and their expiry dates</td>
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<td>5. Undertaking the 'non touch technique'</td>
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<td>6. Understanding of 'key parts/components'</td>
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<td>7. Identifying flushes and drugs</td>
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<td>8. Drawing up and mixing (drugs) and expelling air bubbles</td>
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<td>9. Priming extension set/s</td>
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<td>10. Cleaning bionector</td>
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<td>11. Use of clamps</td>
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<td>12. Flushing before, between and after giving antibiotic/s</td>
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<td>13. Flushing with hepsal after completing IV's (long line/port-a-cath)</td>
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<td>14. Disposal of used components</td>
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<td>15. Disposal of sharps</td>
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<td>16. Problem solving</td>
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<td>Blockage?</td>
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We agree that .............................................................................................. (parent/carer) is able to undertake IV therapy at home in a safe manner and is aware of when to seek help from professionals.

Signatures:

Parent/carer:......................................................................................................

CF Nurse/Community Nurse/Ward 10 nurse:.............................................................

Date:
The hospital is able to arrange for an interpreter to assist you in communicating effectively with staff during your stay through INTRAN.

If you need an interpreter or a person to sign, please let us know.

**If you require a large print version of this booklet, please contact PALS on 01493 453240**

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