The emergency use of a single 500mg dose of intravenous acetazolamide to manage sight threatening raised intraocular pressure secondary to administration of an Anti -Vascular Endothelial Growth Factor (anti-VEGF) intra-vitreal (IVT) injection in adults

TARGET AUDIENCE	The adult intra-vitreal anti-VEGF injection team at University Hospital Hairmyres
PATIENT GROUP	Adult patients who have received an anti-VEGF intra-vitreal injection within the ophthalmology service at an IVT clinic in the absence of a prescriber

Clinical Guideline Summary

Raised intraocular pressure post IVT injection is considered an ophthalmic emergency [1]. The decision-making, weighing up risks versus benefits and overall responsibility to prescribe and direct the safe administration of acetazolamide in this situation lies with the on-call ophthalmology consultant

- This guideline is for use in the management of a very specific indication in an emergency situation that may occur during IVT clinics where on a very small number of occasions there isn't an on-site medical or non-medical prescriber present

- This guideline will provide the detail of when a single 500mg dose of intravenous acetazolamide may require to be prescribed and administered (under specific conditions) to manage potentially sight threating raised intra-ocular pressure secondary to an anti-VEGF IVT injection [1]

- This guideline will also provide the details of patient assessment, logistics of remote transfer of a prescription to the IVT clinic by the on-call ophthalmology consultant (to satisfy legal requirements), nurse administration details and associated patient monitoring required.

Indication for treatment	Raised intra ocular pressure in the eye causing total vision loss, secondary to intra-vitreal injections of an anti-VEGF treatment in adult patients
Patient group	Adults including the elderly
Clinical setting	Out of hours IVT clinics where there is no on-site prescriber (either medical or non-medical). Also included are rare occasions when there is no medical prescriber in the clinic during normal working hours.
Who will administer	Registered nurses who are employed by the Ophthalmology department that are competent to administer intravenous medicines and who have been trained to administer acetazolamide in this situation.
Process of assessment and authorisation **Nursing/ injector / ophthalmology consultant responsibilities**	• Immediately following IVT injection the nurse will test the patient's vision using the *"Protocol for suspected central retinal artery occlusion post intravitreal injection"* available here: R: Clinical/ Ophthalmology/ Ophthalmic nurses – Hairmyres/ ANP folder medical retina • It will be immediately apparent if there is an intraocular pressure rise, as detailed in the protocol. Once initial steps to manage this have been followed with no improvement, medical staff will be consulted immediately • In anticipation of administering acetazolamide, the nurse will retrieve the emergency box to facilitate cannulation of the patient when it has been authorised • At the same time, the injector will call the on-call ophthalmology resident doctor via switchboard at University Hospital Hairmyres. The on call ophthalmology resident will then liaise with the on call ophthalmology consultant to decide on appropriateness for treatment • If the patient is deemed appropriate for treatment, patient consent must be gained by the injector/ nurse • The injector will receive verbal confirmation followed immediately by an email containing an electronic prescription complete with the individual patient details and a digital signature from the on-call ophthalmologist. This will be sent directly to the injector's NHS inbox as a Patient Specific Direction (PSD) (see appendix 1) • On receipt of the PSD it will be printed immediately and used by the nurse as the direction to administer acetazolamide. Following administration the patient will be monitored closely.

	• The ophthalmology consultant will attend the clinic to review the patient and a "wet" signature obtained for the acetazolamide prescription on arrival at clinic.
Suggested exclusions at the discretion of the prescriber	• Patient non-consent • Hypersensitivity to acetazolamide, sulphonamides or, hypersensitivity to excipients listed within manufacturers Summary of Product Characteristics (SmPC) [2] • Acetazolamide injection is contraindicated in situations in which sodium and/or potassium blood levels are depressed, in cases of marked kidney and liver dysfunction, suprarenal gland failure and hyper-chloraemic acidosis. • Acetazolamide injection should not be used in patients with hepatic cirrhosis as this may increase the risk of hepatic encephalopathy. • Acetazolamide should not be administered to patients who previously experienced non-cardiogenic pulmonary oedema following acetazolamide intake. • Breastfeeding- Acetazolamide has been detected in low levels in the milk of lactating women who have taken Acetazolamide injection. Although it is unlikely that this will lead to any harmful effects in the infant, extreme caution should be exercised when Acetazolamide injection is administered to lactating women. • Pregnancy- Acetazolamide has been reported to be teratogenic and embryotoxic in rats, mice, hamsters and rabbits at oral or parenteral doses in excess of ten times those recommended in human beings. Although there is no evidence of these effects in human beings, there are no adequate and well-controlled studies in pregnant women. Therefore, Acetazolamide injection should not be used in pregnancy, especially during the first trimester.
Cautions	• Kidney disease (may take longer to eliminate acetazolamide) • Impaired alveolar ventilation, pulmonary obstruction (risk of acidosis) • Suicidal ideation (patients and caregivers of patients should be advised to seek medical advice should sign of suicidal ideation or behaviour emerge).

	• Impaired glucose tolerance or diabetes mellitus (both increases and decreases in blood glucose levels have been described in patients treated with acetazolamide). • History of renal calculi (risk of precipitating further calculi) The pH of parenteral acetazolamide is 9.1. Care should be taken during intravenous administration of alkaline preparations to avoid extravasation and possible development of skin necrosis • The occurrence at the treatment initiation of a feverish generalized erythema associated with pustula may be a symptom of acute generalised exanthematous pustulosis (AGEP). In case of AGEP diagnosis, acetazolamide should be discontinued and any subsequent administration of acetazolamide contraindicated.
Interaction with other medicinal products and other forms of interaction	• Acetazolamide is a sulphonamide derivative. Sulphonamides may potentiate the effects of folic acid antagonists. Possible potentiation of the effects of folic acid antagonists, hypoglycaemics and oral anti-coagulants. • Concurrent administration of acetazolamide and aspirin (high dose) may result in severe acidosis and increase central nervous system toxicity. Adjustments of dose may be required when Acetazolamide injection is given with cardiac glycosides or hypertensive agents. • When given concomitantly acetazolamide modifies the metabolism of phenytoin leading to increased serum levels of phenytoin. Severe osteomalacia has been noted in a few patients taking acetazolamide in combination with other anticonvulsants. There have been isolated reports of reduced primidone and increased carbamazepine serum levels with concurrent administration of acetazolamide. • Because of possible additive effects with other carbonic anhydrase inhibitors, concomitant use is not advisable. ***See BNF/ Summary of Product Characteristics for complete list of drug interactions*** [2,3]

Description of Treatment

Name of medicine	Acetazolamide (brand name: Diamox ®)
Form/strength/ quantity	1 x 500mg Powder for solution for Injection, white to off-white in colour powder (*note: 500mg is the only strength available for the injection preparation*)
Route of administration	Intravenous (IV)
Dosage and administration	500mg given slowly over 5 minutes as a stat dose. Reconstitute each 500mg vial with 10mL water for injections to reduce injection pain, but a minimum of 5mL water for injections can be used to reconstitute each vial.[4] Acetazolamide has a high pH and may cause venous irritation and tissue damage in cases of extravasation. If a central venous access device is unavailable, administer via a large peripheral vein monitoring insertion site closely using a recognised phlebitis scoring tool. Re-site cannula at first signs of inflammation.

Warnings, including possible adverse reactions	Dizziness, nausea, vomiting, severe cutaneous adverse reactions (SCARs), anaphylactic reaction, confusion, fatigue, headache, paralysis, seizure. Injection site reactions: pain, stinging, swelling or erythema at the injection site.
Reporting procedure for adverse reactions	Healthcare professionals are encouraged to report suspected adverse reactions to the Medicines and Healthcare Products Regulatory Agency (MHRA) using the Yellow Card reporting scheme [5] Review by ophthalmologist if adverse reaction occurs. Inform patient and document in patient's records. Complete electronic In-phase report if appropriate

Advice to patient or carer including written information	Patients are provided with verbal/written advice and a patient information leaflet Protection of the eye from dust, bacterial contamination, rubbing, irritating chemicals and foreign bodies during the period of anaesthesia is important to prevent additional irritation and/or damage to the cornea They are advised to contact ophthalmology clinic if they have any concerns they may be suffering from adverse reactions to any drops administered during the procedure

References

1. The Royal College of Ophthalmologists; Ophthalmic service guidance - Intravitreal Injection Therapy. May 2018, revised Aug 2018. This guideline can be accessed by contacting: contact@rcophth.ac.uk
2. Summary of manufacturer's product characteristics; acetazolamide injection. Available here: DIAMOX Sodium 500mg Powder for Solution for Injection Last accessed: 31/10/25
3. British National Formulary online; acetazolamide monograph. Available here: Acetazolamide | Drugs | BNF | NICE Last accessed: 31/10/25
4. Medusa – NHS Injectable Medicines Guide. Acetazolamide monograph. Available here: Injectable Medicines Guide - Display - Acetazolamide - Intravenous Last accessed: 31/10/25
5. Medicines Healthcare Regulatory Authority Yellow Card reporting site. Available here: Yellow Card | Making medicines and medical devices safer Last accessed: 31/01/25

Appendix 1.

Patient Specific Direction (PSD) for administration of 500mg of intravenous acetazolamide

Name, strength and form of medicine	Acetazolamide, 500mg Powder for solution for Injection, white to off-white in colour powder (*note: 500mg is the only strength available for the injection preparation*)
Dose	500mg
Frequency	Stat dose
Route of administration	Intravenously as per the guideline "The emergency use of a single 500mg dose of intravenous acetazolamide to manage sight threatening intraocular pressure secondary to administration of an anti-VEGF intra-vitreal (IVT) injection in adults attending clinics in the absence of an on-site prescriber ONLY"

Patient details:

Forename	Surname	CHI	Address	Post Code

Person authorising administration of the medicine:

I have reviewed this patient need and authorise medicine administration as above:

Signed	[insert electronic signature here]
PRESCRIBER NAME (PRINT)	
GMC NUMBER	[insert GMC number here]
AUTHORISATION DATE	
WET SIGNATURE ON ARRIVAL AT CLINIC	

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CONSULTATION AND DISTRIBUTION RECORD	
Contributing Author / Authors	Ruth Waters, clinical pharmacy manager UHH Lyndsay Galbraith, senior charge nurse Ophthalmology Doug Lyall, Clinical Lead – Ophthalmology
Consultation Process / Stakeholders:	Karen Hunter, specialist ophthalmology nurse Victoria Gemmell, Advanced Pharmacist for Medicines Guidance Rachael Kelly, Formulary and Clinical Effectiveness pharmacist
Distribution	Ophthalmology Dept. at University Hospital Hairmyres only.

CHANGE RECORD

Date	Lead Author	Change	Version
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