

	Standard Operating Procedure for the Management of Intravenous Immunoglobulin		 Ospidéal Ollscoile Chorcaí Cork University Hospital
	Active Date: 14.11.2025 (Rev.1)	Approved by: Dr Ciara McGlade (Chair of D&TC)	

1. Purpose:

Intravenous immunoglobulin is a treatment involving the infusion of a concentrated solution of immune supporting antibodies. This is a blood product and should be managed as other blood products.

Intravenous immunoglobulin management should ideally take place in a clinical area that is familiar with the procedure, such as Wards 1A, 3A or 3D. **In Life Threatening instances IVIg may be given in the Emergency Department in Resus or Majors** (as decided on by CNM). Medical and nursing staff must seek support if unfamiliar with the prescription or administration of IVIg.

For certain indications IVIg treatment is considered urgent and treatment must not be delayed in these circumstances. This includes, but is not limited to:

Speciality	Urgent Indication
Haematology	- Severe thrombocytopaenia in Immune Thrombocytopaenia (ITP) with Platelets <10. - Severe refractory autoimmune haemolytic anaemia (AIHA) with Hb <7
Rheumatology	- Myositis (particularly with dysphagia) - Haemophagocytic lymphohistiocytosis (HLH)
Neurology	While it is not an emergency medication, IVIg should be given soon after admission (within 12 hours) in some cases: - Severe Guillian-Barre Syndrome - Relapse of Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) - Myasthenia Gravis crisis

2. Prescriber Guidance

For Neurology indications refer to the HSE Guidelines for Immunoglobulin use in Neurological Conditions: <https://www.hse.ie/eng/about/who/acute-hospitals-division/drugs-management-programme/protocols/hse-guidelines-for-immunoglobulin-use-in-neurological-conditions.pdf>

2.1 Consent:

Ensure patient consent is obtained in advance of first infusion of IVIg. Verbal consent is acceptable once the risks and potential benefits of IVIg therapy are discussed with the patient/ guardian and documented in the medical notes.

Patient evaluation should include the following:

- IVIg indicated
- Possible side-effects discussed
- Pre-med charted
- Blood component / Haemovigilance discussed

Written By: Aoife Delaney (Medication Safety Pharmacist; Andrea Moriarty (Quality Lead – Medical Directorate)

Reviewed By: Dr. Rachel Brodie (Consultant Haematologist); Dr. Daniel Costello (Consultant Neurologist); Dr. Finn Coulter (Consultant Emergency Medicine)

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2.2 Pre-treatment bloods:

The following bloods should be taken prior to IVIg treatment:

- FBC; Urea**, Electrolytes**, Creatinine**
- LFTs; HepB / C HIV serology (antigen testing in case of antibody deficiency patients)

** These bloods must be taken and results **reported** pre-treatment.

2.3 Prescribing guidance:

IVIg must be prescribed on Form 15B (Intravenous Immunoglobulin (IVIg) Prescription and Administration Record). This form is available on Wards GA5D, 1A, 2D, 3A, 3D, ED, Infusion Unit and in the Pharmacy Dept (Location - Disp Press 6).

IVIg Brands: IVIg brands are generally not interchangeable. Ideally, patients should be maintained on the same brand throughout long-term treatment to avoid adverse effects. Cork University Hospital (CUH) keeps two brands of IVIg:

- **Kiovig®**: Solution for infusion containing Normal Human Immunoglobulin (IVIg) 100mg/ml: 1g in 10ml, 2.5g in 25ml, 5g in 50ml, 10g in 100ml, 20g in 200ml, 30g in 300ml
- **Flebogamma®**: Solution for infusion containing Normal Human Immunoglobulin (IVIg) 100mg/ml: 5g in 50ml, 10g in 100ml, 20g in 200ml
- Please contact the CUH Pharmacy Department to check:
 - stock availability
 - advice on dose rounding
 - patient's IVIg treatment history.

2.4 IVIg Dosing For Prescribers:

Unless otherwise indicated, use adjusted body weight for dosing calculations in **overweight** or **obese** adults as follows:

Dosing weight is an **adjusted body weight** (of overweight or obese patients):

- Dosing weight = $IBW + [0.4 \times (Actual - IBW)]$ Note: if actual body weight is less than IBW, then Dosing weight = actual body weight
- Ideal Body Weight (IBW), Devine formula is:
 - IBW (male) using inches = $50kg + 2.3kg \times (\text{each inch over 5 feet})$
 - IBW (male) using cms = $50 + 0.91 \times (\text{height in cm} - 152.4)$
 - IBW (female) using inches = $45.5kg + 2.3kg \times (\text{each inch over 5 feet})$
 - IBW (female) using cms = $45.5 + 0.91 \times (\text{height in cm} - 152.4)$
- Use the following IVIg calculator to assist: [Alberta Health Services Calculator](#)

- Prescriber should round dose down to nearest whole vial size to minimise waste. Note in an adult patient part vials should never be used. Where the dose is split over multiple days, the daily dose may differ.

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Example of Dosing Calculation for Hypothetical Patient

Male patient; Height 170cm; Weight 84kg

Diagnosed with Guillain-Barre syndrome and meets criteria for IVIg. Plan to receive 2g/kg to be given over 5 days as per guidelines.

$$\text{IBW} = 50 + (0.91 \times [\text{Height (cm)} - 152.4])$$

$$\text{IBW} = 50 + (0.91 \times [170 - 152.4]) = 66\text{kg}$$

$$\text{Dosing weight} = \text{IBW} + (0.4 \times [\text{ABW(kg)} - \text{IBW (kg)}])$$

$$\text{Dosing weight} = 66 + (0.4 \times [84 - 66]) = 73.2\text{kg}$$

Total IVIg dose = 2 grams x 73.2kg = 146.4g rounded down to nearest 5g (vial size) vial = 145g. To be split over 5 days suggested dosing:

Day 1: 30g Day 2: 30g Day 3: 30g Day 4: 30g Day 5: 25g

2.5 IVIg Pre-medication

As per consultants' instructions, some patients may receive pre-medication; Hydrocortisone 100mg IV and/or Cetirizine 10mg/ Loratadine PO and/or Paracetamol 1g PO

3. Administration

3.1 Administration Guidance:

IVIg should **NOT** be administered if a patient is acutely unwell with infection, until the infection is under control and patient is improving clinically.

Potential complications can often be avoided by ensuring that patients:

- Are not sensitive to IVIg by initially infusing the product slowly
- Are carefully monitored for any symptoms throughout the infusion period. In particular patients naïve to IVIg, patients switched from an alternative IVIg product or when there has been a long interval since the previous infusion. These patients should be monitored during the infusion and for the first hour after the first infusion, in order to detect potential adverse signs. All other patients should be observed for at least 20 minutes after administration.

3.2 Double checking IVIg:

Double checking is the process of having a second colleague independently check the dosage and preparation of a medication/ blood product. This includes the independent calculation of the infusion rates as a means to reduce errors.

The nurses checking the IVIg remove the IVIg batch label from the bottle and attach to the Adult Intravenous Immunoglobulin Prescription and Administration Record (Form 15B). Both nurses sign that they have checked the IVIg. Checking of IVIg should only be performed for the infusion taking place per shift.

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3.3 Infusion Rate Calculations

The rate of IVIg commences at 0.5ml/kg/hr for 30 minutes and increases gradually by 0.5ml/kg/as tolerated to a maximum of 6ml/kg/hr.

Maximum rate for inpatients will rarely exceed 4ml/kg/hr

Example of Infusion Rate Calculations for Hypothetical Patient

Example: Patient prescribed for total dose = $2 \times 73.2\text{kg} = 146.4\text{g}$ rounded down to nearest 5g (vial size) vial = 145g. To be split over 5 days suggested dosing:

Day 1: 30g Day 2: 30g Day 3: 30g Day 4: 30g Day 5: 25g

DAY 1

- Preparation: e.g. preparation chosen for this patient is Kiovig 1g in 10mls (100mg/ml)
- Desired dose in mls: Using this Kiovig preparation a 30g dose will be contained in 300mls. This means the infusion will stop once a total of 300mls (30g) has been administered to the patient.
- Infusion rate: the infusion is started off slowly at 0.5ml/kg/hr with incremental increases in the rate of infusion every 30 mins **as tolerated** by the patient. The infusion **STOPS** once the total desired dose has been given - in this case 300ml (30g)

Day 1	Dose to be infused 30g		
Start time	Rate ml/hr	Rate setting on pump ml/hr	Vol to be infused (ml)
14:00	0.5ml/kg/hr	36.6ml/hr	18.3ml
14:30	1ml/kg/hr	73.2 ml/hr	36.6 ml
15:00	2ml/kg/hr	146.4ml/hr	73.2ml
15:30	3ml/kg/hr	219.6ml/hr	109.8ml
16:30	4ml/kg/hr	292.8ml/hr	62.1ml

0.5ml/kg/hr = $0.5 \times 73.2 \times 1 = 36.6\text{ml/hr}$.

- Infusion to be set at 36.6ml/hr.
- Over 30 mins the volume to be infused is 18.3ml.
- Set Infusion pump to alarm once 18.3ml has infused.

1ml/kg/hr = $1 \times 73.2 \times 1 = 73.2\text{ml/hr}$

- Infusion to be set at 73.2ml/hr.
- Over 30 mins the volume to be infused is 36.6 ml.
- Set Infusion pump to alarm once 36.6 ml has infused.

2ml/kg/hr = $2 \times 73.2 \times 1 = 146.4 \text{ ml/hr}$

- Infusion to be set at 146.4 ml/hr.
- Over 30 mins the volume to be infused is 73.2 ml.
- Set Infusion pump to alarm once 73.2 ml has infused.

3ml/kg/hr = $3 \times 73.2 \times 1 = 219.6 \text{ ml/hr}$

- Infusion to be set at 219.6 ml/hr.
- Over 30 mins the volume to be infused is 109.8 ml.
- Set Infusion pump to alarm once 109.8 ml has infused.

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4ml/kg/hr = 4 x 73.2 x 1 = 292.8 ml/hr

- Infusion to be set at 292.8 ml/hr.
- Total volume infused so far = 237.9ml. Final total volume = 300ml. Only 62.1 ml left to infuse.
- Set Infusion pump to alarm once 62.1 ml has infused and **STOP**.

DAY 5 Example

- Preparation: e.g. preparation chosen for this patient is Kiovig 1g in 10mls (100mg/ml)
- Desired dose in mls: Using this Kiovig preparation a 20g + 5g dose will be contained in 250mls. This means the infusion will stop once a total of 250mls (25g) has been administered to the patient.
- Infusion rate: the infusion is started off slowly at 0.5mls/kg/hr with incremental increases in the rate of infusion every 30 mins as tolerated by the patient. The infusion **STOPS** once the total desired dose has been given - in this case 250mls (25g)

Day 1	Dose to be infused 25g		
Start time	Rate ml/hr	Rate setting on pump ml/hr	Vol to be infused (ml)
14:00	0.5ml/kg/hr	36.6ml/hr	18.3ml
14:30	1ml/kg/hr	73.2 ml/hr	36.6 ml
15:00	2ml/kg/hr	146.4ml/hr	73.2ml
15:30	3ml/kg/hr	219.6ml/hr	109.8ml
16:30	4ml/kg/hr	292.8ml/hr	12.1ml

0.5ml/kg/hr = 0.5 x 73.2 x 1 = 36.6ml/hr.

- Infusion to be set at 36.6ml/hr.
- Over 30 mins the volume to be infused is 18.3ml.
- Set Infusion pump to alarm once 18.3ml has infused.

1ml/kg/hr = 1 x 73.2 x 1 = 73.2ml/hr

- Infusion to be set at 73.2ml/hr.
- Over 30 mins the volume to be infused is 36.6 ml.
- Set Infusion pump to alarm once 36.6 ml has infused.

2ml/kg/hr = 2 x 73.2 x 1 = 146.4 ml/hr

- Infusion to be set at 146.4 ml/hr.
- Over 30 mins the volume to be infused is 73.2 ml.
- Set Infusion pump to alarm once 73.2 ml has infused.

3ml/kg/hr = 3 x 73.2 x 1 = 219.6 ml/hr

- Infusion to be set at 219.6 ml/hr.
- Over 30 mins the volume to be infused is 109.8 ml.
- Set Infusion pump to alarm once 109.8 ml has infused.

4ml/kg/hr = 4 x 73.2 x 1 = 292.8 ml/hr

- Infusion to be set at 292.8 ml/hr.
- Total volume infused so far = 237.9ml. Final total volume = 250ml. Only 12.1ml left to infuse.
- Set Infusion pump to alarm once 12.1 ml has infused and **STOP**

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4. Monitoring:

Observations should be taken at the beginning of the infusion, at each rate change, at the end of the infusion and documented in the INEWS chart. These should include temperature, pulse, oxygen saturations and blood pressure. In all patients, IVIg administration requires:

- Adequate hydration prior to the initiation of the IVIg infusion
- Monitoring of urine output
- Monitoring of serum creatinine levels
- Monitoring for signs and symptoms of thrombosis
- Assessment of blood viscosity in patients at risk for hyperviscosity
- Avoidance of concomitant use of loop diuretics

Monitoring of patients receiving long term IVIg should also include full blood count, urea, electrolytes and liver function tests.

5. Management of Adverse Effects:

Certain adverse reactions may occur more frequently:

- in case of high rate of infusion in patients who receive IVIg for the first time or, in rare cases, when the IVIg product is switched or when there has been a long interval since the previous infusion.
- in patients with an untreated infection or underlying chronic inflammation

Refer to the summary of product characteristics of Kiovig® or Flebogamma® for further information.

If the patient experiences an infusion reaction, **STOP the infusion** and contact a member of the medical team.

6. Post Treatment Follow-up (For patients treated for immunodeficiency only)

Clinical evaluation of efficacy of treatment should be documented in the notes; specifying parameters to be monitored and timelines. Routine blood monitoring (every three months) should include:

- IgG level
- FBC
- Biochemistry

Do **NOT** change doses in antibody deficiency patients without discussion with Consultant.

7. References

Commissioning Criteria Policy for the use of therapeutic immunoglobulin (Ig) England, 2025.
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<https://www.hse.ie/eng/about/who/acute-hospitals-division/drugs-management-programme/protocols/hse-guidelines-for-immunoglobulin-use-in-neurological-conditions.pdf> Accessed on 14.11.25

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