Immunoglobulin (Kiovig) Intravenous for Adults

Who can administer

May be administered by registered competent doctor or nurse/midwife

Important information

- An **In-patient Authorisation form** **or** **Out-patient prescription form** MUST be completed prior to the first dose of immunoglobulin in GUH. Supply will ONLY be arranged when this form is completed correctly.
- See below re using adjusted weight for calculation of doses
- See overleaf for monitoring requirements
- This is a **blood product**, therefore batch and expiry information should be recorded in the patient's notes. This is facilitated by putting the dispensing label from each vial into the patient's notes
- **Round doses** to nearest vial size (ref 2)
- Licensed doses vary with the brand of immunoglobulin employed. Discuss with your consultant or pharmacy if further information required
- **Contraindicated** in individuals with known **class specific antibody to Immunoglobulin A**
- **Thromboembolism:** Use caution with IVIg in **obese patients** and in patients with **pre-existing risk factors for thrombotic events**. In patients at risk for thromboembolic adverse reactions, IVIg products should be administered at the **minimum rate of infusion and dose practicable**
- **Glass bottle precautions as follows:**
- Precautions need to be taken during administration to **prevent possible air embolism** - particularly in central line administration.
- Bottles **must be vented** in one of two ways. Directly by means of a filter needle into the bottle which goes through the rubber stopper and opens into the air, or Direct air vent on the air inlet of the administration set, located between the drip chamber and piercing pin, it is covered with a bacterial retentive filter to reduce the chance of contamination

Available preparations

Kiovig 2.5g human normal immunoglobulin per 25mL vial

Kiovig 5g human normal immunoglobulin per 50mL vial

Kiovig 10g human normal immunoglobulin per 100mL vial

Kiovig 20g human normal immunoglobulin per 200mL vial

Kiovig 30g human normal immunoglobulin per 300mL vial

Reconstitution

Already in solution

Infusion fluids

Not required (product ready for infusion)

Methods of intravenous administration

Intermittent intravenous infusion (using an electronically controlled infusion device)

- **Initial rate:** 0.5ml per kg per hour for 30 minutes
- If well tolerated, the rate of administration may be gradually increased to a maximum of 6ml/kg/hour
- Clinical data obtained from a limited number of patients also indicate that adult patients with Primary Immunodeficiency Syndromes may tolerate a rate of up to 8ml/kg/hour
- If reaction occurs during infusion, see 'Further information' for guidance
- When prescribed as a daily dose over several days, the rate will need to be titrated again on each day. However, if it was well tolerated the previous day, the rate may be increased more quickly on subsequent days. (ref 1)
- If prescribed as a daily dose, and on day one it is first administered late in the day, on subsequent days the starting time for administration may be brought back to earlier in the day if required. Gradual titration of the rate will be needed on each day, as before

Infusion rates for KIOVIG- sample calculations. See above for exceptions to rate increases					
If a patient's weight falls between two values below, use the lower infusion rate- e.g. patient weight 59kg- use rates for 55kg rather than for 60kg					
Increase rate as per table below, every 30 minutes as tolerated - <u>until the full dose has been administered</u> Maintain low rate of infusion throughout if patient has acute renal disease, or thromboembolic disorders					
Weight (kg)	**First 30 minutes (ml/hour)**	**Second 30 minutes (ml/hour)**	**Third 30 minutes (ml/hour)**	**Fourth 30 minutes (ml/hour)**	**Maximum rate (ml/hour)**
Â	0.5ml/kg/hour	1ml/kg/hour	2ml/kg/hour	4ml/kg/hour	6ml/kg/hour
50	25	50	100	200	300
55	27.5	55	110	220	330
60	30	60	120	240	360
65	32.5	65	130	260	390
70	35	70	140	280	420
75	37.5	75	150	300	450
80	40	80	160	320	480
85	42.5	85	170	340	510
90	45	90	180	360	540
95	47.5	95	190	380	570
100	50	100	200	400	600
105	52.5	105	210	420	630
110	55	110	220	440	660
115	57.5	115	230	460	690
120	60	120	240	480	720
125	62.5	125	250	500	750
130	65	130	260	520;	780
135	67.5	135	270	540	810
140	70	140	280	560	840
Rates above are for most patients. Patients with Primary immunodeficiency may tolerate up to 8ml/kg/hour					

Dose in adults

Important points (ref 2)

- For patients with BMI 30kg/m^2 or more, or if actual weight >20% more than IBW, consider using adjusted body-weight dosing of immunoglobulin. See handy calculator here
- Using this adjusted weight dose may contribute to minimisation of side-effects and will also save significant quantities of immunoglobulin.
- **Round dose** to nearest whole vial size

Measles prophylaxis (ref 3)Â Â (see NIAC Immunisation Guidelines, Chapter 12, Measles)

- Kiovig is our preferred first line brand to use for this indication (supply issues)
- Give 0.4g per kg. **Round dose** to nearest vial size
- For example 0.4g per kg for patient who weighs 65Kg is 26g - give 25g (2x10g vials + 5g vial)

Replacement therapy in primary immunodeficiency syndromes

- 0.4 to 0.8g per kg as starting dose, followed by 0.2 to 0.8g per kg every three to four weeks
- **Round dose** down to nearest vial size
- Three to six months are required after the initiation of therapy for equilibration to occur
- Desired trough levels (taken before the next infusion) are at least 5 to 6g/L

Replacement therapy in secondary immunodeficiency

- Usual dose 0.2 to 0.4g per kg every three to four weeks
- **Round dose** down to nearest vial size
- IgG trough levels should be measured and assessed in conjunction with the incidence of infection. Dose should be adjusted as necessary to achieve optimal protection against infections, an increase may be necessary in patients with persisting infection; a dose decrease can be considered when the patient remains infection free.

Idiopathic thrombocytopenia (ITP)

- **Treatment**: either 0.8g to 1g per kg on day one, which may be repeated once within three days,
- **or** 0.4g/kg daily for two to five days
- **Round dose** to nearest vial size, or adjust dose over the treatment course. For example 0.4g per kg for 5 days for patient who weighs 65kg is 26g daily for up to 5 days - give 25g daily for four days, then give 30g on day 5
- Treatment may be repeated if relapse occurs

Guillain Barre syndrome

- 0.4g per kg daily for five days
- **Round dose** to nearest vial size, or adjust dose over the treatment course. For example 0.4g per kg for 5 days for patient who weighs 65kg is 26g daily for up to 5 days - give 25g daily for four days, then give 30g on day 5

Multifocal Motor Neuropathy (MMN)

- **Starting dose:** Give 2g/kg given over two to five days (example 1g/kg daily for two days, or 0.4g/kg daily for five days)
- **Maintenance dose:** Give 1g/kg every two to four weeks, **or** 2g/kg every four to eight weeks

It is common practice for neurology patients to be prescribed enoxaparin 40mg od subcutaneously due to the increased risk of thromboembolism. Consider prescribing but check dose etc with Registrar first. See also under Important information re thromboembolism

See SPC for other indications

Monitoring

- Patients must be **closely monitored** and carefully observed for any adverse reactions throughout the infusion period and for at least twenty minutes after administration
- Monitoring should be **extended to one hour** for immunoglobulin naive patients, those switched from another product, or when there has been a long interval since previous infusion
- If adverse reactions occur, slow or stop the infusion - see under 'Further information'. Please also consult Medication Protocol: Management of Infusion Related patient reactions in nurse led infusion settings in GUH -available on Q pulse (CLN-NM-0118)

Further information

- **Management of infusion related reactions:** depending on the severity of the reactions, the infusion rate may either be **slowed or stopped**
- Some cases of **acute renal failure** have been reported in patients receiving IVIG (particularly those containing sucrose as an excipient)
- **Adequate hydration prior to infusion** of IVIG is essential, urinary output and creatinine must be monitored, and the concomitant use of loop diuretics should be avoided where possible
- IVIG may interfere with response to **live vaccines** - serological testing may be necessary - see SPC
- At least 98% of Kiovig is immunoglobulin G (IgG)
- Maximum IgA content is 140 microgram per ml
- Contains glycine as an excipient
- If dilution to a lower concentration is required, Kiovig may be diluted with Glucose 5% to a final concentration of 50mg/ml (5%). Example: Mix 50ml Kiovig 10% solution with 50ml Glucose 5%

Storage

- Store below 25^{O}C, do not freeze

References

SPC Kiovig 100mg/ml 11/05/2020

1. Communication with Dr Tormey, Immunologist, by email March 2011

2. Department of Health Clinical Guidelines on the use of Intravenous Immunoglobulins 2011 Second edition update

3. NIAC immunisation guidelinesÂ Measles Prophylaxis- see page 19

Therapeutic classification

Intravenous immunoglobulin