



# **Post-Registration Children's Nursing Student (PRCNS) Participation in Intravenous Therapy: Preparing the PRCNS for Safe Intravenous Care**

## **IV Care Day Competency Assessment Workbook**

<b>Student Name:</b>	
<b>Date of IV Care Day:</b>	
<b>Facilitated by:</b>	
<b>Completed workbook reviewed by:</b>	

To be completed in conjunction with:

1. CHI Participation in Care Guideline
2. Medication Workbook

“All registered nurses who administer medications are responsible and accountable for their safe administration or the delegation (and direct supervision) of this role to nursing students.”

Competence is the attainment of knowledge, intellectual capacities, practical skills, integrity and professional and ethical values required for safe, accountable and effective practice as a registered nurse or registered midwife (NMBI 2015).

## Abbreviations

ANTT	Aseptic Non-Touch Technique
CHI	Children's Health Ireland
CPD	Continuing Professional Development
ED	Emergency Department
IV	Intravenous
kg	Kilogram
mL	Milliliter
NMBI	Nursing and Midwifery Board of Ireland
PIN	Personal Identity Number
PIVC	Peripheral Intravenous Cannula
PRCNS	Post-Registration Children's Nursing Student
UCD	University College Dublin

## Signature Bank

Please fill in the signature bank below and **use only initials** throughout the workbook.

Initials	Name (Block Capitals)	Signature	NMBI PIN	Date

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## Introduction

The aim of the IV Care Day is to prepare the student for the safe administration of intravenous (IV) fluids and/or Sodium Chloride 0.9% w/v bolus injection (flush) via peripheral intravenous cannula (PIVC) **only** under supervision of a Registered Nurse in the clinical environment.

Attendance and full participation in the IV Care Day will provide you with the required knowledge, skills and attitudes that will enable you to safely care for a child receiving IV therapy while working within the guidelines and policies of Children's Health Ireland.

## Learning Outcomes

Following **a)** attendance at the CHI IV Care Day and **b)** completion of the IV Care Day Competency Assessment Workbook, the PRCNS should be able to:

- Combine the theory and practice obtained in the IV Care Day with theory and practice experienced in the clinical area to make informed decisions regarding safe practice in IV therapy management
- Safely administer IV fluids (without additives)
- Safely administer IV Sodium Chloride 0.9% flushes
- Safely act as second checker in preparation of IV medications, including IV fluid additives
- Recognise associated risks of a patient receiving IV fluids and medications
- Demonstrate competency as described in Learning Points below.

## Learning points

On completion of the IV Care Day, the PRCNS should be able to:

- Discuss the legal and professional issues associated with administering medications to children
- Identify the local policies relevant to administering IV therapy to children
- Reflect on his/her restricted scope of practice in relation to administering IV fluids and flushes and identify accountability and competency issues
- Demonstrate safe patient holding
- Identify local policies and legal requirement for documentation of the administration of intravenous therapy management
- Manage the care and possible complications that may occur when a child is receiving IV therapy through a PIVC
- Calculate IV therapy using the appropriate formula
- Initiate appropriate actions for checking the prescription chart and patient identity
- Identify potential medication errors and discuss the actions/policies required when an error has occurred
- Manage the safe administration of IV therapy via PIVC
- Administer IV therapy at the correct rate and dose
- Identify likely causes of PIVC site pain and discomfort and take appropriate action in response

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- Demonstrate the knowledge of safe storage and disposal of IV therapy medicines and equipment
- Manage intravenous therapy in accordance with the infection control policy of the hospital
- Medical Devices and Equipment:
  - Demonstrate knowledge and understanding of the medical devices and equipment required to administer fluids and medication via PIVC
  - Administer intravenous fluids safely and competently using appropriate equipment
  - Manage the care of medical equipment in accordance with the infection control policy of the hospital
  - Takes appropriate action in relation to faulty medical devices.

## Competency Process

1. Attendance and full participation in Student Medication Practice Day
2. Attendance and full participation in IV Care Day
3. Complete assessment under supervision of a registered nurse who:
  - a. has completed a CHI IV study day
  - b. has completed their own IV competency assessment
  - c. is practicing IV therapy within their current role
4. Successful completion of assessment workbook
5. Submit completed workbook to be signed off by PRCNS Course Coordinator/ Clinical Placement Co-Ordinator

## Workbook Process

1. Medication preparation questionnaire (to be completed during Student Medication Practice Day)
2. 3 episodes of observed practice
3. 3 episodes of supervised practice in clinical setting
4. Return completed workbook to PRCNS Coordinator for correction

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## Skills Assessment

1. What must be checked before you and a staff nurse administer IV therapy to a child?
a. Child's name
b. Child's DOB
c. Child's HCRN
d. Child's weight
e. Allergies
f. Time due
g. Dose
h. Route
i. Medication Expiry
j. Calculation of dose to be administered

2. What action would you take if a wrong medication/incorrect fluids or dose was administered to a child in your care?
a. If the medication is ongoing, stop administration immediately
b. Notify nurse in charge, medical staff and other relevant staff
c. Additional monitoring of patient may be required
d. Ensure child's parent(s) are informed
e. Complete incident report form (respond)

3. What action would you take if you were asked to administer IV medication to a child?
a. Inform the person who requested it that IV medication administration is outside your scope of practice
b. Inform nurse in charge that your patient requires an IV medication

4. Describe how to prepare a child/family for insertion of a PIVC.
a. Inform child and parent of procedure
b. Topical anaesthetic 45 minutes prior to the procedure
c. Warm peripheries

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5. List the common sites for the insertion of a PIVC.
a. Metacarpal
b. (Ante)Cubital Fossa
c. Axillary Basilic Vein
d. Dorsal Venous Arch and Venous Plexus of the foot
e. Scalp Veins

6. When should you remove a PIVC?
a. Infiltration is evident
b. Signs of phlebitis
c. Contamination is suspected
d. Treatment is discontinued

7. What factors should you consider when caring for a child on IV therapy (continuous or intermittent)?
a. When in use: hourly monitoring of IV site for inflammation, infiltration, extravasation, infection, leaking or pressure
b. When not in use: monitor patency and examine site for inflammation

8. Why and when should a PIVC be flushed?
a. Prior to administration of treatment
b. Between administration of different fluids or medications
c. Post administration of treatment
d. 6 hourly when not in use
e. After withdrawing blood samples

9. What are the infection control principles to be considered when using a PIVC?
a. ANTT when accessing needle-free device
b. Hand hygiene before and after access
c. Do not disconnect unnecessarily
d. Avoid alternating IV sites unless clinically indicated

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10. What is phlebitis?
The vein becomes inflamed because there's blood clotting inside it or the vein walls are damaged (NHS)
List the signs and symptoms:
a. Pain
b. Redness
c. Swelling
d. Heat
e. Hardening of surrounding tissue
f. Pyrexia

11. What is the correct procedure if you notice that a child has phlebitis?
a. Remove the PIVC immediately
b. Have the site assessed by team

12. What would you do if you notice that a drug prescription is written incorrectly?
a. The drug should not be administered
b. Inform the prescriber
c. Complete incident report

13. Why is "incomplete mixing" of intravenous drugs dangerous when added to an infusion?
<i>"Incomplete mixing</i> of a medication in an intravenous solution results in the administration of the <i>wrong concentration</i> . This can be extremely dangerous e.g. intravenous Potassium Chloride given too rapidly can cause cardiac arrest. Special care is needed to ensure adequate mixing." (Med Policy 2017)

14. How often should an IV giving set be changed?
Continuous infusions: 24 hours
High fat/glucose content: 24 hours
Administration sets: 48 hours

15. What measures can be taken to reduce the risk of a child developing an embolism when receiving IV therapy?
Monitor PIVC and set for damage
Use Leur-lok™ connection to minimise risk of disconnection
Prevent pulling or pressure on line
Use t-piece clamp when PIVC not in use

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## Calculations

**Students are required to demonstrate the calculations and independently check if their answers are correct by using a calculator. Please ensure UCD Medication workbook calculations have been completed before attempting to complete this section.**

IV fluid requirements can be calculated as follows:

Body Weight		Volume of Fluid per 24 Hours	
a.	First 0-10kg	100mls/kg	
b.	Next 10-20kg	1000mL (as per calculation in a above)	+ 50mL/kg for each kg >10
c.	>20kg	1500mL (as per calculation in a + b above)	+20mL/kg for each kg >20
<p><b>This calculates 100% maintenance. Where a child is fluid restricted or requires additional fluid intake, amend accordingly e.g. 80% total fluid intake = value of 100% intake (mL) x 80%.</b></p>			

Example:

36kg patient requiring 80% maintenance fluids

First calculate 100%:

$$\text{First 0-10kg} = 100\text{mL/kg} = 100 \times 10 = 1000\text{mL}$$

$$\text{Next 10-20kg} = 50\text{mL/kg} = 50 \times 10 = +500\text{mL}$$

$$>20\text{kg} = 20\text{mL/kg} = 20 \times 16 = \underline{+320\text{mL}}$$

$$\underline{\mathbf{100\% Maintenance}} = 1820\text{mL/day}$$

$$\underline{\mathbf{80\% Maintenance}} = 1820\text{mL} \times 80\% = 1456\text{mL/day}$$

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1. Calculate the 24-hour total and the hourly rate for a 9.8kg child receiving an IV infusion of Sodium Chloride 0.9% & Glucose 5%.

a) 24 total: \_\_\_\_\_

b) Hourly rate: \_\_\_\_\_

2. Calculate the 24-hour total and the hourly rate for a 19.3kg child receiving and intravenous infusion of Compound Sodium Lactate solution.

a) 24 total: \_\_\_\_\_

b) Hourly rate: \_\_\_\_\_

This child was then fluid restricted to 70% maintenance. Calculate the new 24-hour total and the hourly rate.

c) 24 total: \_\_\_\_\_

d) Hourly rate: \_\_\_\_\_

3. Calculate the volume required for a 20mL/kg fluid bolus of Sodium Chloride 0.9% for a 4kg child admitted to ED: \_\_\_\_\_

4. What is the expected normal hourly urine output of a patient weighing:

a) 5kg \_\_\_\_\_

b) 35kg \_\_\_\_\_

**Procedure for administration of IV peripheral injection of Sodium Chloride 0.9% 'flush' and continuous infusion of intravenous fluids**

It is recommended that each student completes this assessment within 3 months of IV Care Day. When a student has been deemed competent on assessment, the student should forward this workbook to the PRCNS coordinator. Please retain a copy for CPD records.

**D = Demonstration**  
**Q&A = Question and answer**

IV Fluid/Flush Preparation	Mode of Assessment	Assessed by <i>Preceptor initials</i>
Describe knowledge of the medication policy and the role of PRCNS	Q&A	
Review relevant care bundles pertaining to IV Therapy and access	D	
Review prescription and demonstrate an understanding of: a) the reason for the prescription b) possible complications	D	
Check the following details on Medication Administration Record: a) Patient' name b) Patient's medical record number c) Patient's date of birth d) Patient's allergy status e) Patient's weight f) Fluid type ( <i>PRCNSs cannot administer fluids with additives</i> ) g) Time of administration h) Duration of administration i) Method of administration j) Prescriber's signature and date	D	
Independently check: a) Prescription b) Fluid c) Calculation (then with a second person)	D	
Explain how to calculate total fluid intake	Q&A	
Outline the correct action to be taken if prescription is incorrect or incomplete	Q&A	
Demonstrate correct hand hygiene technique	D	
Prepare appropriate equipment (employing Hand Hygiene and ANTT principles): a) Clean tray b) Sodium Chloride 0.9% c) IV Fluid Bag (if required) d) Syringes (3mL for flushes) e) Needle-free components: bionector and red bung f) Alcohol swab (2% Chlorhexidine in 70% isopropyl) g) Giving set/extension set h) IV pumps/stand ( <i>if delivering IV fluids</i> )	D	
Check expiry dates of all products	D	
Check fluids for faults such as contamination, cloudiness, discolouration or particles	D	
Prepare flush and IV Fluids as required	D	
IV Fluids: attach giving set to IV fluid bag and prime the line to ensure no air is present in line	D	

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Administration of prescribed IV Fluids/Flush	Mode of Assessment	Assessed by <i>Preceptor initials</i>
Employ principles of Hand Hygiene and ANTT	D	
Check that patient's identity band corresponds with Medication Administration Record	D	
Assess child's clinical status	D	
Explain the procedure to the child and parents/guardians	D	
IV Fluids: Insert IV Giving Set into pump and set rate with second checker	D	
Assess IV insertion site for: a) Redness b) Swelling c) Phlebitis d) Infiltration	D	
Clean bionector using alcohol swab for 15 seconds and allow time to dry	D	
Flush: attach flush syringe and slowly administer 3 mL Sodium Chloride 0.9%	D	
IV Fluids: attach giving set to bionector and start fluids	D	
Sign Medication Administration Record and signature bank		
Completion of fluid administration	Mode of Assessment	Assessed by <i>Preceptor initials</i>
Flush cannula	D	
Ensure clamp and bionector are secure post flush	D	
Sign Medication Administration Record	D	
Dispose of equipment appropriately	D	
Outline action to be taken if there is a discrepancy/error in fluid administration	Q&A	
Outline action to be taken if IV extravasation or phlebitis occurs	Q&A	
Preparation for Assisting with Cannulation	Mode of Assessment	Assessed by <i>Preceptor initials</i>
Employ principles of Hand Hygiene and ANTT	D	
Prepare appropriate equipment: a) Clean tray b) Peripheral intravenous cannula (more than one size may be required) c) Syringes (3mL for flushes) d) Needles e) Needle-free components: bionector and red bung f) Sodium Chloride 0.9% (prepare flush with 3mL) g) Alcohol swab h) T-piece i) Dressing to secure cannula – NB the cannula must remain visible	D	

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