



Osteosarcoma Home Care Learning Package

Pre and Post Hydration for Methotrexate

13th NOVEMBER 2018

Acknowledgments

This learning package was developed by the Royal Children's Hospital Home-based Care Working Group with multidisciplinary representation from:

- Day Oncology
- Kookaburra Ward
- Kelpie Ward
- Wallaby Ward
- Oncology Pharmacy
- Physiotherapy Department
- Nursing Innovation Unit
- The Paediatric Integrated Cancer Service

In particular we would like to thank and acknowledge the parents of children who have previously been diagnosed with Osteosarcoma, who provided feedback on the learning package.

Disclaimer

For education and information only.

Content is accurate at the time of publication, however over time information may change.

Always get advice from your health care team for answers to your medical questions.

Published 13th November 2018



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1. Background Information

There is an option for your child to receive Pre and Post intravenous (IV) Hydration for Methotrexate cycles at home. Support and care will be provided during this time by the RCH Hospital in the Home service (known as Wallaby) in collaboration with the Oncology team. If eligible, your child will be required to attend one outpatient appointment and a 5 hour Day Cancer Centre visit, but will avoid a 5 day hospital admission.

Eligible patients need to be medically stable, have received at least one cycle of Methotrexate without complications and live within 30kms of the RCH.

Parents and/or carers will need to:

- complete the attached learning package and be competent in the relevant procedures
- attend to their child overnight (IV bags may require changing 4 – 8 hourly)
- administer oral medications
- monitor urine output and pH (every 4 hours at a minimum)
- ensure an appropriate person can stay with their child at all times

Education will be provided by nurses within your unit using this package. Providing parents and carers with the right information will help reduce the amount of time spent in hospital, giving your child the opportunity to be at home with family and friends.

It is advisable to have more than one parent/carer trained for care at home. Identify who these carers will be early to ensure they can receive the appropriate training— e.g. parent, grand parent, aunt, etc.

2. Contact Numbers

If you have any concerns regarding your child's health or wellbeing or problems with equipment, there is always help and assistance available any time of the day or night. You can call Wallaby on-call nurse anytime, 24/7 on **9345 4770**

- if you notice a change in your child's condition
- if you need to come to the RCH Emergency department
- with any concerns or questions you may have (refer to Section 5.10 for more information)

IN CASE OF AN EMERGENCY CALL AN AMBULANCE ON 000

3. Home Plan (Protocol)

The protocol over the page provides an overview of your child's treatment plan during each cycle of Methotrexate. It includes the roles and responsibilities of yourself as the parent/carer/child.

Please make sure you read and understand the information in this protocol. If you have any questions, please speak with the nursing staff.

Monday: Day 0

Hospital

AM

Appointments	<ul style="list-style-type: none"> Attend Royal Children's Hospital for your child's blood test in the Pathology Collection Department, located on Ground Floor, Desk A6. Go to your child's scheduled outpatient appointment on Level 2, Desk E. Go to Day Cancer Centre where staff will access your child's port. Collect your home-care equipment (refer to Section 4). Attend any allied health appointments.
Nutrition and Hydration	<ul style="list-style-type: none"> Encourage your child to drink water, keep hydrated and eat regular meals.
Medication	<ul style="list-style-type: none"> Collect medication from Oncology Pharmacy.

PM

Home visits	<ul style="list-style-type: none"> You will get a home visit from a Wallaby nurse. The Wallaby nurse will complete a nurse assessment. The Wallaby nurse will connect the Bodyguard pump and IV fluid to commence pre-hydration.
Hydration	<ul style="list-style-type: none"> Change the IV fluid bag as required (refer to Section 5.5 for instructions). Continue the IV fluid until your appointment the next day.
Fluid Balance	<ul style="list-style-type: none"> Start to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.

Call Wallaby staff immediately on 9345 4770 if:

- Urine output decreases below _____
- Urine pH decreases below 7
- Nausea and vomiting becomes unmanageable
- Any other concerns

Tuesday: Day 1

Hospital

AM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Appointments	<ul style="list-style-type: none"> Attend Royal Children's Hospital for your appointment in Day Cancer Centre on Level 2, Desk E. <ul style="list-style-type: none"> Remember to bring the Fluid Balance Chart with you The clinical team will check your child's urine output and pH levels. At approximately 9.30am your child's methotrexate infusion will begin. <ul style="list-style-type: none"> Remember to record the exact time it begins Set your medication reminder alarms for Day 2, 3 and 4 At approximately 1.30pm your child's methotrexate infusion will finish. The clinical team will connect the Bodyguard pump and IV fluid to commence post-hydration. Attend any allied health appointments.

PM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a home visit from a Wallaby nurse. The Wallaby nurse will complete a nurse assessment.
Medication	<ul style="list-style-type: none"> Give your child oral anti-nausea medication as required.

Call Wallaby staff immediately on 9345 4770 if:

- Urine output decreases below _____
- Urine pH decreases below 7
- Nausea and vomiting becomes unmanageable
- Any other concerns

Wednesday: Day 2

Home

AM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a home visit from a Wallaby nurse. The Wallaby nurse will complete a blood test and nurse assessment.
Medication	<ul style="list-style-type: none"> You must give the 1st dose of folic acid, 24 hours following START of Methotrexate infusion. <ul style="list-style-type: none"> For example, if the infusion started at 9.30am yesterday, give the 1st dose of folic acid at 9.30am today. Give your child ondansetron and folic acid every 6 hours following 1st dose of folic acid. Give your child oral anti-nausea medication as required.

PM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a visit from a Wallaby nurse (or via Telehealth). The Wallaby nurse will complete a nurse assessment.
Medication	<ul style="list-style-type: none"> Give your child ondansetron and folic acid every 6 hours following 1st dose of folic acid. Give your child oral anti-nausea medication as required.

Call Wallaby staff immediately on 9345 4770 if:

- Urine output decreases below _____
- Urine pH decreases below 7
- Nausea and vomiting becomes unmanageable
- Any other concerns

Thursday: Day 3

Home

AM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a visit from a Wallaby nurse. The Wallaby nurse will complete a blood test and nurse assessment.
Medication	<ul style="list-style-type: none"> Give your child ondansetron and folinic acid every 6 hours following 1st dose of folinic acid. Give your child oral anti-nausea medications as required.

PM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a visit from a Wallaby nurse (or via Telehealth). The Wallaby nurse will complete a nurse assessment.
Medication	<ul style="list-style-type: none"> Give your child ondansetron and folinic acid every 6 hours following 1st dose of folinic acid. Give your child oral anti-nausea medications as required.

Call Wallaby staff immediately on 9345 4770 if:

- Urine output decreases below _____
- Urine pH decreases below 7
- Nausea and vomiting becomes unmanageable
- Any other concerns

Friday: Day 4

Home

AM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions).
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a visit from a Wallaby nurse. The Wallaby nurse will complete a blood test and nurse assessment.
Medication	<ul style="list-style-type: none"> Give your child ondansetron and folinic acid every 6 hours following 1st dose of folinic acid. Give your child oral anti-nausea medications as required.

PM

Hydration	<ul style="list-style-type: none"> Continue to change the IV fluid bag as required (refer to Section 5.5 for instructions). The doctor will review your child's blood tests to determine whether the methotrexate has cleared.
Fluid Balance	<ul style="list-style-type: none"> Continue to record the following on the Fluid Balance Chart: <ul style="list-style-type: none"> Fluid intake Urine output Urine pH Refer to Section 5.8 for instructions.
Home visits	<ul style="list-style-type: none"> You will get a visit from a Wallaby nurse. <ul style="list-style-type: none"> If the methotrexate has cleared the nurse will disconnect the fluids, flush and lock the CVAD. If the methotrexate has not cleared, your child may be admitted to hospital.

Call Wallaby staff immediately on 9345 4770 if:

- Urine output decreases below _____
- Urine pH decreases below 7
- Nausea and vomiting becomes unmanageable
- Any other concerns

4. Equipment Required at Home

The equipment you will require at home will be provided to you by the Wallaby and Day Oncology staff during your outpatient appointment on Day 0. This includes:

- gloves
- urinal/bed pan with measures – to measure urine output
- urine dip sticks
- alcohol based hand gel
- alcohol chlorhexidine solution
- ‘Bodyguard’ ambulatory IV pump
- fluid balance chart
- medication chart
- IV giving sets
- IV pole
- backpack to carry the IV pump and fluids
- purple cytotoxic waste bin

Wallaby nursing staff will bring the IV fluid bags when they visit you at home. It is important to store these in the fridge and use the IV bags within 24 hours. Remember to take the IV bags out of the fridge 1 to 2 hours before use.

Travelling with equipment

It is important to keep the fluid bag higher than your child’s CVAD where possible

To keep the fluid bag elevated at home, use an IV pole.

When travelling in the car or walking around, use the back pack provided to carry the pump and IV fluids. If possible in the car keep it above waist level, you may be able to hang it up on the head rest or keep it on your lap.

5. Procedure Checklist

The next section provides you with information and advice about how to safely care for your child while they are having treatment.

It also provides you with step by step instructions on how to complete different procedures at home. You will also be provided with a training video, and face-to-face training on the ward.

To access this learning package and the training videos [click here](#).
(or go to https://www.rch.org.au/wallaby/Osteosarcoma_Home-based_Care_Program/).

Once you have read, observed and demonstrated your understanding of each procedure, the ward nursing staff will tick off the following checklist.

Section	Procedure	Relevant Reading	Observed	Demonstrate Understanding	Demonstrate Procedure
5.1	Hand Hygiene <ul style="list-style-type: none"> List five examples of when you should wash your hands Demonstrate how to wash your hands using alcohol based hand gels Demonstrate how to wash your hands using soap and water 				
5.2	Central Venous Access Device (CVAD) Education <ul style="list-style-type: none"> Explain the key purpose of a CVAD device Identify key parts of a CVAD device Explain the purpose of the Huber needle 				
5.3	Non Touch Technique <ul style="list-style-type: none"> Identify key parts of equipment which you should use non-touch technique Identify key sites which you should use non-touch technique Explain what non-touch technique involves Demonstrate non-touch technique when preparing to spike a bag 				
5.4	Bodyguard 323 Pump <ul style="list-style-type: none"> Explain the function of each button on the pump Demonstrate how to silence an alarm Demonstrate how to stop and restart the pump Demonstrate how to recharge the battery 				
5.5	Safely 'spike' an Intravenous (IV) Fluid Bag <ul style="list-style-type: none"> List the equipment required to spike an IV bag Explain where the IV bag should be stored when not being used Identify the correct port you will use on the IV bag Demonstrate how to spike a bag Demonstrate how to safely travel with IV bag and pump 				

5.6	Folinic Acid <ul style="list-style-type: none"> • Explain the purpose of folinic acid • Explain how frequently you should administer folinic acid • Explain what to do if your child vomits after taking folinic acid • Demonstrate how to administer folinic acid 				
5.7	Managing Nausea and Vomiting <ul style="list-style-type: none"> • List the different types of antiemetics your child takes to manage nausea and vomiting • Identify five ways you can manage nausea and vomiting 				
5.8	Monitor Urine Output <ul style="list-style-type: none"> • List the equipment required to monitor urine output and pH • Identify what pH level is of concern • Explain how often your child must pass urine and have pH checked • Demonstrate how to measure and record urine output on the Fluid Balance Chart • Demonstrate how to measure and record pH on the Fluid Balance Chart 				
5.9	Cytotoxic Waste Management <ul style="list-style-type: none"> • Discuss the correct use of personal protective equipment required to dispose of cytotoxic waste or excreta 				
5.10	Identify concerns and Call for Support <ul style="list-style-type: none"> • What number do you call for help during and after hours • What number do you call in an emergency situation • List some signs your child might be unwell • Identify 3 CVAD problems and how these can be prevented 				
5.11	Oral Care <ul style="list-style-type: none"> • Identify what can cause mouth sores in your child • List 5 measures to reduce the likelihood of mouth sores 				
5.12	Pressure Care <ul style="list-style-type: none"> • Explain what a pressure sore is • Identify areas of the body which are at high risk of pressure sores • Demonstrate methods to reduce the risk of pressure sores 				

5.1 Hand Hygiene

Everyone is at risk of getting illnesses caused by germs found in hospitals, the community and around the home. Many germs are spread from person to person simply by touch.

You can help keep your child from getting sick by washing your hands. Hand washing is one of the easiest and most effective ways to prevent the spread of germs.

What are germs?

There are many different types of germs, such as viruses or bacteria. Germs can make people sick. You can get germs on your hands when you touch objects and when you touch other people. Once germs are on your hands, they can get inside your body through a wound or when you touch your eyes, nose or mouth. You can also spread germs on your hands to objects or people that you touch. The most common infections are spread through touching.

When you should wash your hands?

Before	After
<ul style="list-style-type: none"> • preparing or eating food • breastfeeding or feeding a child • giving medication to a child • touching, cuddling or holding a sick child • performing any procedure for your child 	<ul style="list-style-type: none"> • touching, cuddling or holding a sick child • changing a nappy • helping a child use the toilet • using the toilet or bathroom yourself • wiping your nose or your child's nose • touching things outside • sneezing or coughing • patting or playing with an animal • your hands have become dirty

How can we stop the spread of germs?

When you wash your hands, you wash away germs. Washing your hands and your children's hands is the best thing you can do to stop the spread of germs. There are also antiseptic 'gels' that you can rub into your hands to stop the spread of infections. The [Equipment Distribution Centre](#) also stocks hand gels for purchase. You can also purchase them from supermarkets and pharmacies.

Using alcohol based hand gels

1. squirt gel into hands
2. rub hands together ensuring gel comes into contact with all surfaces from wrists to finger tips
3. continue to rub gel until hands are dry, approximately 10 seconds

How to wash your hands



6 Dry with paper towel



1 Wet your hands



2 Apply solution and scrub for at least 15 seconds



5 Turn off water lever using your elbows



4 Rinse your hands



3 Scrub back of hands, wrists, between fingers and under fingernails

5.2 Central Venous Access Device Information

Central Venous Access Devices (CVAD)

A Central Venous Access Device (CVAD) is an intravenous line that has its tip in a major central vein or enters the heart itself.

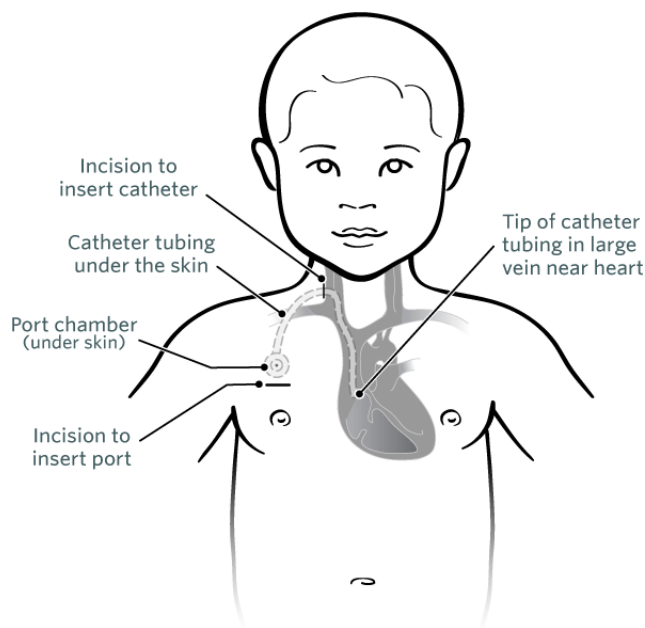
An implanted venous port is a CVAD that is completely inside the body. It consists of a port, which is a round piece of metal with a soft, silicone top and a catheter, which is the thin, flexible tube attached to the port. The port is surgically placed under the skin of the chest wall. The catheter runs into the vein entry point. The port is accessed through the skin via a Huber needle.

The insertion site on the skin is the area that requires meticulous cleaning and must always be covered with a dressing.

The most important factor in reducing contamination and the risk of infection is strict adherence to hand washing before commencing any procedure involving CVAD care.

For more information on CVAD care, refer to section 5.10.

Implantable Venous Port



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5.3 Non-touch Technique Principles

To change an IV bag you will be required to learn how to use a non-touch technique.

Non-touch technique is a technique used to prevent contamination. Non-touch technique involves identifying key parts and key sites and protecting them from contact with hands, surfaces or other equipment.

If key parts or key sites are contaminated by germs, the risk of infection increases.

Key parts includes equipment which comes into direct contact with a liquid infusion. These sites should not come into contact with hands, surfaces or other equipment. Examples include:



IV line connections

Key sites are medical device access sites or open wounds, such as CVAD site.

Tip!

Although an assistant is not essential, you may like a second person to assist with distraction to ensure your child does not touch key parts.

If you touch a key site or key part, contact Wallaby staff [on 9345 4770](tel:93454770).

5.4 Bodyguard 323 IV Pump

The Bodyguard 323 IV pump is a small, lightweight infusion pump that RCH use to safely deliver fluids and medication through a vein (intravenous) to children at home.

Pump Features

ON | OFF

Hold button down for 1 second to turn machine on and off

LOCK

The lock button is not required to be used by parents

INFO

Pressing this button will take you through a list of information about the infusion and pump. The information you will see includes:

- how much fluid has been infused
- how much remains to be infused (VTBI)
- the life of the battery
- time remaining for infusion

NUMBERS 0 - 9

These numbers are used by the nursing staff to program the volume of fluid and the rate at which it will be delivered. The 5 and the 0 allow user to scroll within menus.

LCD DISPLAY SCREEN

Displays instructions for setting up the infusion, information about the infusion and information about pump alarms.

STOP | NO

To stop an infusion or to put it on hold. Acts as a silence/mute key and back key

START | OK

Starts infusion or re-starts after putting machine on hold. Answer OK to questions on screen

PRIME | BOLUS

Primes the line used to deliver fluids (*not required to be used by parents*)



PUMP DOCK CONNECTION

Connects the pump to the Charger/Dock to allow the battery to be charged.

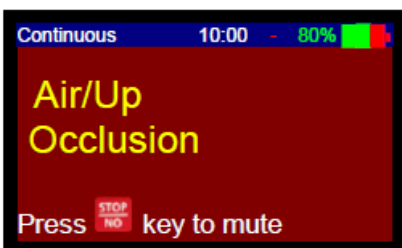
PUMP DOOR

The pump door secures the IV set inside the pumping mechanism. It is opened by the "Door release catch" on the right side of the pump.


Alarms and Alerts

If something goes wrong with the set-up and/or delivery of IV fluids during the day or night, an alarm on the pump will alert you. Do not panic. Here are some instructions on how to solve the problem, otherwise you can always call Wallaby staff on [9345 4770](tel:93454770).

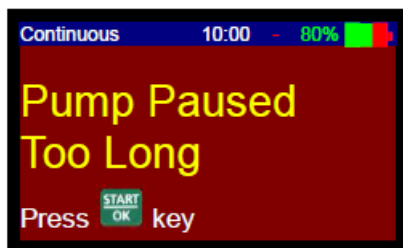
Air or Up Occlusion





This alarm sounds when there is air in the line between the bag of IV fluid and the pump. To avoid getting air in the line make sure that the bag of IV fluid where possible stays at a higher level than the pump.

1. To silence the alarm press **STOP | NO** .
2. Check for a kink or blockage in the line, straighten out kink or remove the blockage.
3. Check for air in the line above the pump, if there is air in the line try tapping the line to make the air bubbles travel upwards back into the bag of fluid.
4. If you can't tap the air out of the line then you should clamp the line closest to the port, turn off the pump and contact Wallaby staff on [9345 4770](tel:93454770).

Pump Paused Too Long





This alarm will sound when the pump has been paused for two minutes.

1. If you have fixed the problem that caused you to pause the pump then press **START | OK** .
2. If the problem is not yet fixed press **STOP | NO** .
3. Continue to fix the problem.
4. If you can't fix the problem contact Wallaby staff on [9345 4770](tel:93454770).

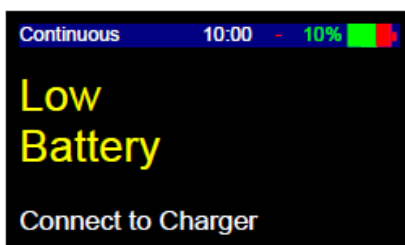
Down Occlusion



This alarm will sound when there is a blockage in the line below the pump. The blockage can be in the IV tubing (giving set), the central line or the child.

1. To silence the alarm press **STOP | NO** 
2. Then in the following order check:
 - a. Giving set - remove kink or blockage in the set
 - b. Child's central line - ensure the giving set is properly connected to the central line and there are no kinks in the central line.
 - c. Child - try changing their position to see if this helps.
3. Re-start the infusion by pressing **START | OK** 
4. If the Down Occlusion alarm starts again you will need to recheck the giving set and central line connections.
5. If you cannot see any problems you will need to clamp the line closest to the port (see video for example), turn off the pump and contact Wallaby staff on [9345 4770](tel:93454770).

Low Battery



This means there is only approximately 30 minutes of battery remaining. You must connect the pump to an external power source for charging.

It is recommended to keep your pump charging at all times, unless your child is mobile.

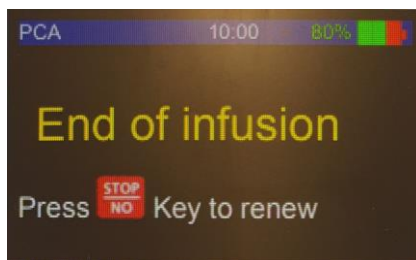
Always ensure the power cord is firmly inserted into the pump



End Battery

If this alarm sounds the infusion will stop. You must connect the pump to an external power source for charging.

Infusion complete (change Bag)

An alarm will sound when you are required to change the IV bag



1. To change bag press **STOP | NO** 
2. Change the bag as instructed (see section 5.5 on page 22)
3. The original infusion data will appear with new bag volume, check and confirm
4. Restart the infusion by pressing **START | OK**  twice

5.5 Changing the IV Fluid Bag

To continue infusing IV fluid to your child, you will need to connect the IV tubing (giving set) to a new IV fluid bag. We call this “spiking” the bag. Depending on the delivery rate and volume of your child’s IV fluids, the bag may need to be changed as frequently as every 3-4 hours. The pump will alarm to alert you when to change the bag.

Using Non Touch Technique

As mentioned in Section 5.3 on page 16, non-touch technique is used to prevent contamination.



Preparing a Work Area

1. Choose a space away from household traffic and any possible distractions.
2. The work area should be clean and dry.
3. The work area should be a hard flat surface that is washable, such as a bedside table.
4. Remember tables and hard surfaces around your home have dust and germs on them. This is normal. You should clean the area with alcohol chlorhexidine solution and allow it to air dry before use.
5. Try not to cough or sneeze over the clean surface (if unavoidable then re clean area).
6. Keep all pets out of the room while attending to your child’s CVAD.

Equipment Required

1. Alcohol Chlorhexidine solution
2. Clean tray / Trolley/ Work surface
3. 1 or 2 litre IV fluid bag
4. Bodyguard pump

Steps to Spiking a Bag

Steps	Photo
<ol style="list-style-type: none"> 1. Remove jewelry 2. Wash your hands 3. Wash work area with Alcohol Chlorhexidine solution and allow to air dry 4. Add equipment to the work area (IV bag) 	
<ol style="list-style-type: none"> 5. Always check your IV bag label, making sure the information is correct –name, solution, additives, expiry date. If there are any discrepancies, contact Wallaby staff and use a correct bag (if available) 6. The 2 litre IV bag will have three “ports” at the bottom. These will look like small pieces of tubing that are part of the IV bag. You will only be using the middle IV tubing port 7. Gel/ Wash hands 	
<ol style="list-style-type: none"> 8. Pause (stop) the infusion pump  9. Gel/ Wash hands. 10. Place the IV bag flat on your work area and pull off the cap. (Don't worry, the fluid will stay in the bag!). Do not let the tip of this port touch anything else once the cap is off. 11. Remove the plastic “spike” from the empty IV bag (do not let the “spike” touch anything). 12. While holding the port of your IV bag with your non-dominant hand, insert the spike. It will take some pressure, and you should continue to insert it until it will go no further (about $\frac{3}{4}$ of the spike). 13. Be careful not to spike a hole in the fluid bag itself. If this happens call Wallaby immediately. 14. Hang the bag on the IV pole. 15. To let out any air bubbles in the fluid, squeeze the bag near the entrance of the port. 16. Press START OK twice to restart the infusion pump. 	

5.6 Folinic Acid

Folinic acid, also known as '*leucovorin*', is the rescue medicine for high dose methotrexate. Your child will always take folinic acid after receiving methotrexate to reduce side effects and damage to normal healthy cells.

Folinic acid works best when a constant amount is in the body. To keep this amount constant, your child must take this medicine orally at the scheduled times. **Do not miss any doses.**

The first dose must be given exactly 24 hours after the start of the methotrexate infusion and continue routinely every 6 hours until the level of methotrexate in the blood stream has reached an appropriate level.

Use the Medication Chart provided at the back of this package to keep a record of when to give your child their medication. It is also worth setting alarm clocks to remind you when to give your child their medication.

If your child does miss a dose, contact Wallaby staff on **9345 4770**.

If your child vomits within one (1) hour of taking Folinic Acid, give another dose.

If your child vomits within one (1) hour of taking the repeated dose, contact Wallaby staff immediately on **9345 4770**.



Tip!

- Set alarm clocks to remind you when to give your child their medication.
- Use the Medication Chart provided at the back of this package, to keep a record of when to give your child their medication.

5.7 Managing Nausea and Vomiting

One of the most common side effects of chemotherapy is nausea and vomiting. It is important that the correct medications are given at appropriate times to manage nausea and vomiting.

Appropriate medications will be prescribed prior to leaving hospital, the pharmacist will provide instructions on dosage.

Some medicines used for nausea and vomiting might make your child feel drowsy. Many older children and teens refuse this medicine because they do not like feeling “drugged.” Often, they would rather be awake and vomiting than asleep and feeling “out of control.” Control is an important issue for teens. Please try to respect your child’s feelings in this area. If this is relevant to your child please discuss with the treatment team, so everyone can agree on a plan to treat nausea and vomiting without making your child too drowsy.

Some other ideas to help decrease nausea and vomiting include:

- serve meals in an airy room, away from smells caused by cooking or cigarette smoke
- try small, frequent meals
- avoid fried, spicy, greasy, or rich foods
- avoid foods with strong odours
- give dry or salty foods, such as dried biscuits or toast
- try low-fat foods
- try not to serve favourite foods until the nausea and vomiting stop. This will keep your child from connecting these foods with feelings of illness
- give cool, clear liquids between meals.
- after meals, have your child rest with his head raised
- rinse the mouth well after vomiting. Stomach acid will cause tooth decay and will bother an already tender mouth. More information on mouth sores is provided in Section 5.11.

Information on how to dispose of your child’s vomit is provided in Section 5.9.

5.8 Monitoring Urine Output

Urine output needs to be monitored to ensure that your child's kidneys are working effectively to excrete toxins from the body. This is done in two ways:

1. Measuring the amount of urine
2. Testing the pH

Measuring Urine

A dedicated urinal or bed pan can be used to measure all urine. The Day Oncology or Wallaby staff will give you a Fluid Balance Chart to record these measures on. You should also record the number of bowel actions and try to measure any vomits where possible.

Tip!

An example of how to complete a Fluid Balance Chart and calculate your child's necessary urine output is provided at the back of this package

Testing pH

This will determine whether your child's urine is alkaline or acidic. This should be checked with every urine. It is important your child passes urine at least **every 4 hours**. Intravenous orders may be altered depending on the pH of your child's urine.

1. Complete hand hygiene.
2. Put on gloves.
3. Capture urine in a dedicated urinal or bed pan
4. Record the volume of urine on the Fluid Balance Chart.
5. Remove one 'dipstick' from the container and ensure lid is on tight (exposure to sunlight may give false readings).
6. Immerse dipstick in urine ensuring all squares have been covered.
7. Place dipstick on clean surface (this helps prevent the running of colours on the dipstick).
8. Wait 1-2 minutes.
9. Compare the dipstick to colours on the container and note the pH reading.
10. Dispose of urine in the toilet by gently pouring it down the side of the toilet bowl (this helps prevent splashing).
11. Rinse the dedicated urinal or bed pan and dispose of this by gently pouring it down the side of the toilet bowl
12. Close toilet lid before flushing, and use a full flush.
13. Remove gloves and complete hand hygiene.
14. Document reading on the Fluid Balance Chart.



If the pH reading is **less than 7**

If there are traces of blood

Contact Wallaby staff
immediately on **9345 4770**.

5.9 Handling Cytotoxic Waste

Cytotoxic agents are substances which are used in the treatment of cancer. Methotrexate is a cytotoxic agent.

Cytotoxic agents are eliminated from your child's body through kidney and liver excretion. All body substances may be contaminated with either the unchanged cytotoxic agent or active agent metabolites. The period during which body substances may be contaminated with cytotoxic agents will differ for individual agents and patients.

Protective measures

The following protective measures must be used when handling your child's vomitus, blood, excreta and fluid drained from body cavities which are contaminated with cytotoxic agents:

- Always wear closed footwear and protective gloves
- your child's waste such as urine, faeces, vomitus and the contents of colostomy and urostomy bags may be disposed of in the normal sewerage system
- when disposing of this waste, slowly pour it down the side of the toilet bowl. Close the toilet lid when flushing and use a 'full' flush
- remove gloves and wash hands with soap and water immediately after handling this cytotoxic waste
- dispose of gloves and urine containers in the general waste (double bag if required)
- if urine or vomit gets on clothes or bedding then remove and wash soiled items twice using detergent and hot water
- if waste spills on yourself or your child, remove affected clothing and wash affected areas with soap and water for 5 to 10 minutes

A new urine container will be provided at the end of each time you have pre and post hydration at home



Tip!

Your local council may be able to provide you with an extra or larger garbage bin if required

5.10 Identify Concerns and Call for Support

The following information relates to signs that may indicate potential problems for your child.

Call Wallaby staff immediately on **9345 4770** if any of the following occur:

- sudden increase in temperature above 38 or rigors (shivering)
- swelling of hands and feet/ sudden change in weight
- suddenly feeling unwell
- uncontrolled nausea and vomiting
- redness, swelling, discharge or pain at the central line exit site

It is recommended that you check your child's CVAD site regularly for signs of needle dislodgment, leakage or breakage. A good way to remember this, is to make it a routine to do this each time you change an IV bag, give oral medicine or help your child with toileting. Signs of a problem with the CVAD site include:

- leakage of fluid around needle site or under dressing
- increased swelling, redness or tenderness at port site or along catheter tract under the skin
- increased swelling on trunk/neck on side of CVAD
- blood flow back is evident in lines indicating a break in the lines or disconnection
- fluid on clothing or bedsheets

Over the page there are a few examples of how to problem solve with your child's CVAD device. Contact Wallaby staff on **9345 4770** if you have any queries or concerns.

IN CASE OF AN EMERGENCY CALL AN AMBULANCE ON 000

Central Venous Access Devices (CVAD) Problem Solving

Problem	Prevention	Action
<p>1. CVAD Infection</p> <p>Signs of infection include:</p> <ul style="list-style-type: none"> • fever >38.0 • unwell • increased vomiting • increased bowel actions • increased respiratory rate • increased pulse rate • change in conscious state and/or behaviour. 	<ul style="list-style-type: none"> • Use non touch technique for line procedures. 	<p>1. Call Wallaby staff immediately on <u>9345 4770</u>.</p> <p>Call an ambulance on 000 if there are changes in conscious state or your child is seriously unwell.</p>
<p>2. Accidental disconnection of IV lines.</p>	<ul style="list-style-type: none"> • Protect lines from all sharp surfaces or objects. • Ensure all connections are tight. 	<p>1. Clamp the line closet to port immediately.</p> <p>2. Turn off the pump.</p> <p>3. Call Wallaby staff on <u>9345 4770</u>.</p> <p>Call an ambulance on 000 if there are changes in conscious state or your child is seriously unwell.</p>
<p>3. Accidental dislodgement of Huber needle.</p>	<ul style="list-style-type: none"> • Ensure dressing over CVAD port is well secured and IV line is secured with a safety pin. 	<p>1. Call Wallaby staff on <u>9345 4770</u>.</p> <p>2. Come into the Emergency Department immediately.</p>

5.11 Oral Care

Mouth sores are painful, irritated areas in your child's mouth which can be caused by some cancer treatments. Mouth sores usually heal but can be painful until they do.

Treatments may also give your child a sore throat, upset stomach, and diarrhoea, please let Wallaby nurses know if any of these are present.

How to reduce mouth sores:

- Avoid salty or spicy foods or dry, crunchy foods that could scrape the mouth. The best foods are soft foods like poached fruit, yogurt, soup, pasta, cooked meat and vegetables.
- Encourage them to drink plenty of water.
- Sucking ice chips can help keep the mouth moist during or after chemotherapy.
- Have your child rinse their mouth after eating.
- Your child may floss if they can do it without irritating their mouth.
- Use a soft toothbrush. Let it dry completely after each use.
- If your child cannot brush their teeth, you can clean them with moist gauze wrapped around a finger, a small sponge, or a foam toothbrush.
- If your child tends to swallow toothpaste, use plain water to clean their teeth.
- Use a new toothbrush regularly.

What toothpaste to use:

- Adult-strength toothpaste should be used.
- If your child doesn't like the taste, Colgate™ Spiderman or Macleans™ Big Teeth are brands of adult-strength toothpastes that have a mild berry-mint taste that your child may prefer.

5.12 Pressure Care

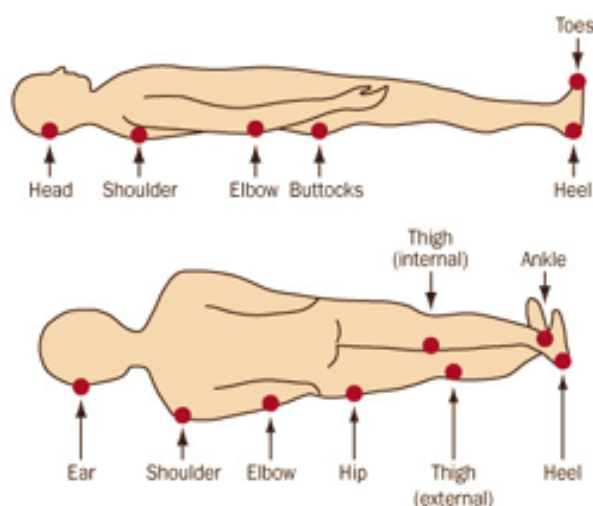
Cancer treatment increase the risk of pressure injuries. A pressure injury is any damage to the skin due to constant pressure, chafing or rubbing of the skin.

A pressure injury may appear as a red area (or, in darker toned skin, a blue or purple area), a blister or a break in the skin.

High Risk Areas

Pressure injuries can appear anywhere on the body, however, common areas are:

- ears
- tailbone (sacrum/coccyx)
- heels
- elbows
- spine and shoulder blades
- hips and bottom
- under plasters, casts, splints or braces;
- around medical equipment such as tubes, masks, drains, etc.



Report any changes in skin colour, red marks, blistering, broken skin or pain to Wallaby nursing staff.

Prevention

Pressure injuries can be painful and may take a long time to heal. There are some simple things you can do to reduce the risk.

Observe

- Check your child's skin regularly, especially high risk areas (see below).
- Look for changes in skin colour (redness or darkening), blisters, bruising, cracks, scrapes or dry skin.
- Note any increased pain or discomfort under plaster casts.

Positioning

- Encourage your child to change their position if sitting for long periods.
- If your child is spending a lot of time in bed, encourage them to move every few hours throughout the day, if they need your help be careful not to drag their skin when moving.
- Position changes can include left side, back, right side.
- Encourage your child to be active where appropriate.

Hygiene Care

- Use lukewarm water (not hot) for baths and showers.

- If using soap or liquid cleanser, try to use a product that is pH neutral, unperfumed and alcohol free.
- Avoid massaging or rubbing the skin, especially over bony areas.
- Apply moisturisers gently over dry areas; do not rub.
- A barrier cream (available at any pharmacy) on moist areas may benefit your child.

Nutrition

- Although your child may not feel like eating much continue to offer small meals and encourage frequent nutritious snacks.
- Encourage your child to drink adequate fluids throughout the day. Caffeinated drinks such as cola should be kept to a minimum or avoided all together.

Avoid

- Stretching or pulling the skin.
- Massaging or rubbing red areas as this may cause further damage.
- Using 'donut' or 'ring' cushions.

Pressure Relieving Devices

If your child requires long periods of bed rest, consider:

- sheepskin
- foam mattress
- gel pads
- air mattress

5.13 Physical Activity

Physical activity can involve a wide range of activities and does not always refer to a structured exercise program. It can include time spent playing at home, playing sports and merely walking to the bathroom or sitting out of bed.

Research supports physical activity during cancer treatment as **safe** when completed with care and with support from health care professionals.

Benefits of physical activity

- Maintain or improve physical abilities – including independence with moving and completing everyday tasks
- Reduce muscle wasting or shortening – due to physical inactivity
- Reduce the risks of blood clots and chest infections
- Reduce feelings of fatigue
- Improve mood and self-esteem
- Improve long term outcomes

Incidental exercise

A great place to begin is to encourage increased physical participation in your child's daily routine. This can be done in many ways:

- Sit on the couch instead of lying in bed
- Sit out of bed for meals
- Walk to appointments when attending the hospital
- Take the stairs instead of the lift
- Help with household chores and daily tasks

Some days will be more challenging than others. On days when your child is feeling unwell, simply standing by the bed or walking to the bathroom is beneficial.

Mobility restrictions and equipment

Depending on the type and location of tumour, your child may be instructed to limit the amount they use or weight-bear through their legs. This may occur before and/or after surgery.

For these children, a physiotherapist at the hospital will complete an assessment and provide recommendations. This may include using equipment to help with walking, such as crutches or a frame, or use of a wheelchair. Exercises may also be prescribed to help strengthen or lengthen muscles.

Referrals

If your child is having significant difficulty with moving and walking, please ask for referral to a physiotherapist at the hospital. They will complete an assessment and provide strategies to help this.

6. Glossary

Word	Meaning
Alcohol Chlorhexidine	A disinfectant and antiseptic that is used to kill germs.
Antiemetic	A drug to reduce vomiting. It can also be called anti-nausea.
Cancer	An uncontrolled growth of abnormal cells
Central Venous Access Device (CVAD)	A small flexible plastic tube inserted into a large vein through which drugs and fluids can be given and blood specimens taken painlessly.
Chemotherapy	Drugs that destroy cancer cells. The drugs may also affect normal cells.
Cytotoxic agents	Cytotoxic agents are substances which are used in the treatment of cancer. Methotrexate is a cytotoxic agent.
Drug levels	Drug levels in the blood can vary between patients, even when the same dose is given. It is necessary to measure the blood level of some drugs to ensure an effective dose is given.
Finger prick	The process of obtaining a sample of blood via a needle prick to the finger.
Folinic acid	Folinic acid, also known as ' <i>leucovorin</i> ', is the rescue medicine for high dose methotrexate. Your child will always take folinic acid after receiving methotrexate to reduce side effects and damage to normal healthy cells.
Huber needle	Huber needles are used to access ports implanted under the skin.
Infection	An invasion of body tissues by disease causing germs.
Infusion	Fluids and/or drugs that are administered intravenously over a period of time.
Intravenous (IV)	Method to administer fluids and medications through a small plastic tube inserted into a blood vessel (vein).
IV Pump	An electronic pump used to deliver intravenous fluids and medications. The bodyguard 323 pump is an IV pump.
Methotrexate	A type of chemotherapy that is used to treat osteosarcoma.
Non touch technique	A technique used to prevent contamination. Non touch technique involves identifying key parts and key sites and protecting them from contact with hands, surfaces or other equipment.
Osteosarcoma	A cancer of the bone.
Pre Hydration	Intravenous fluids necessary before certain chemotherapy.
Post Hydration	Intravenous fluids necessary after certain chemotherapy.
Port	A central line surgically inserted under the skin, usually the chest wall. It provides quick and easy access to the blood and can be left in place for years.

Word	Meaning
Protocol	A plan of tests and treatments.
Rigors	A sudden feeling of cold with shivering accompanied by a rise in temperature, often with lots of sweating.
Spiking the bag	Connect the IV tubing (giving set) to a new IV fluid bag.
Vein	Blood vessel that carries blood from the tissues and organs back to the heart.

7. Appendices

- Medication Chart
- Fluid Balance Chart
- Minimum urine requirements post methotrexate

7.1 Medication Chart

Medication Chart

- Use this Medication Chart to record when to give your child their medication.
- Give your child oral Ondansetron 6 hours after the START of the Methotrexate infusion. Continue this every 6 hours after 1st dose.
- Give your child oral Folinic Acid 24 hours after the START of the Methotrexate Infusion. Continue this every 6 hours after 1st dose.
- It is important your child **does not miss any doses**. It is a good idea to set alarms to remind yourself.

If your child misses a dose or vomits within 1 hour of taking their medication, contact Wallaby staff on [9345 4770](tel:93454770)

	Tuesday: Day 1			Wednesday: Day 2			Thursday: Day 3			Friday: Day 4		
Frequency	START	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs	+6 hrs
Time												
Ondansetron												
Folinic Acid												
<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> Enter the time on Day 1 that your child's methotrexate infusion started e.g. 09:30 </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> Give Ondansetron 6 hours after START of methotrexate infusion </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> Give Folinic acid 24 hours after START of methotrexate infusion </div> </div>												
Do not give Folinic acid												
Time taken												
Other medication												

7.2 Fluid Balance Chart

<p>ROYAL CHILDREN'S HOSPITAL</p> <p>INTAKE/OUTPUT SUMMARY</p> <p>WARD</p>	<p>AFFIX PATIENT IDENTIFICATION LABEL HERE</p>
---	--

DATE	INTAKE				OUTPUT				BALANCE (+/-)
	ORAL	GASTRIC	INTRAVENOUS	TOTAL VOL.	URINE	VOMIT	STOOL		

INTAKE/OUTPUT SUMMARY SHEET MR 18

Stock No. 305905

7109 F 4010

Example: Fluid Balance Chart

ROYAL CHILDREN'S HOSPITAL INTAKE/OUTPUT SUMMARY					AFFIX PATIENT IDENTIFICATION LABEL HERE				
WARD <u>Home Hydration</u>									
DATE	INTAKE				OUTPUT				BALANCE (+/-)
	ORAL	GASTRIC	INTRAVENOUS	TOTAL VOL.	URINE	VOMIT	STOOL	PH	
01/06									
18:06	250								
18:40	250			500					
19:30					273			8.5	
20:49					412			8.0	
22:17					397			8.0	
23:30			900	1400					
23:30	330			1730					
01:21					273			7.5	
02:01					364			8.0	
03:55		*			251			8.0	
04:23			900						
06:46		400			441		BA	8.0	
11:51	250		900		291			8.0	
12:12						150			

INTAKE/OUTPUT SUMMARY SHEET MR 18

Stock No. 305905

7.3 Example: Minimum Urine requirements post methotrexate

This table has been calculated and double checked by the nurses in Day Cancer Care. It has been developed to assist you in working out if you or your child is maintaining the minimum urine output after having their methotrexate.

We know that the frequency in which patients urinate is unique to them, so to help you with working out if your child is urinating enough we have developed this table that has been calculated specifically for your child.

After your child urinates, please record the amount and the pH level on the fluid balance chart provided to you. Have a look and see how long it has been since your child's last urination. Once you know how long it has been, check the amount urinated against that hour figure in the table below to ensure that your child is meeting the minimum amount of urine output required.

If they are meeting the minimum urination amount – continue as normal. If they are not meeting the minimum amount or it has been longer than 4 hours since their last urination, encourage your child to get up and urinate. Often all your child needs is a prompt to urinate. However, if they fall below the minimum amount or has been longer than 4 hours since their last urination, and are unable to urinate please contact Wallaby ward.

Urine output required for Patient: _____

Patient weight: _____

Patient BSA: _____

IV Hydration fluid rate (125ml/m²/hr): _____

Hours	Calculation	Minimum amount of urine – depending on frequency of urination
1 hour	ml/hr x 0.8	
2 hours	(ml/hr x 2) x 0.8	
3 hours	(ml/hr x 3) x 0.8	
4 hours	(ml/hr x 4) x 0.8	

Example:

Urine output required for Patient: Frank Test

Patient weight: 60kg

Patient BSA: 1.64

IV Hydration fluid rate (125ml/m²/hr): 205

Hours	Calculation	Minimum amount of urine – depending on frequency of urination
1 hour	205 ml/hr x 0.8	164
2 hours	(205 ml/hr x 2) x 0.8	328
3 hours	(205 ml/hr x 3) x 0.8	492
4 hours	(205 ml/hr x 4) x 0.8	656