

T H E O G P R O C O L L A B O R A T I V E · E S T . 2 0 2 5

Ozone in Practice

Clinical Content · Ozone Basic

M O D U L E 1 · F O U N D A T I O N S

Ozone (Gas · Liquid · Oils) · Ozonated Glycerin · Foundational Equipment · The 12-Step Framework

Two species tracks. One foundational vocabulary. One 12-point framework

C L I N I C A L C O N T E N T · A A O T - E N D O R S E D

MODULE 1 · AT A GLANCE

Five Lessons · Two Tracks

Each clinical lesson presents the protocols side-by-side. One framework anchors them both.

LESSON 1.1

Ozone — The Gas

O₃ chemistry · gamma ·
30–45 min half-life ·
three clinical forms
(gas, liquid, oils).

LESSON 1.2

**Ozone ≠
Ozonated
Glycerin**

The critical distinction.
Two molecules. Two
shelves. Two clinical
roles.

LESSON 1.3

**Ozonated
Glycerin (OG)**

Shiota's trioxepane ·
1% / 99% · ~10,000
ppm · 2–4 week
duration of action.

LESSON 1.4

**Foundational
Equipment**

Generator · O₂ source ·
gas path · destruct.

LESSON 1.5

**12-Step
Framework**

The reusable protocol
template. Carries every
clinical route in
Modules 2 – 7.

UNIVERSAL DISCIPLINE

Oxygen first on, oxygen last off · Start low, titrate slowly · Destruct active · Document every session

LESSON 1.1 · THE CHEMISTRY

Ozone · The Gas

O₃ — three oxygen atoms. Unstable. Powerful oxidizer. Always generated on-site. Measured in gamma (µg/mL) or ppm.

O₃

THREE OXYGEN ATOMS

Allotrope of oxygen. One extra atom over O₂ — and that extra atom drives every clinical effect of medical ozone.

30–45

MIN HALF-LIFE

At room temperature, ozone decays back to O₂ in minutes. It cannot be stored, bottled, or shipped — only generated on demand.

γ

MICROGRAMS PER mL
(µ g / m L)

Clinical dose is gamma. Therapeutic range across routes: ~10–80 µg/mL. Always pair concentration with volume.

MEDICAL OZONE IS GENERATED FROM MEDICAL OXYGEN VIA A CORONA-DISCHARGE GENERATOR. NEVER INHALED — THE PULMONARY EPITHELIUM IS NOT A TARGET TISSUE.

LESSON 1.1 · THE THREE FORMS

Three Clinical Forms of Ozone

The same O₃ molecule, three vehicles. Each used differently, each with a different time-to-effect.

Gas

Direct administration

Bagged & cavity routes: rectal, vaginal, ear, joint, limb-bag, intraperitoneal, dental handpiece. Delivered straight from the generator into the body cavity or sealed enclosure.

TIME-TO-EFFECT **MINUTES**

Liquid

Ozonated water · saline

O₃ bubbled into distilled water or 0.9% saline. Used for oral rinse, irrigation, lavage, dental flushing, wound cleaning, SQ / IV injection. Half-life ~30–45 min — use immediately.

USE-IMMEDIATELY WINDOW **<60 min**

Oil

Ozonated oils (olive · sunflower · jojoba)

O₃ reacts with the unsaturated fatty acids in oil to form ozonide structures. Stable for months refrigerated. Topical only. DIFFERENT chemistry from OG — see Lesson 1.2.

REFRIGERATED SHELF-LIFE **MONTHS**

ALL THREE FORMS DECAY BACK TO O₂. NONE CAN BE BOTTLED AND SHIPPED LONG-TERM. THE NEXT LESSON INTRODUCES THE EXCEPTION — OZONATED GLYCERIN.

LESSON 1.2 · CRITICAL DISTINCTION

Ozone ≠ Ozonated Glycerin

Same word root. Two different substances. Two different storage protocols. Two different clinical roles.

OZONE · the gas (and its short-lived liquid / oil derivatives)

Form: O₃ molecule itself — gas, or freshly dissolved in water/oil.

Stability: Half-life 30–45 minutes. Decays back to O₂.

Storage: Cannot be stored. Generated on-site, used immediately.

Action: Minutes. Single burst of oxidation.

Risk: Inhalation hazard — pulmonary toxicity. Destructive.

OZONATED GLYCERIN (OG) · a stable, shelf-storable liquid product

Form: Ozone reacted INTO glycerin → a trioxepane compound.

Stability: Years sealed. Months at room temp. Stable liquid.

Storage: Bottled. Shipped. Refrigerated for long-term.

Action: 2–4 weeks per dose. Time-release oxidative signaling.

Risk: No inhalation hazard. Topical / oral / mucosal-safe.

ANCHOR FACT *Ozone is a gas (or a short-lived dissolution of that gas). Ozonated Glycerin is a stable liquid where ozone has chemically reacted with glycerin. Different molecules. Different shelves. Different clinical roles.*

LESSON 1.3 · WHAT OG IS

Ozonated Glycerin (OG)

A stable liquid product. Discovered by Charles Marchand in New York in 1885.

1% / 99%

ACTIVE / CARRIER

~1% trioxepane active compound.
~99% unreacted USP glycerin — the
slow-release carrier.

~10,000

PPM SINGLET-O EQUIV.

Singlet-oxygen equivalent per mL of
saturated OG — roughly the
oxidative potential of pure ozone
gas, in liquid form.

2–4

WEEKS PER DOSE

Carrier wears off slowly in tissue.
Weekly-to-monthly dosing — not
daily.

"The idea of ozonating glycerin was difficult to conceive of in conventional science. However, I thought I would never know unless I tried it, so I did it." **DR. GOTARO SHIOTA · MEDIPLUS PHARMA, TOKYO**

LESSON 1.3 · HOW OG IS MADE

How Ozonated Glycerin Is Made

Medical-grade ozone bubbled slowly through USP-grade vegetable glycerin — hours to days, controlled, until saturation.

01 INPUT

Medical-Grade O₃

Ozone gas generated from medical oxygen by a controlled corona-discharge generator (the same equipment seen in Lesson 1.4).

02 REACTION

USP Vegetable Glycerin

O₃ bubbled slowly through USP-grade glycerin for hours to days — depending on batch volume and saturation target.

03 OUTPUT

Ozonated Glycerin

A stable solution: ~1% active ozonized trioxepane compound, ~99% unreacted glycerin carrier. Shelf-stable. Shippable.

WHY THIS MATTERS

Because the ozone is chemically bound into the glycerin, the practitioner does NOT need an on-site generator to dispense OG — it ships, stores, and dispenses like a conventional liquid medicine.

LESSON 1.4 · THE FIVE COMPONENTS

The Ozone Gas Path · Five Components

Every ozone procedure — vet or human — flows through the same five-component chain. Master this, master every route.

1***O₂ Source***

Medical oxygen tank (870/540) OR oxygen concentrator ($\geq 90\%$ O₂, 5 LPM warm-up → 2 LPM clinical).

2***Ozone Generator***

Corona-discharge cell.
Converts O₂ → O₂ + O₃.
Output measured in gamma (μg/mL).

3***Gas Path***

Ozone-resistant silicone tubing, luer fittings, check valve.
Polypropylene syringes only — no rubber/latex.

4***Delivery Device***

Catheter, syringe, bag, cup, bubbler, or stethoscope — depending on the route.

5***Destruct System***

Mandatory exhaust scrub. Off-dial controls whether ozone flows to the device or to destruct.

FLOW DIRECTION O₂ Source ► Ozone Generator ► Tubing / Check Valve ►
Delivery Device ► Destruct (exhaust)

LESSON 1.4 · GENERATOR MODELS

Choosing a Medical Ozone Generator

AAOT Specifications are that the ozone generating cell must be glass. The models below are NOT APPROVED for clinic use by AAOT.

They are listed here as they are models that you will encounter in the home use market.

Longevity uses a glass cell and is approved by AAOT for clinic use.

O3Elite Mini

MAX OUTPUT

70 γ

Fixed concentrations

Entry / home / small-clinic adjunct. Fixed-output settings tied to flow rate.

O3Elite Single

MAX OUTPUT

70 γ

Adjustable concentrations

Single-patient clinical use. Adjustable dial — preferred for most outpatient routes.

O3Elite Dual

MAX OUTPUT

100 γ

Adjustable concentrations

Two-cell unit. Higher output for high-volume / blood / dental practices.

O3Arc

MAX OUTPUT

100 γ

Adjustable concentrations

Premium clinical workhorse. Highest stability, ideal for daily multi-route practice.

GAMMA RANGES VARY BY MODEL · *Always reference the gamma chart that came with your specific generator. Concentration is a function of dial setting AND flow rate — lower flow = higher gamma.*

LESSON 1.4 · EQUIPMENT KIT

Foundational Equipment Kit

Same gas-path backbone in both tracks. Different syringe sizes, catheter types, and consumables by species.

VET · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing · check valve · ozone trap
- Ozone destruct system · 3-way off-dial
- Oxygen tank (540/870) OR concentrator + low-flow regulator

DELIVERY DEVICES

- Polypropylene luer-lock syringes — 12 / 20 / 60 / 200 mL
- Catheters · limb bag · ozone cup · oil bubbler stethoscope
- 200 mL ozonide breathing bubbler · 250 mL oil bubbler

CONSUMABLES

- Distilled water · 0.9% NaCl · ozonated oil (olive/sunflower)
- Vet wrap · gauze · paper towels (uncolored) · exam gloves

HUMAN · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator, calibrated $\mu\text{g/mL}$
- Medical O₂ tank OR $\geq 90\%$ O₂ concentrator + low-flow regulator
- Silicone tubing · check valve · ozone trap
- Destruct on room exhaust path · 3-way off-dial

DELIVERY DEVICES

- Polypropylene luer-lock syringes — 3 / 6 / 10 / 20 / 60 / 100 mL
- Single-use catheters · self-sealing limb bag · cup · full-body bag
- 200mL ozonide bubbler + nasal cannula · 250mL oil bubbler

CONSUMABLES

- Distilled water (no LRS) · 0.9% NaCl for injection · olive oil
- CHG / alcohol skin prep · sterile drape · sterile gloves · gauze

MATERIALS DISCIPLINE · Ozone-contact path is polypropylene, glass, silicone, PTFE, HDPE only. NO METAL. NO LATEX. NO RUBBER.

LESSON 1.4 · STARTUP & SHUTDOWN

Oxygen First On · Oxygen Last Off

The single most important safety discipline in ozone therapy. Every session, every route, every time.

STARTUP · Power up in this order

- 1 Open the oxygen source (tank valve counter-clockwise, or concentrator power-on + 5–10 min warm-up at 5 LPM).
- 2 Position the 3-way off-dial / set the flow rate on the low-flow regulator (per your route).
- 3 Power ON the ozone generator.
- 4 Dial in the target concentration (γ).
- 5 Verify destruct dial is set correctly for your route, then begin therapy.

SHUTDOWN · Power down in this order

- 1 Power OFF the ozone generator (oxygen still flowing).
- 2 Purge the system — let O₂ flow ~30 seconds to clear residual ozone from tubing.
- 3 If using a bubbler, disconnect tubing at the Ozone Out port to prevent backflow.
- 4 Close the oxygen tank (or power down concentrator). Relieve regulator pressure (tank only).
- 5 Reset 3-way off-dial to the OFF-toward-regulator position for next use.

BACKFLOW RULE

Oil flooding destroys the ozone cell and is NOT covered by warranty. Always disconnect oil bubblers immediately after use. Check valves slow but don't stop oil — disconnection is the only reliable fail-safe.

LESSON 1.4 · DESTRUCT SYSTEM · ROOM SAFETY

Destruct Discipline

Ozone is a respiratory toxin in ambient air. The destruct system, the 3-way dial, and ventilation are the three layers of protection.

The 3-Way Off-Dial

- OFF toward insufflation port = ozone flows into the destruct (correct starting position).
- OFF toward destruct = ozone flows into the patient / accessory (treatment position).
- OFF toward bubbler = pressure builds, bubbler stem lifts, ozone vents into room. NEVER this position.

Check Valve · Not a Fail-Safe

- Check valves slow but do not stop backflow — they are a backup, not a primary defense.
- Always disconnect tubing after use — disconnection is the only reliable protection.
- Oil bypasses check valves entirely. Disconnect oil bubblers IMMEDIATELY at session end.

Room Ventilation

- Active destruct on every gas route — limb-bag, cup, joint, IPO, rectal, vaginal.
- Open window / exhaust fan when bag-removing. Squeeze residual O₃ into destruct before opening.
- Pulse oximeter on patient during longer sessions. Stop and ventilate if patient coughs.

DESTRUCT IS NOT OPTIONAL. ROOM-VENTING OZONE IS A PULMONARY HAZARD FOR EVERYONE IN THE CLINIC — PATIENT, PRACTITIONER, AND STAFF.

LESSON 1.5 · WHY A FRAMEWORK

The 12-Step Protocol Framework

Same template, every route. The discipline that frees clinical attention for the patient in front of you.

WHY IT WORKS

Same template, new content

Modules 2 – 10 execute the same 12 steps across topical, oral, gas, blood, dental, and injectable routes. Only the technique changes; the structure carries forward.

WHAT IT PROTECTS

Gap-naming + case-share

Step 11 flags clinical unknowns for advisor review. Step 12 routes unique cases — those that change, reinforce, or caution OG use — back through OGPro to improve practice for everyone.

WHAT GRADUATES TAKE

Internalized framework

By Module 10 a practitioner has both a complete protocol library AND an internalized 12-step framework for evaluating every subsequent route they encounter.

A protocol framework frees the practitioner from re-inventing structure for every case — and lets clinical attention focus on the individual patient in front of them.

LESSON 1.5 · THE 12 POINTS

Every Procedure · Same 12 Steps

Indications through case-share. The structure that frees clinical attention and closes the learning loop.

1	Indications Why this route, what it treats, evidence ranking.	2	Contraindications Absolute, relative, and dose-dependent cautions.	3	Equipment Clinic-staff-can-shop-this-list granularity.	4	Patient/Owner Ed. What ozone/OG is in one lay sentence + expectations.
5	Pre-Procedure History, screening, informed consent, site prep.	6	Preparation Concentration, vehicle, buffering, freshness.	7	Administration Step-by-step technique. Where judgment lives.	8	Post-Procedure Immediate observation + home monitoring.
9	Documentation Gamma · volume · response · batch.	10	Follow-Up Indication-specific recheck cadence.	11	Troubleshooting Common issues + items flagged for advisor review.	12	Reporting & Improving Unique case? Share via OGPro to refine practice.

STEP 12 QUESTION
yes — share it.

"Is there something unique about this case that changes, reinforces, or provides a cautionary principle in the use of ozone/OG?" If

LESSON 1.5 · FRAMEWORK MAP

Where the 12 Steps Show Up Next

Module 1 introduces the framework.

Modules 2 – 7 execute it — same template, different route, both species tracks.

MODULE 2

Gas Administration

Rectal · Limb · Ear ·
Bladder · Vaginal · Joint
· Intraperitoneal. Seven
gas routes, dual-track.

MODULE 3

Liquid Administration

Ozonated fluids · SQ
NaCl · IV NaCl · PRP +
Ozone · AUIT.

MODULE 4

Blood Administration

Minor AHT · Major AHT
(Geneva method) ·
UVBI.

MODULE 5

Oils & Nebulizing

Topical ozonated oils ·
liniments · nebulizing
through olive oil (O3O).

MODULES 6 – 7

Dentistry & OG Routes

Vet dentistry · OG eye
drops · IVOG · OGUB ·
OGI · PROG joint.

MASTER THE TEMPLATE ONCE. USE IT FOR EVERY ROUTE. EQUIPMENT IS ALWAYS STEP 3.
ADMINISTRATION IS ALWAYS STEP 7. CASE-SHARE IS ALWAYS STEP 12.

MODULE CLOSER

Three Substances · Five Components · One Framework

You can now name the substances on your shelf. Ozone is a short-lived gas, generated on-site, used in gas / water / saline / oil form within minutes. Ozonated glycerin is a stable trioxepane liquid, bottled and shelf-storable, with a 2–4 week duration of action. They share a word root and almost nothing else.

You can also identify the five components of every ozone gas path, power a Promolife generator up and down in the correct order and explain the 12-step protocol framework that will carry every clinical route in Modules 2 – 7.

NEXT UP — MODULE 2 · GAS ADMINISTRATION

Rectal Insufflation · Limb Bagging & Cupping · Ear Treatments

Three procedures. Two species tracks. One 12-point framework.

THE OGPRO COLLABORATIVE · EST. 2025

Medical Ozone in Practice

Clinical Content · Ozone Basic

MODULE 2 PART 1 · GAS ADMINISTRATION

Rectal Insufflation · Limb Bagging & Cupping · Ear Treatments

Three procedures. Two species tracks. One 12-point framework.

CLINICAL CONTENT · AAOT-ENDORSED

OGPro.org · Connecting · Collaborating · Advancing Ozone Therapy

MODULE 2 PART 1 · AT A GLANCE

Three Procedures · Two Tracks

Each lesson presents the AAOT vet protocol and the human protocol side-by-side, followed by a shared equipment slide.

LESSON 2.1

Rectal Insufflation

- Vet: 2–5 mL/lb · 25–50 µg/mL
- Human: 100–400 mL · 20–50 µg/mL
- Retention 3–5 min · 3–7×/week

LESSON 2.2

Limb Bag & Cupping

- Vet: 20–75 µg/mL stage-based
- Human: 30–40 / 70–80 µg/mL
- 10–15 min · destruct mandatory

LESSON 2.3

Ear Treatments

- Gas · Bubbler · Saline flush
- 45–60 µg/mL clinical (gas)
- 5–7 min · 1×/wk × 3–5 sessions

UNIVERSAL DISCIPLINE

Oxygen first on, oxygen last off · Start low, titrate slowly · Destruct active · Document every session

LESSON 2.1 · RECTAL INSUFFLATION

Rectal Insufflation · Same Route, Two Tracks

Direct gas infusion into the rectum via lubricated catheter. Systemic-effect workhorse for both species.

VET PROTOCOL · AAOT

Companion Animal

VOLUME	2–5 mL per pound (start low; advance to comfort)
CONCENTRATION	25–50 µg/mL · 45–65 for infection · 24–25
FREQUENCY	immune/cancer
RETENTION	1–7×/week · 10–20 treatments per course
CATHETER	Hold tail 30–45 sec post-removal
INDICATIONS	Insert 2–3" (cranial 3–4" for MBRT prep) GI inflammation · hepatitis · immune support · cancer adjunct · parasites · biofilm · circulation

FIELD NOTE *Patient may defecate immediately after — keep chux.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

VOLUME	100–150 mL starting · titrate to 200–400 mL
CONCENTRATION	20–50 µg/mL (start 20–30 · adv. gradually)
FLOW RATE	⅛ – ¼ LPM
RETENTION	3–5 minutes if tolerated
FREQUENCY	3–5×/week · daily with rest days · course 10–20
INDICATIONS	Chronic GI · hepatitis · immune deficiency · oncology adjunct · viral / autoimmune · preconditioning

FIELD NOTE *Best performed after a bowel movement · left-lateral (Sims) position · room ventilated, destruct active.*

LESSON 2.1 · EQUIPMENT & SUPPLIES

Rectal Insufflation · Equipment

The gas paths are identical; delivery devices and prep differ by patient size.

VET · EQUIPMENT

Companion Animal

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing
- Check valve (200 mL syringe) or direct connect (60 mL)
- Ozone destruct system

DELIVERY DEVICE

- Rectal insufflation catheter (luer end)
- 60–200 mL ozone-compatible syringe, OR
- Insufflation bag with clamp (reusable)
- Syringe caps

PATIENT PREP & CONSUMABLES

- Lubricant — olive oil or aloe vera gel
- Gauze · paper towels · exam gloves
- Cleaning: ozone water or H₂O₂ (for reuse)

HUMAN · EQUIPMENT

Adult Human

GENERATOR & GAS PATH

- Medical ozone generator (calibrated µg/mL output)
- Medical O₂ tank or ≥90% O₂ concentrator
- Ozone-resistant silicone tubing · check valve
- Ozone destruct on room exhaust path

DELIVERY DEVICE

- Single-patient-use rectal catheter (luer)
- 60–100 mL polypropylene luer-lock syringe, OR
- Clamped insufflation bag

PATIENT PREP & CONSUMABLES

- Water-soluble or natural lubricant (aloe / olive)
- Drape · chux · exam gloves
- Privacy curtain · Sims position support

LESSON 2.2 · LIMB BAGGING & CUPPING

Limb Bagging & Cupping · Two Tracks

Local high-gamma exposure — systemic loading is minimal, so infection-stage concentrations can run high.

VET PROTOCOL · AAOT

Companion Animal

INFLAMMATORY	45–75 µg/mL · 10–15 min · daily × 3–5
PROLIFERATIVE	45–60 µg/mL · 10–15 min · daily × 2–4
REMODELING	20–45 µg/mL · 10–15 min · daily × 2–4
INDICATIONS	Non-healing wounds · burns · ulcers · post-surgical · external tumors · parasites · osteomyelitis
DISCIPLINE	Vet wrap toenails to prevent bag puncture · destruct mandatory

FIELD NOTE *Squeeze residual ozone into the destruct before removing the bag. Ventilate before opening.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

WOUND HEALING	30–40 µg/mL · 10–15 min · 1–3×/day
ACTIVE INFECTION	70–80 µg/mL · 10–15 min · 1–3×/day · reduce as it clears
FLOW RATE	⅛ – ¼ LPM
INDICATIONS	Diabetic ulcers · venous stasis · pressure injury · cellulitis · fungal · post-herpetic · burns · stump care
SEALING	Velcro strap or loose elastic — seal gas in, not blood out

FIELD NOTE *Lightly moisten skin first · photograph baseline & each major decision point.*

LESSON 2.2 · EQUIPMENT & SUPPLIES

Limb Bagging & Cupping · Equipment

Enclosure devices differ slightly by anatomy; destruct system is mandatory in both tracks.

VET · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing
- Ozone destruct system (mandatory — vent before removal)

ENCLOSURE

- Disposable limb bag · luer fitting + Velcro strap, OR
- Ozone cup with inlet + outlet (cupping), OR
- Plastic bag + vet wrap + bandage tape (backup)

PATIENT PREP & CONSUMABLES

- Vet wrap 2–3" — toenails + bag seal
- Paper towels (uncolored) moistened with ozone water/saline
- Bandage tape (plastic bag backup)
- Ozonated NaCl or distilled water (for soaks)

HUMAN · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicone tubing
- Destruct unit on outflow line (mandatory)

ENCLOSURE

- Self-sealing limb bag (preferred), OR
- Rigid ozone cup with inlet + outlet ports, OR
- Plastic bag + vet wrap + bandage tape (backup)

PATIENT PREP & CONSUMABLES

- Velcro strap or loose elastic seal
- Distilled water or ozonated saline (no LRS)
- Uncolored paper towel or gauze · gloves
- Ozonated oil (jojoba / olive / sunflower) for post-session topical

LESSON 2.3 · EAR TREATMENTS — THREE METHODS

Ear Treatments · Gas · Bubbler · Flush

Three sub-routes in both tracks. Pick by indication, tolerance, and tympanic-membrane status (human).

VET PROTOCOL · AAOT

Companion Animal

- I · GAS

20 mL · 45–60 µg/mL · 1×/wk × 3–5 (severe: every other day)
- II · BUBBLER

45 µg/mL × 5–6 min acute · 50 µg/mL × 6–7 min chronic · 30 µg/mL × 5 min tumors
- III · FLUSH

Sat. 25–37 µg/mL · weekly × 3–5
- INDICATIONS

Otitis (bacterial / fungal / mixed) · aural parasites · polyps · neurologic · old-dog vestibular

FIELD NOTE *Towel wrapped around the head holds the stethoscope in position. Apply standard ear medication after the ozone application.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

- I · GAS (CLINICAL)

~20 mL · 45–60 µg/mL · weekly × 3–5 ·
Home / general: 20–30 µg/mL × 3–5 min
- II · BUBBLER

45 µg/mL × 5–6 min acute · 50 µg/mL × 6–7 min chronic · ⅛ LPM
- III · FLUSH

Sat. 25–37 µg/mL · bulb syringe · weekly × 3–5
- INDICATIONS

Otitis externa · chronic recurrent OE · post-tympanostomy (flush only) · idiopathic vertigo · tinnitus adjunct

FIELD NOTE *TM STATUS MANDATORY for direct gas — if uncertain, default to oil-bubbler vapor or low-gamma saline flush.*

LESSON 2.3 · EQUIPMENT & SUPPLIES

Ear Treatments · Equipment

Three delivery devices in both tracks: direct-gas syringe, oil-bubbler stethoscope, and saline-flush bulb.

VET · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Extra-long ozone-resistant silicon tubing
- Ozone oil bubbler (250 mL) for stethoscope route
- Olive oil (or other quality oil) for the bubbler

DELIVERY DEVICES — THREE ROUTES

- Direct gas: 12–20 mL syringe
- Oil-bubbler: ear ozone stethoscope
- Flush: bulb syringe + bowl for debris

PATIENT PREP & CONSUMABLES

- Ear cleaner (alcohol-free)
- Cotton or gauze moistened with ozonated NaCl
- Towel large enough to wrap the head
- Prescribed ear medication (applied after ozone)

HUMAN · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Extra-long ozone-resistant silicone tubing
- Ozone oil bubbler (250 mL) — stethoscope route
- Pharmaceutical / food-grade olive oil for the bubbler

DELIVERY DEVICES — THREE ROUTES

- Direct gas: 12–20 mL polypropylene syringe + canal applicator
- Oil-bubbler: human ear stethoscope assembly
- Flush: bulb syringe + kidney basin

PATIENT PREP & CONSUMABLES

- Otoscope — TM inspection before AND after
- 0.9% NaCl or distilled water (no LRS)
- Cotton / gauze moistened with ozonated saline
- Drape · prescribed post-procedure ear medication

Three Gas Routes · Two Species Tracks · One Framework

You now hold the AAOT vet protocol and the human protocol for Rectal · Limb · Ear, with paired equipment lists. The same 12-point template carries every route. Part 2 adds the aseptic gas routes — Bladder, Vaginal, Joint, and Intraperitoneal — in the same dual-track format.

LESSON 2.1

Rectal Insufflation

VET 2–5 mL/lb · 25–50 µg/mL

HUMAN 100–400 mL · 20–50 µg/mL

LESSON 2.2

Limb Bagging & Cupping

VET 20–75 µg/mL stage-based

HUMAN 30–40 / 70–80 µg/mL

LESSON 2.3

Ear Treatments

VET Three routes · 30–60 µg/mL

HUMAN Three routes · 20–60 µg/mL

THE OGPRO COLLABORATIVE · EST. 2025

Medical Ozone in Practice

Clinical Content · Ozone Basic

MODULE 2 PART 2 · ASEPTIC GAS ROUTES

Bladder · Vaginal · Joint Injections · Intraperitoneal

Four procedures. Two species tracks. Aseptic technique throughout.

CLINICAL CONTENT · AAOT-ENDORSED

OGPro.org · Connecting · Collaborating · Advancing Ozone Therapy

MODULE 2 PART 2 · AT A GLANCE

Four Procedures · Two Tracks

Each lesson presents the protocol side-by-side, followed by a shared equipment slide.

LESSON 2.4

Bladder

- Vet: 1–2 mL/lb · 15–35 µg/mL
- Human: 30–50 mL · 15–35 µg/mL
- Catheter or cysto · empty first

LESSON 2.5

Vaginal

- Vet: 2 mL/lb · 10–15 µg/mL
- Human: 5–10 min · 20–30 µg/mL
- 3–4 min slow infusion (vet)

LESSON 2.6

Joint (JOI)

- Vet: 10–20 mL · 15–35 µg/mL
- Human: 2–10 mL by joint size
- One-site rule · gas travels

LESSON 2.7

Intraperitoneal

- Vet: 0.5–1 mL/lb · 20–40 µg/mL
- Human: advanced practice only
- Sub-umbilical · aseptic

OZONE DISCIPLINE : Starting low and work up dose over time.

LESSON 2.4 · URINARY BLADDER INSUFFLATION

Bladder · Catheter or Cystocentesis

Intravesical ozone for chronic and antibiotic-resistant UTIs, interstitial cystitis, and bladder oncology adjunct. Empty the bladder before infusing.

VET PROTOCOL

VOLUME	10–45 mL · or 1–2 mL/lb (up to 50 mL)
CONCENTRATION	15–35 µg/mL
FREQUENCY	1–2×/day · 10–20 treatments · or weekly maintenance
ROUTE	Sterile catheter · or US-guided cystocentesis
VEHICLE	Catheter: ozonated distilled water OK · Cysto: ozonated NaCl only (peritoneal compatibility)
INDICATIONS	UTI · resistant UTI · incontinence · hemorrhagic / interstitial cystitis · TVT · oncology adjunct

FIELD NOTE *Walk patient to void first. Empty bladder fully before infusion. Intravesical cocktail = pre-draw a separate syringe.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

VOLUME	30–50 mL (start 10 mL · titrate as tolerated)
CONCENTRATION	15–35 µg/mL (Promolife: 30–40 µg/mL)
RETENTION	1–5 minutes; release if discomfort
FREQUENCY	1–3×/week · course 5–10 sessions
ROUTE	Sterile catheter · drain all residual urine first
INDICATIONS	Recurrent UTI · interstitial cystitis · post-cystoscopy support · bladder oncology adjunct (coordinate with urology)

FIELD NOTE *Inject slowly — initial discomfort is normal · reduce volume if excessive · retain ~1 min then release.*

LESSON 2.4 · EQUIPMENT & SUPPLIES

Bladder · Equipment

Identical gas paths; aseptic field is mandatory in both tracks. Cystocentesis is a vet-only routine route.

VET · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing
- Ozone fluid bubbler (for ozonated NaCl)
- Ozonated NaCl (cysto route) · ozonated distilled water (catheter OK)

DELIVERY

- Sterile urethral catheter sized to patient
- Syringes — Practitioner Discretion
- Cystocentesis: 22 g × 1½" needle + ultrasound

ASEPTIC FIELD

- Sterile lubricating gel · alcohol prep (cysto site)
- Surgical scrub & solution · sterile gloves · gauze
- Sedation drugs (female cats / small dogs may need)

HUMAN · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator (calibrated µg/mL)
- Ozone-resistant silicone tubing · check valve
- Ozone fluid bubbler for ozonated NaCl prep
- 0.9% NaCl (preferred for retained infusion)

DELIVERY

- Sterile single-use urethral catheter sized to patient
- Polypropylene luer-lock syringes (30 / 60 mL)
- Cystocentesis NOT a routine human route — refer to urology

ASEPTIC FIELD

- Sterile lubricating gel · CHG / alcohol skin prep
- Sterile drape · sterile gloves · gauze
- Privacy curtain · post-void confirmation (bladder scan optional)

LESSON 2.5 · VAGINAL INSUFFLATION

Vaginal · Slow Infusion, Reproductive Route

Direct insufflation for vaginal and uterine infections, biofilm, and reproductive indications. Slow infusion preserves mucosal comfort.

VET PROTOCOL

VOLUME	2 mL per pound body weight
CONCENTRATION	10–15 µg/mL standard · up to 55 µg/mL for AMR (may sting)
DURATION	3–4 minute slow infusion
FREQUENCY	1–2×/week · 10–20 treatments · daily if heavy pyometra drainage
ROUTE	Urinary catheter via urethra advanced into vagina (aseptic)
INDICATIONS	Vaginal infections · uterine biofilm lavage · pyometra · reproductive disease · complementary cancer

FIELD NOTE *Direct catheter along dorsal vulvar aspect to avoid the clitoral fossa. Pyometra in a high-value breeder is an attempt-before-surgery route — OVH remains definitive.*

HUMAN PROTOCOL

FLOW RATE	⅓ – ¼ LPM
CONCENTRATION	20–30 µg/mL (start lower if sensitive)
DURATION	5–10 minutes (up to 20 min experienced)
FREQUENCY	2–3×/week · course 6–10 sessions
ROUTE	Direct insufflation via vaginal probe / catheter ~4" depth · lying down
INDICATIONS	Bacterial / fungal vaginosis · BV recurrence · post-treatment biofilm · cervical dysplasia adjunct · pelvic-floor inflammation

FIELD NOTE *No insufflation bag required — direct insufflation method. Beginners may use a bag (rectal-style). Humidifier optional, placed between generator and catheter.*

LESSON 2.5 · EQUIPMENT & SUPPLIES

Vaginal · Equipment

Vet uses a urinary catheter through the urethra into the vagina; human uses a direct vaginal probe / catheter.

VET · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing
- Ozone fluid bubbler (for ozonated NaCl prep)
- Vaginal insufflation device (optional alternative)

DELIVERY

- Urinary catheter with luer-lock end
- Syringes — 12 mL to 60 mL (volume by patient)
- Ozonated NaCl (also acceptable as the infusion)

ASEPTIC FIELD

- Sterile lubricating jelly · gauze sponges
- Surgical scrub & solution · sterile gloves
- Sedation if needed

HUMAN · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicone tubing · check valve
- Humidifier (optional, between generator and catheter)
- Destruct on room exhaust path

DELIVERY

- Vaginal insufflation probe / catheter (~4" insertion)
- Polypropylene luer-lock syringe (for bag-method beginners)
- Insufflation bag (optional, beginners only)

ASEPTIC / PATIENT PREP

- Water-based lubricant · drape · privacy curtain
- Single-use gloves · gauze
- Patient lies supine — confirm comfort before flow

LESSON 2.6 · JOINT OZONE INJECTIONS (JOI)

Joint · Periarticular · One Site · Gas Travels

Periarticular gas placement is sufficient — intra-articular is not required. One insertion point; the gas spreads.

VET PROTOCOL

VOLUME	10–20 mL gas total · periarticular
CONCENTRATION	15–35 µg/mL (PRP / Prolozone: 10–25 µg/mL Prolozone, 60–75 µg/mL PRP)
FREQUENCY	1×/month × 3 months · weekly × 6–8 for Prolozone
NEEDLE	25–22 g × 1½"
JOINTS	Stifle · hock · hip · shoulder · elbow
INDICATIONS	OA · ACL injury · tenosynovitis · dysplasia · autoimmune joint disease · chronic pain

FIELD NOTE One insertion point. Hemostat-disconnect the syringe — leave the needle in the joint — then reconnect the ozone syringe.

HUMAN PROTOCOL

SMALL JOINTS	Finger / toe: 1–2 mL · 15–25 µg/mL
MEDIUM JOINTS	Ankle / wrist / elbow: 2–4 mL · 15–30 µg/mL
LARGE JOINTS	Knee / shoulder / hip: 4–10 mL · 15–35 µg/mL
FREQUENCY	Weekly × 4–6 sessions · then monthly maintenance
APPROACH	Lateral or medial parapatellar (knee) · landmark-guided or ultrasound · aspirate before inject
INDICATIONS	Osteoarthritis · meniscal injury · ACL / partial tears · post-surgical recovery · NOT for septic arthritis

FIELD NOTE PROG variant (3:3:3:1 OG + B12 + lidocaine + bicarbonate) is the human regenerative protocol — see Module 9. Septic arthritis is an absolute contraindication.

LESSON 2.6 · EQUIPMENT & SUPPLIES

Joint • Equipment

Sterile field for every injection. Hemostat enables the syringe swap without moving the needle.

VET • EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing
- Syringe caps

DELIVERY

- Syringes
- Needles — 25–22 g × 1½"
- Hemostats — needed for the syringe swap
- Prolozone cocktail components (if combined)

ASEPTIC FIELD

- Surgical scrub & solution · alcohol prep
- Gauze · vet wrap · sterile gloves
- Sedation for intra-articular work

HUMAN • EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicone tubing · check valve
- Polypropylene luer-lock syringe caps

DELIVERY

- Polypropylene luer-lock syringes (3 / 6 / 10 / 20 mL)
- Needles — 25–27 g × 1–1½" (small joints) · 22 g × 1½–2" (large)
- Hemostats for syringe swap
- PROG buffered stock if regenerative protocol

ASEPTIC FIELD

- CHG / alcohol skin prep · sterile drape
- Sterile gloves · gauze · adhesive bandage
- Optional: ultrasound for deep / difficult joints

LESSON 2.7 · INTRAPERITONEAL OZONE (IPO)

Intraperitoneal · Sub-Umbilical Aseptic

Direct gas infusion into the peritoneal cavity via a sub-umbilical paramedian aseptic puncture. Slow infusion, gentle distribution.

VET PROTOCOL

VOLUME	0.5–1 mL per pound body weight
CONCENTRATION	20–40 µg/mL
FREQUENCY	1–2×/week · 5–10 treatments per course
NEEDLE	22–25 g · length per patient depth
SITE	Sub-umbilical paramedian · clip & surgical scrub
INDICATIONS	Chronic abdominal infection · IBD adjunct · complementary cancer · biofilm reduction

FIELD NOTE *Aspirate before infusing — confirm no organ engagement. Gentle abdominal massage post-injection distributes gas. Oral OG outperforms IPO for canine prostatitis.*

HUMAN PROTOCOL · ADVANCED

VOLUME	50–100 mL adult (scaled by clinical judgment)
CONCENTRATION	20–40 µg/mL
FREQUENCY	Weekly × 4–6 · advanced-practice indication only
NEEDLE	22–25 g spinal needle · length per habitus
SITE	Sub-umbilical paramedian · ultrasound guidance recommended
INDICATIONS	Refractory chronic abdominal infection · oncology adjunct (coordinate with oncology) · adhesion-pain adjunct — NOT routine

FIELD NOTE *NOT a routine outpatient route. Reserve for trained practitioners with abdominal-procedure competency. Absolute contraindications: pregnancy · active peritonitis · recent abdominal surgery · organomegaly obscuring landmarks.*

LESSON 2.7 · EQUIPMENT & SUPPLIES

Intraperitoneal · Equipment

Surgical-grade aseptic field in both tracks. Human IPO additionally calls for ultrasound guidance.

VET · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator
- Ozone-resistant silicon tubing
- Syringe caps

DELIVERY

- Syringes sized to dose (12–60 mL)
- Needle — 22–25 g (length per patient depth)
- Hemostats (syringe swap, as needed)

ASEPTIC FIELD

- Clippers — clip sub-umbilical paramedian site
- Surgical scrub & solution
- Sterile gloves · gauze
- Sedation when patient tolerance requires

HUMAN · EQUIPMENT

GENERATOR & GAS PATH

- Medical ozone generator (calibrated)
- Ozone-resistant silicone tubing · check valve
- Polypropylene luer-lock syringe caps

DELIVERY

- 50–100 mL polypropylene luer-lock syringe
- 22–25 g spinal needle (length per habitus)
- Hemostats (syringe swap)
- Ultrasound for site selection (strongly recommended)

ASEPTIC FIELD

- CHG / Betadine surgical scrub · sterile drape
- Sterile gloves · gauze · adhesive bandage
- Local anesthetic at skin entry · emergency cart accessible

Seven Gas Routes Complete · Two Tracks · One Framework

Module 2 complete. Part 1 delivered Rectal · Limb · Ear. Part 2 added Bladder · Vaginal · Joint · Intraperitoneal with the same dual-track format. Every procedure runs the same 12-point template — equipment, dosing, technique, follow-up — only the clinical content varies by route and species.

LESSON 2.4

Bladder

VET 1–2 mL/lb · 15–35 µg/mL

HUMAN 30–50 mL · 15–35 µg/mL

LESSON 2.5

Vaginal

VET 2 mL/lb · 10–15 µg/mL

HUMAN 5–10 min · 20–30 µg/mL

LESSON 2.6

Joint (JOI)

VET 10–20 mL · 15–35 µg/mL

HUMAN 2–10 mL by joint size

LESSON 2.7

Intraperitoneal

VET 0.5–1 mL/lb · 20–40 µg/mL

HUMAN Advanced practice only

THE OGPRO COLLABORATIVE · EST. 2025

Medical Ozone in Practice

Clinical Content · Ozone Basic

MODULE 3 · LIQUID ADMINISTRATION

Ozonated Fluids · SQ NaCl · IV NaCl · PRP · AUIT

Five liquid routes · Two species tracks · One framework.

Each lesson presents the AAOT vet protocol and the human protocol side-by-side, followed by a shared equipment slide.

CLINICAL CONTENT · AAOT-ENDORSED

MODULE 3 · AT A GLANCE

Five Procedures · Two Tracks

Each lesson presents the AAOT vet protocol and the human protocol side-by-side, followed by a shared equipment slide. Liquid handling is the same in both — ozone half-life is short; prepare fresh.

LESSON 3.1

Ozonated Fluids for Lavage

VET 40–100 µg/mL · sat 25–37

HUMAN 25–37 µg/mL sat · lavage / drink / flush

5 min ozonate per 250 mL · use fresh

LESSON 3.2

Subcutaneous Ozonated NaCl

VET 3 mL/lb · 45–100 µg/mL · 1–6×/wk

HUMAN 50–250 mL · 25–37 µg/mL · 1–3×/wk

Vet workhorse · human adjunct route

LESSON 3.3

Intravenous Ozonated NaCl

VET Per fluid deficit · 80–100 µg/mL into bubbler

HUMAN 250–500 mL · sat 25–37 µg/mL · 1–3×/wk

Keep patient warm · saline runs cold

LESSON 3.4

PRP + Medical Ozone

VET 1:1 PRP-to-O₃ · 60–75 µg/mL · 2×/mo

HUMAN 1:1 · 20–40 µg/mL · 1×/mo × 3–6

Joint regeneration · PROG variant in Module 9

LESSON 3.5

Autologous Urine (AUIT)

VET 2 mL saline + urine + MAHT · 30 µg/mL · IM

HUMAN 2–5 mL saline + 0.5 mL each · 20–30 µg/mL · IM

Immunomodulation · advanced practice

LIQUID DISCIPLINE Half-life 30 min (plastic) / 45 min (glass) · NaCl for injection · distilled OK external · use fresh · keep patient warm

LESSON 3.1 · OZONATED FLUIDS FOR LAVAGE

Ozonated Fluids · Lavage · Drink · Flush

External lavage, internal cavity flush, oral consumption. NaCl for internal/injectable, distilled OK external. Saturation caps at 25–37 µg/mL regardless of generator setting.

VET PROTOCOL · AAOT

Companion Animal

CONCENTRATION	Bubbler 40–100 µg/mL · saturation 25–37 µg/mL
VEHICLE	NaCl 0.9% for internal lavage / injection · distilled water for external only
PREP TIME	5 min per 250 mL · 30 min initial saturation for IV glass bottle
VOLUME	By indication — wound flush, eye/ear rinse, oral, surgical lavage
SHELF-LIFE	Use fresh; refrigerated colored-glass jar ≤ 3 days · ice cubes weeks
INDICATIONS	Hot spots · decubitus ulcers · mycotic infection · uterine lavage · pain · surgical prep

FIELD NOTE Wave hand over the jar opening before inhaling — ozone gas accumulates at the surface and a direct breath causes coughing.

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

CONCENTRATION	Max dial 50–75 gamma · saturation 25–37 µg/mL
FLOW RATE	⅓ LPM (¼–½ LPM lowers concentration)
PREP TIME	20–30 min per liter (Promolife) · 5 min per 250 mL clinical
DRINKING	Distilled or filtered water · use immediately · 8–16 oz daily build-up
LAVAGE / FLUSH	Sinus rinse · wound irrigation · oral rinse · post-surgical · bulb-syringe ears
INDICATIONS	Chronic wounds · sinus · oral health · GI prep · post-operative cavity irrigation

FIELD NOTE Drinking ozonated water has a strong taste; the response normalizes after several weeks of regular use. Always deconstruct active during prep.

LESSON 3.1 · EQUIPMENT & SUPPLIES

Ozonated Fluids · Equipment

Identical bubbler hardware in both tracks — vehicle choice and delivery device differ by application.

VET · EQUIPMENT

Companion Animal

GENERATOR & PATH	Medical ozone generator · ozone-resistant silicon tubing · hydrophobic valve
BUBBLER	Ozone fluid bubbler — 1,000 mL or 1,500 mL · colored-glass storage jar with ozone-resistant cap
VEHICLE	NaCl 0.9% (internal cavities / injections) · distilled water (external only) · avoid LRS
DELIVERY	60 mL syringe (or larger) · IV macro drip infusion set off the smaller bubbler port for small areas
CONSUMABLES	Gauze · ozonated cotton · paper towels (white only) · exam gloves

FIELD NOTE Freezing ozone water into ice cubes extends usable life several weeks for topical use.

HUMAN · EQUIPMENT

Adult Human

GENERATOR & PATH	Medical ozone generator (calibrated µg/mL) · medical O ₂ tank or ≥90% concentrator · check valve · destruct on exhaust
BUBBLER	Promolife all-glass water bubbler / humidifier · diffuser stem covered · destruct attached to side port
VEHICLE	Distilled water (drinking, sinus, wound flush) · 0.9% NaCl (injectable cavities) · avoid spring/mineral water
DELIVERY	Polypropylene luer-lock syringes · sterile bulb syringe · neti pot · oral cup · bandage cling
CONSUMABLES	Single-patient-use drape · gauze · sterile gloves · ozonated saline cotton

FIELD NOTE Disconnect the bubbler from the generator after every session to prevent backflow of water into the unit.

LESSON 3.2 · SUBCUTANEOUS OZONATED NaCl (SQ NaCl)

SQ Ozonated NaCl · Slow Absorption Route

Vet workhorse for dehydration and immune loading; human adjunct route for hydration and local cancer support. Keep the patient warm — ozonated saline runs cold.

VET PROTOCOL · AAOT

Companion Animal

VOLUME	3 mL per pound body weight (titrate up over visits)
CONCENTRATION	45–100 µg/mL into bubbler · saturation 25–37 µg/mL delivered
FREQUENCY	1–6×/week · course 5–10 treatments · maintenance weekly
SITE	Scapular SQ pocket · fan-spread infusion
HOME USE	Glass IV bottle · every 8 h × 24–72 h · refrigerated between
INDICATIONS	Dehydration · cancer adjunct · chronic hepatitis · renal disease · circulatory · immune support · peri-tumor pre-acupuncture

FIELD NOTE *Cardiac patient: reduce SQ volume (sodium load) and increase rectal insufflation for full therapeutic effect.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

VOLUME	50–250 mL (start 50 · advance to tolerance) — adjunct route, not primary fluids
CONCENTRATION	25–37 µg/mL delivered · 40–60 µg/mL into bubbler
FREQUENCY	1–3×/week · course 5–10 sessions
SITE	Abdominal or thigh SQ tissue · butterfly or 18–20 g needle
SCOPE	Local-effect and oncology-nutrition adjunct · NOT a primary IV alternative
INDICATIONS	Cancer-nutrition adjunct · peri-tumor pre-acupuncture · local inflammation · home-care hydration support

FIELD NOTE *Patient warming is part of the procedure — saline is cold. Warm the line in a water bowl or use a heating blanket; monitor core temp.*

LESSON 3.2 · EQUIPMENT & SUPPLIES

Subcutaneous Ozonated NaCl · Equipment

Same bubbler setup as IV NaCl — route differs, not the prep. Heating support is part of the equipment list, not an optional add-on.

VET · EQUIPMENT

Companion Animal

GENERATOR & PATH	Medical ozone generator · ozone-resistant silicon tubing · hydrophobic valve
BUBBLER	Ozone fluid bubbler — 1,000 mL or 1,500 mL · NaCl 0.9% (LRS not recommended)
DELIVERY	60 mL syringe (or larger) · IV macro drip infusion set · IV extension set if desired · 18–20 g × 1" needle
ASEPTIC FIELD	Surgical scrub · alcohol · sterile gloves · gauze · 1" white medical tape
WARMING	Heating blanket or warmed water bowl · thermometer for core temp

FIELD NOTE Same bubbler set-up as IV NaCl. The route differs, not the prep.

HUMAN · EQUIPMENT

Adult Human

GENERATOR & PATH	Medical ozone generator (calibrated µg/mL) · ozone-resistant silicone tubing · check valve · destruct on exhaust
BUBBLER	Promolife all-glass fluid bubbler · NaCl 0.9% in glass IV bottle preferred
DELIVERY	Polypropylene luer-lock syringes (30 / 60 mL) · butterfly catheter (21–23 g) · IV extension set · short SQ infusion set
ASEPTIC FIELD	CHG / alcohol skin prep · sterile drape · sterile gloves · gauze · adhesive dressing
WARMING	Heating pad or fluid line through warmed bath · patient blanket · thermometer

FIELD NOTE Abdominal or anterior thigh SQ tissue tolerates volume best in adults. Distribute over two sites if > 100 mL.

LESSON 3.3 · INTRAVENOUS OZONATED NaCl (IV NaCl)

IV Ozonated NaCl · Direct Vascular Delivery

Systemic route for sepsis, shock, and severe infectious disease. Volume calculated to fluid deficit. Gravity feed while ozonating; keep the patient warm.

VET PROTOCOL · AAOT

Companion Animal

VOLUME	Per fluid deficit · calculated to individual patient needs
CONCENTRATION	80–100 µg/mL into bubbler · 5 min per 250 mL ozonation
FREQUENCY	1×/week to 1×/month depending on severity
CATHETER	18–24 g (sized to patient) · macro drip set off the bubbler
DELIVERY	Gravity feed; continue gentle ozonation through the infusion
INDICATIONS	Dehydration · sepsis · severe bacterial / viral / protozoal / fungal · renal or hepatic disease · shock · cancer & autoimmune adjunct

FIELD NOTE Avoid Lactated Ringer's — LRS precipitates on the walls of the glass bottle and compromises solution integrity.

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

VOLUME	250–500 mL per session (start 250 · advance as tolerated)
CONCENTRATION	Saturation 25–37 µg/mL · bubbler set 50–75 gamma
FREQUENCY	1–3×/week · course 5–10 sessions · maintenance monthly
CATHETER	20–22 g peripheral IV · macro drip · gravity feed
DURATION	~30–45 min per 250 mL while ozonating continuously
INDICATIONS	Chronic infection (Lyme, viral persistence) · oncology adjunct · post-operative recovery · cardiovascular conditioning · chronic fatigue

FIELD NOTE Always use 0.9% NaCl in glass — never LRS, dextrose, or plastic bags. Pre-screen for G6PD deficiency. Stop and call if any chest tightness.

LESSON 3.3 · EQUIPMENT & SUPPLIES

Intravenous Ozonated NaCl · Equipment

Patient warming is part of the equipment list — ozonated saline is cold and patients chill during infusion. Glass IV bottle is required; plastic is not compatible.

VET · EQUIPMENT

Companion Animal

GENERATOR & PATH	Medical ozone generator · ozone-resistant silicon tubing · hydrophobic valve
BUBBLER	Ozone fluid bubbler — 1,500 mL · IV NaCl 0.9% only (no LRS, no dextrose)
IV SET-UP	IV catheter 18–24 g · IV macro drip infusion set · IV extension set if needed · 1" white medical tape · vet wrap 2–3"
FIELD & PREP	Surgical scrub & solution · alcohol · sterile gloves · gauze · clippers
WARMING	Heating blanket + thermometer · warmed water bowl to place IV line

FIELD NOTE *Patient warming is part of the equipment — ozonated saline is cold and patients chill during infusion.*

HUMAN · EQUIPMENT

Adult Human

GENERATOR & PATH	Medical ozone generator (calibrated µg/mL) · medical O ₂ tank or ≥90% concentrator · check valve · destruct on room exhaust
BUBBLER	Promolife glass fluid bubbler — 1,500 mL · NaCl 0.9% in glass IV bottle (no plastic, no LRS)
IV SET-UP	IV catheter 20–22 g · IV macro drip set · luer-lock extension · clear adhesive site dressing
FIELD & PREP	CHG / alcohol prep · sterile drape · gloves · gauze · tourniquet · ultrasound for difficult sticks
WARMING	Patient blanket · warmed IV line bath · room temperature ≥ 72 °F · pulse-ox & BP monitor

FIELD NOTE *Per Promolife — disconnect the bubbler from the generator after the run to prevent backflow. Destruct stays on through prep and infusion.*

LESSON 3.4 · PRP + MEDICAL OZONE

PRP + Ozone · Regenerative Joint Injection

Platelet-rich plasma combined with ozone for joint, tendon, and degenerative pain. One-to-one PRP-to-ozone ratio in both species; concentration is lower in humans.

VET PROTOCOL · AAOT

Companion Animal

RATIO	1:1 PRP-to-ozone gas (matched syringe volumes)
CONCENTRATION	60–75 µg/mL ozone gas
VOLUME	3–6 mL total per joint by joint size
FREQUENCY	2×/month · course 1–4 treatments
NEEDLE / ROUTE	22 g × 1" · SQ above joint or intra-articular (sedation for IA)
INDICATIONS	Joint pain · arthritis · degenerative disc · trigger points · neck / shoulder / elbow / carpus / spine / SI / stifle / hock

FIELD NOTE Process PRP per the kit's manufacturer protocol first; mix ozone in last via F-to-F connector. Restrict activity 24–48 h after injection.

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

RATIO	1:1 PRP-to-ozone gas (matched syringe volumes)
CONCENTRATION	20–40 µg/mL ozone (gentler than vet · matches PROG)
VOLUME	Small joint 1–3 mL · medium 3–5 mL · large 5–10 mL
FREQUENCY	1×/month · course 3–6 sessions · then maintenance
NEEDLE / ROUTE	25–27 g × 1–1½" small joints · 22 g × 1½–2" large · ultrasound for deep
INDICATIONS	Osteoarthritis · meniscal injury · ACL / partial tear · tendinopathy · post-surgical recovery · NOT septic arthritis

FIELD NOTE The PROG variant (3:3:3:1 OG + B12 + lidocaine + bicarbonate) is the human regenerative protocol detailed in Module 9.

LESSON 3.4 · EQUIPMENT & SUPPLIES

PRP + Medical Ozone · Equipment

Sterile field is mandatory. Hemostat enables the syringe swap without moving the needle. Ozone is mixed in last — never before centrifugation.

VET · EQUIPMENT

Companion Animal

GENERATOR & PATH	Medical ozone generator · ozone-resistant silicon tubing · syringe caps
PRP PREP	PRP processing kit (per manufacturer) · centrifuge to kit spec
DELIVERY	3–6 mL luer-lock syringes (≥2) · female-to-female connector · 22 g × 1" needles · hemostats for syringe swap
ASEPTIC FIELD	Clippers · surgical scrub & solution · alcohol · sterile gloves · gauze
SEDATION	Sedation drugs for intra-articular delivery

FIELD NOTE Process PRP per kit instructions first; mix ozone in last via F-to-F connector. Sedation is routine for intra-articular work.

HUMAN · EQUIPMENT

Adult Human

GENERATOR & PATH	Medical ozone generator (calibrated µg/mL) · ozone-resistant silicone tubing · luer-lock caps
PRP PREP	Single-spin or double-spin PRP kit (FDA-cleared) · centrifuge · pre-injection labeling protocol
DELIVERY	Polypropylene luer-lock syringes (3 / 6 / 10 mL) · F-to-F connector · 25–27 g (small) / 22 g (large) needles · hemostats · ultrasound for deep joints
ASEPTIC FIELD	CHG / alcohol skin prep · sterile drape · gloves · gauze · adhesive bandage
PROG VARIANT	Pre-buffered B12 + lidocaine + bicarbonate stock (Module 9 protocol)

FIELD NOTE Local anesthetic at the skin entry only — never inject lidocaine into the joint capsule with PRP. Restrict heavy use 48–72 h.

LESSON 3.5 · AUTOLOGOUS URINE IMMUNOTHERAPY (AUIT)

AUIT · Patient's Own Immune Signature

Ozonated saline plus the patient's own urine and blood, succussed and reintroduced IM. Acts as a homeopathic isode — uses immunoglobulins from the patient as the modulating agent.

VET PROTOCOL · AAOT

Companion Animal

CARRIER	2 mL ozonated NaCl (1 mL cats) into 3 mL syringe
ADDITIONS	2–3 drops fresh first-morning urine · 2–3 drops whole blood, MAHT, or UVBI blood
OZONE	30 µg/mL gas via 3-way stopcock
MIXING	Succuss (shake) 25–30 times to fully activate
ROUTE	IM injection · 22 g needle · single site
INDICATIONS	Immunocompromised · autoimmune · allergies / atopy · debilitating chronic · skin disease · complementary cancer · environmental toxin burden

FIELD NOTE *Ozone sterilizes the urine sample if the container isn't fully sterile. First-morning urine is preferred for immunoglobulin concentration.*

HUMAN PROTOCOL · AAOT

Adult Human

CARRIER	2–5 mL ozonated NaCl in 5 mL syringe
ADDITIONS	0.5–1 mL fresh first-morning urine · 0.5–1 mL autologous blood (MAHT preferred)
OZONE	20–30 µg/mL gas via 3-way stopcock
MIXING	Succuss 25–30 times · single homeopathic-style activation
ROUTE	IM gluteal or deltoid · 22 g × 1½" · 1–2×/week · course 5–10
INDICATIONS	Treatment-resistant autoimmune · chronic allergies · advanced oncology adjunct · post-viral chronic fatigue · NOT first-line

FIELD NOTE *Advanced practice route. Informed consent required — patient must understand the autologous-immunotherapy mechanism and the off-label nature.*

LESSON 3.5 · EQUIPMENT & SUPPLIES

AUIT · Equipment

Minimal hardware: a 3-way stopcock, sterile collection, and a 3–5 mL syringe. Discipline is in the sequence — saline, urine, blood, ozone, then succuss.

VET · EQUIPMENT

Companion Animal

GENERATOR & PATH	Medical ozone generator · ozone-resistant silicon tubing · NaCl 0.9% in fluid bubbler
MIXING	3 mL syringe + 22 g needle · 3-way stopcock for ozone gas injection
COLLECTION	Sterile container for fresh urine · MAHT or UVBI blood (separately prepared)
ASEPTIC FIELD	Alcohol prep · surgical scrub · sterile gloves · gauze · clippers (IM site)
CONSUMABLES	1" white medical tape · cotton pledget · sharps container

FIELD NOTE First-morning urine preferred. Succuss the loaded syringe 25–30× before IM injection.

HUMAN · EQUIPMENT

Adult Human

GENERATOR & PATH	Medical ozone generator (calibrated µg/mL) · ozone-resistant silicone tubing · NaCl 0.9% in Promolife glass bubbler
MIXING	5 mL polypropylene luer-lock syringe · 3-way stopcock · F-to-F connector · 22 g × 1½" IM needle
COLLECTION	Sterile urine cup · butterfly catheter for blood draw · MAHT prep chain (Module 4)
ASEPTIC FIELD	CHG / alcohol prep · sterile drape · gloves · gauze · adhesive bandage
DOCUMENTATION	Informed consent form · log of carrier µg/mL · session-by-session response notes

FIELD NOTE Process and inject within 30 minutes — ozonated saline loses half its potency every 30 min in plastic, every 45 min in glass.

Five Liquid Routes · Two Tracks · One Framework

Module 3 complete. From external lavage and oral consumption to subcutaneous, intravenous, regenerative PRP, and immunomodulatory AUIT — the same 12-point template runs every route. Vehicle, vessel, and warming discipline are constant across both species; volume, concentration, and frequency scale to patient. NaCl for injection. Distilled water external only. Glass bubbler, not plastic. Use it fresh.

LESSON 3.1

Ozonated Fluids

VET 40–100 µg/mL · sat 25–37

HUMAN sat 25–37 · drink / lavage / flush

LESSON 3.2

SQ NaCl

VET 3 mL/lb · 45–100 µg/mL

HUMAN 50–250 mL · 25–37 µg/mL

LESSON 3.3

IV NaCl

VET Per deficit · 80–100 µg/mL

HUMAN 250–500 mL · 25–37 µg/mL

LESSON 3.4

PRP + Ozone

VET 1:1 · 60–75 µg/mL · 2×/mo

HUMAN 1:1 · 20–40 µg/mL · 1×/mo

LESSON 3.5

AUIT

VET 2 mL · 30 µg/mL · IM

HUMAN 2–5 mL · 20–30 µg/mL · IM

THE OGPRO COLLABORATIVE · EST. 2025

Medical Ozone in Practice

Clinical Content · Ozone Basic

MODULE 4 · BLOOD ADMINISTRATION

Minor AHT · Major AHT · Ultraviolet Blood Irradiation

Three immunotherapy routes. Two species tracks. One 12-point framework.

CLINICAL CONTENT · AAOT-ENDORSED

Three Procedures · Two Tracks

Each lesson presents the AAOT vet protocol and the human protocol side-by-side, followed by a shared equipment slide.

LESSON 4.1

Minor Autohemotherapy (mAHT)

VET

1–10 mL · 2:1 · 35–50 µg/mL · SQ/IM

HUMAN

5–10 mL · 2:1 · 35–50 µg/mL · IM / trigger

CADENCE

1–3×/week · 5–10 sessions

LESSON 4.2

Major Autohemotherapy (MAHT)

VET

2–5 mL/10 lb · 45–50 µg/mL · IV reinfuse

HUMAN

100–200 mL · 30–40 µg/mL · IV reinfuse

VARIANT

Geneva Method · clotting / platelet disorders

LESSON 4.3

Ultraviolet Blood Irradiation (UVBI)

VET

2–5 mL/10 lb · 45–50 µg/mL · cuvette + UV

HUMAN

100–200 mL · 30–50 µg/mL · cuvette + UV

DISCIPLINE

Photosensitizer washout 7–10 days pre/post

BLOOD DISCIPLINE

Heparin film coating only · female-to-female mixing · sterile blood filter on reinfusion · slow steady IV rate · medication review before UVBI

LESSON 4.1 · MINOR AUTOHEMOTHERAPY (MAHT)

Minor AHT · Same Method, Two Tracks

Small blood draw, ozonate at 2:1, reinject SQ or IM. Trigger-point and acupuncture-compatible immunotherapy.

VET PROTOCOL · AAOT

Companion Animal

VOLUME	1–10 mL blood (size to indication)
RATIO	2:1 ozone-to-blood
CONCENTRATION	35–50 µg/mL ozone gas
ROUTE	SQ or IM into trigger / acupuncture points
FREQUENCY	1–3×/week · 5–10 treatments per course
INDICATIONS	Chronic pain · allergies · inflammation · infections · skin disease · cancer adjunct · aquapuncture

FIELD NOTE *Smaller volumes for cats and small dogs. UVBI-treated blood can substitute for ozonated blood.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

VOLUME	5–10 mL blood (start 3–5 mL · titrate)
RATIO	2:1 ozone-to-blood
CONCENTRATION	35–50 µg/mL ozone gas
ROUTE	IM (deltoid / gluteal) · trigger or acupuncture
FREQUENCY	1–2×/week · course 8–10 sessions
INDICATIONS	Allergic / atopic disease · chronic infection · low-vigor immune support · trigger-point pain

FIELD NOTE *Heparin = hub-coat only. Succuss 30 sec post-mix. Sterile single-patient draw set.*

LESSON 4.1 · EQUIPMENT & SUPPLIES

Minor AHT · Equipment

Vet and human paths share the same mixing principle; consumables differ by patient size and regulatory class.

VET · EQUIPMENT

Companion Animal

GENERATOR & MIXING

- Medical ozone generator
- Ozone-resistant silicon tubing
- 3 · 6 · 12 · 35 mL syringes (×2) — size to dose
- Female-to-female connector

BLOOD DRAW & INJECTION

- Hypodermic needle — 22 g × 1" (draw)
- Heparin 10,000–30,000 USP units/mL (coat only)
- Needle 22–25 g for SQ / IM injection

ASEPTIC FIELD

- Alcohol prep · surgical scrub & solution
- Sterile gloves · gauze
- Clippers — shave draw site

FIELD NOTE *Heparin = hub-coat only (the residual film is enough). Succuss 30 sec post-mix.*

HUMAN · EQUIPMENT

Adult Human

GENERATOR & MIXING

- Medical ozone generator (calibrated µg/mL output)
- Ozone-resistant silicone tubing · check valve
- 10 · 20 · 30 mL polypropylene luer-lock syringes (×2)
- Female-to-female connector

BLOOD DRAW & INJECTION

- Sterile single-patient draw set · 21 g butterfly
- Heparin 1,000 USP units/mL (hub-coat only)
- Needle 23–25 g × 1" for IM injection

ASEPTIC FIELD

- CHG or alcohol skin prep
- Sterile gloves · gauze · bandage
- Single-use sharps container

FIELD NOTE *Confirm BBP / sharps protocol per local jurisdiction. Document lot numbers for heparin.*



LESSON 4.2 · MAJOR AUTOHEMOTHERAPY (MAHT)

Major AHT · IV Reinfusion, Two Tracks

Heparinized draw, mix with ozonated saline and ozone gas, reinfuse IV. Geneva variant for clotting / platelet disorders.

VET PROTOCOL · AAOT

Companion Animal

VOLUME	2–5 mL blood per 10 lb body weight
RATIO	2:1 ozone-to-blood · saline ≈ blood volume
CONCENTRATION	45–50 µg/mL ozone gas
FREQUENCY	1×/week · 5–10 treatments per course
ADJUNCTS	BIOCEAN® or calcium stock solution (optional)
ROUTE	Jugular draw · IV butterfly or IV catheter reinfusion
INDICATIONS	Immune deficiency · infectious disease · cancer adjunct · liver / GI · circulation

FIELD NOTE *Heparin 0.1–0.2 mL coating only — less is more. Sterile blood filter mandatory on reinfusion.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

VOLUME	100–200 mL whole blood (start 60–100 mL)
RATIO	1:1 ozone-to-blood (Promolife standard)
CONCENTRATION	30–40 µg/mL ozone gas (start 25–30)
FREQUENCY	1–2×/week · course 8–10 sessions
VACUUM SYSTEM	Sealed vacuum bottle · sodium-citrate anticoagulant
ROUTE	Antecubital draw · gravity reinfusion · sterile blood filter
INDICATIONS	Chronic viral / Lyme · autoimmune · oncology adjunct · CFS / fibromyalgia

FIELD NOTE *Promolife 10-Pass also referenced — same draw, multiple ozonation cycles via vacuum system. Always filter on return.*

LESSON 4.2 · EQUIPMENT & SUPPLIES

Major AHT · Equipment

Gas path is identical; human MAHT typically uses a closed vacuum-bottle system, vet MAHT uses syringe-and-butterfly.

VET · EQUIPMENT

Companion Animal

GENERATOR & BUBBLER

- Medical ozone generator
- Ozone fluid bubbler (for ozonated saline)
- Ozone-resistant silicon tubing
- NaCl 0.9% · BIOCEAN® or calcium stock (optional)

BLOOD PATH

- 6 / 12 / 20 / 35 / 60 / 100 mL syringes (×2)
- Heparin 1,000–10,000 USP units/mL (coat only)
- Female-to-female connector · sterile blood filter
- IV butterfly 25 g × ¾" OR IV catheter 20 g × 2"

ASEPTIC FIELD

- Clippers — shave jugular draw site
- Surgical scrub & solution · alcohol
- Tape — 1" white medical · sterile gloves · gauze

FIELD NOTE *Geneva variant: no heparin or citrate · draw directly into ozonated saline + BIOCEAN® via butterfly while rocking.*

HUMAN · EQUIPMENT

Adult Human

GENERATOR & VACUUM

- Medical ozone generator (calibrated µg/mL · ≥40 µg/mL)
- Promolife or equivalent MAHT vacuum bottle
- Ozone-resistant tubing · in-line ozone filter
- Sodium-citrate anticoagulant (or sterile saline)

BLOOD PATH

- 16–18 g IV cannula · butterfly back-up
- 250 mL sealed vacuum / ozone-rated glass bottle
- Sterile blood filter for reinfusion line
- IV pole · gravity drip set

ASEPTIC FIELD

- CHG skin prep · sterile drape
- Sterile gloves · tourniquet · pressure dressing
- BBP-rated sharps container

FIELD NOTE *Always confirm vacuum integrity before draw. Hold ozonated blood ≤ 15 min before reinfusion.*

LESSON 4.3 · ULTRAVIOLET BLOOD IRRADIATION (UVBI)

UVBI · Through the Cuvette, Two Tracks

Ozonated blood passed through a quartz cuvette under UV-A + UV-C + visible spectrum, then reinfused. Photobiomodulation layered on MAHT.

VET PROTOCOL · AAOT

Companion Animal

VOLUME	2–5 mL blood per 10 lb body weight
RATIO	2:1 ozone-to-blood · saline = blood volume
CONCENTRATION	45–50 µg/mL ozone gas
UV SPECTRUM	UV-A + UV-C + visible (Hemealumen RGB optional)
FREQUENCY	1×/week · 5–10 treatments per course
ROUTE	Jugular draw → cuvette → butterfly / IV catheter
INDICATIONS	Lyme / RMSF / Bartonella · FIP / FELV · resistant infection · autoimmune · oncology

FIELD NOTE *Eliminate cuvette dead-space with extra ozonated saline. Recover all contents before reinfusion.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

VOLUME	100–200 mL whole blood (vacuum draw)
CONCENTRATION	30–50 µg/mL ozone gas
UV SPECTRUM	UV-A + UV-C + visible (Hemealumen RGB optional)
FREQUENCY	1–2×/week · course 8–10 sessions
WASHOUT	7–10 days pre- and post- for photosensitizing meds
ROUTE	Antecubital draw → vacuum bottle + cuvette → reinfuse
INDICATIONS	Chronic viral · post-COVID · Lyme · oncology · CFS · resistant infection

FIELD NOTE *Mandatory medication review. Document lot of cuvette + lamp hours. Filter on return.*



LESSON 4.3 · EQUIPMENT & SUPPLIES

UVBI · Equipment

MAHT setup plus a UV unit and quartz cuvette. The cuvette is the limiting consumable — track lot and lamp hours.

VET · EQUIPMENT

Companion Animal

UVBI MACHINE

- UVBI unit — UV-A + UV-C + visible spectrum lamps
- Quartz cuvettes — UV-transparent (single-patient use)
- Hemealumen RGB photobiomodulation attachment (optional)
- Medical ozone generator + fluid bubbler

BLOOD PATH

- 12 / 20 / 35 / 60 mL syringes (×2) + 22 g × 1" needle
- Heparin 1,000–10,000 USP units/mL (coat only)
- Female-to-female connector · sterile blood filter
- 250 mL blood collection bag · ozonated saline
- IV butterfly 25 g × ¾" OR IV catheter 20 g × 2"

ASEPTIC FIELD

- Clippers · surgical scrub & solution · alcohol
- Tape 1" white medical · gauze · sterile gloves

FIELD NOTE *Photosensitizer washout 7–10 days pre AND post: sulfas · doxycycline · cipro · NSAIDs · thiazides · voriconazole · amiodarone.*

HUMAN · EQUIPMENT

Adult Human

UVBI MACHINE

- UVBI unit (clinical-grade UV-A + UV-C + visible)
- Quartz cuvettes — UV-transparent · single-patient
- Hemealumen RGB attachment (optional)
- Medical ozone generator (≥40 µg/mL output)

BLOOD PATH

- Promolife / equivalent MAHT vacuum-bottle system
- 16–18 g IV cannula · butterfly back-up
- Sterile blood filter on reinfusion line
- Sodium-citrate anticoagulant
- IV pole · gravity drip set

ASEPTIC FIELD

- CHG skin prep · sterile drape
- Sterile gloves · tourniquet · pressure dressing
- BBP-rated sharps container

FIELD NOTE *Same washout list. Confirm patient is not on phototoxic supplements (St. John's wort, high-dose retinoids).*

Three Blood Routes · Two Species Tracks · One Framework

You now hold the AAOT vet protocol and the AAOT / Promolife human protocol for mAHT · MAHT · UVBI, with paired equipment lists for each lesson. The same 12-point template carries every route. Heparin film coating, female-to-female mixing, sterile blood filter on reinfusion, and a slow steady IV rate are non-negotiable across both species.

LESSON 4.1

Minor AHT (mAHT)

V E T 1–10 mL · 2:1 · 35–50 µg/mL · SQ/IM

H U M A N 5–10 mL · 2:1 · 35–50 µg/mL · IM

LESSON 4.2

Major AHT (MAHT)

V E T 2–5 mL/10 lb · 45–50 µg/mL · IV

H U M A N 100–200 mL · 30–40 µg/mL · IV

LESSON 4.3

Ultraviolet Blood Irradiation

V E T Cuvette + UV-A/UV-C + visible

H U M A N Cuvette + UV-A/UV-C + visible

THE OGPRO COLLABORATIVE

EST. 2025

Medical Ozone in Practice

Clinical Content · Ozone Basic

MODULE 5

OZONATED OILS & NEBULIZING

Ozonated Oils & Liniments · Nebulizing Through Olive Oil (O3O)

Two routes. Two species tracks. Ready-made products and oil-bubbler delivery.

CLINICAL CONTENT

AAOT-ENDORSED

OGPro.org · Connecting · Collaborating · Advancing Ozone Therapy

Two Routes · Two Tracks

Each lesson presents the AAOT vet protocol and the Promolife-aligned human protocol side-by-side, followed by a shared equipment slide. Ready-made topicals and oil-bubbler delivery — the two routes where 'ozone' is delivered as ozonides and terpene vapors, not free ozone gas.

LESSON 5.1

Ozonated Oils & Liniments

- **VET** Ready-made oils · per label · Tre Bien · Insect Shield
- **HUMAN** Jojoba · olive · sunflower · hemp · 2–4× daily
- *Buy don't make · ozonides, not free ozone gas*

LESSON 5.2

Nebulizing Through Olive Oil (O3O)

- **VET** 10–20 µg/mL · 5–6 min · 3×/week × 5–10 tx
- **HUMAN** 15–30 gamma · 10–30 min · 1–2× daily · nasal cannula
- *Disconnect bubbler post-use · oil destroys the cell*

LESSON 5.1 · OZONATED OILS & LINIMENTS

Topical Oils · Buy, Don't Make

Ready-made ozonated oils and liniments for skin, wounds, dermatitis, and post-surgical care. Apply per product label; the active species are ozonides — chemically distinct from medical ozone gas.

VET PROTOCOL · AAOT		HUMAN PROTOCOL · AAOT / PROMOLIFE	
Companion Animal		Adult Human	
APPLICATION	Thin film over lesion + 5 mm margin	OIL CHOICE	Jojoba · olive · sunflower · hemp
FREQUENCY	Per product label · typically 2–4× daily	OIL MATCH	Jojoba: face · Olive: eczema · Hemp: deep wounds
DURATION	Acute: until closure · chronic: 4+ weeks	APPLICATION	Thin film · allow to absorb fully
PRODUCTS	Tre Bien™ oil · Insect Shield liniment	FREQUENCY	2–4× daily
INDICATIONS	Wounds · burns · hot spots · dermatitis · bites	INDICATIONS	Eczema · dermatitis · wounds · acne · fungal
CAUTIONS	Cover if patient may lick or rub site	STORAGE	Cool & dark · refrigerate after opening
FIELD NOTE	Ready-made products — do not make in clinic. Source from a reputable ozone supplier (Regeno3onevet).	FIELD NOTE	Order a sample pack before committing to a full size. Cover areas that rub against clothing. Sourced per Promolife guide.

LESSON 5.1 · EQUIPMENT & SUPPLIES

Ozonated Oils · Equipment

Ready-made products; no generator needed at point of use. Shelf-stable ozonide-based topicals — identical product set across species; species-specific PPE and patient prep.

VET · EQUIPMENT

Companion Animal

READY-MADE PRODUCTS

- Tre Bien™ ozonated oil — wounds, skin
- Insect Shield liniment — bites, irritation
- Other tested ozonated oils per clinic preference
- Storage: cool, dark · refrigerate after opening

APPLICATION & PREP

- Cotton-tipped applicators · sterile gauze
- 3–5 mL polypropylene syringes (no needle)
- Clippers (if site needs clearing) · nitrile gloves
- Vet wrap · loose dressings (no tight occlusion)

FIELD NOTE *Topicals contain ozonides — chemically distinct from medical ozone gas. Shelf-stable product set, no generator needed at point of use.*

HUMAN · EQUIPMENT

Adult Human

READY-MADE PRODUCTS

- Jojoba — general use, facial / beauty
- Olive — eczema, dermatitis, infections
- Sunflower — wounds, fungal, acne
- Hemp — serious wounds, spot treatment

APPLICATION & SELF-CARE

- Clean fingers or cotton swab — thin film
- Bandage for areas that rub against clothing
- Sample pack before committing to full size
- Storage: cool, dark · refrigerate after opening

FIELD NOTE *Apply 2–4× daily and allow to absorb fully. Per Promolife guide — most users are better off purchasing pre-made oil than home-producing it (fire risk).*

LESSON 5.2 · NEBULIZING THROUGH OLIVE OIL (O3O / BOO)

Through the Oil · Inhaled Ozonides

Medical ozone routed through olive oil; the patient inhales ozonides and terpene vapors — NOT free ozone. Vet uses a mask; human uses a nasal cannula. Same oil-bubbler discipline in both tracks.

VET PROTOCOL · AAOT		HUMAN PROTOCOL · AAOT / PROMOLIFE	
Companion Animal		Adult Human	
CONCENTRATION	10–20 µg/mL	FLOW RATE	¼ or ½ LPM
DURATION	5–6 min per session · allow breaks	CONCENTRATION	15–30 gamma
FREQUENCY	3×/week × 5–10 treatments	DURATION	10–30 min · 1–2× daily
DELIVERY	Silicone pet mask over nose & mouth	DELIVERY	Nasal cannula beneath nose (not inserted)
INDICATIONS	Sinusitis · URI · polyps · parasites · tonsillitis	INDICATIONS	Sinus · respiratory · bronchitis · immune
MONITOR	Cats & small animals — stop for distress	OIL FILL	Glass oil bubbler — just over halfway
FIELD NOTE	Oil must stay clear (not opaque). Thick oil = lost surface area; unconverted ozone can reach the airway. Stop if breathing discomfort.	FIELD NOTE	Per Promolife guide: gas through olive oil contains ozonides, peroxides, and terpene vapors — safe to inhale. Use ozone trap. Disconnect immediately after use.

Nebulizing (O3O) · Equipment

Identical generator and oil-bubbler stack; delivery interface differs — pet mask for veterinary, nasal cannula for human. Disconnect bubbler from generator after every use.

VET · EQUIPMENT

Companion Animal

GENERATOR & BUBBLER

- Medical ozone generator · silicone ozone tubing
- Ozone oil bubbler (200–250 mL)
- Good-quality pure olive oil (clear, not opaque)
- Ozone trap (recommended with oil bubblers)
- Check valve + tubing kit

DELIVERY & SAFETY

- Nebulizing silicone pet mask — by patient size
- Mini pet mask — small animals / wound work
- Treatment-area fan & ventilation · timer
- Disconnect bubbler immediately post-use

FIELD NOTE *The patient inhales ozonides + terpene vapors — NOT free ozone. Oil must coat the bubbles (clear oil, small bubbles).*

HUMAN · EQUIPMENT

Adult Human

GENERATOR & BUBBLER

- Medical ozone generator (Promolife or equiv.)
- Glass oil bubbler — fill just over halfway
- Ozone-resistant silicon tubing · check valve
- Ozone trap — strongly recommended
- Destruct system on room exhaust path

DELIVERY & SAFETY

- Nasal cannula — beneath nose (not inserted)
- Fan blowing ozone smell away from face
- Timer · comfortable seated position
- DISCONNECT bubbler from generator post-use

FIELD NOTE *CRITICAL — Oil bypasses the check valve and will destroy the ozone cell if it backflows (not warranty-covered). Replace oil when it thickens or lightens.*

Two Routes Complete · Two Tracks One Framework

Module 5 covered the two routes where ozone acts not as free gas but as ozonides — ready-made topicals applied to skin and oil-bubbler vapors inhaled through a mask or cannula. Vet and human protocols ran side-by-side, with the AAOT vet protocol on the green track and the Promolife human protocol on the blue track. Every lesson followed the same 12-point framework — equipment, dosing, technique, follow-up — only the clinical content varied by species and route.

LESSON 5.1

Ozonated Oils & Liniments

VET Ready-made oils · thin film · 2–4× daily

HUMAN Jojoba / olive / sunflower / hemp · 2–4× daily

LESSON 5.2

Nebulizing Through Olive Oil (O3O)

VET 10–20 µg/mL · 5–6 min · pet mask · 3×/week

HUMAN 15–30 gamma · 10–30 min · nasal cannula · 1–2× daily

THE OGPRO COLLABORATIVE · EST. 2025

Medical Ozone in Veterinary Practice

VET BASIC · MODULE 6

Dentistry — Ozonated Water, Ozone Gas & Ozonated Glycerin

Three modalities. One dental unit. Five clinical applications.

CLINICAL CONTENT · OGPRO ADVISORS

OGPro.org · Connecting · Collaborating · Advancing Ozone Therapy

MODULE 6 AT A GLANCE

Five Lessons. Three Modalities. One Dental Unit.

Where ozone earns its place in routine veterinary dental care — from prophylaxis to post-extraction.

LESSON 6.1

Ozonated Water

Lavage & flushing · 40–100 µg/mL · saturates 25–37 µg/mL · use fresh.

LESSON 6.2

Ozone Gas

Handpiece · 10–15 µg/mL · 0.5–2.0 mL into pockets · fan or suction.

LESSON 6.3

Ozonated Glycerin

Socket · sinus flush · periodontal · home rinse. Weeks of activity in tissue.

LESSON 6.4

Oil Pulling

Ozonated olive or other ready-made ozonated oils · client home adjunct.

LESSON 6.5

Clinical Anchor

Basil — feline periodontal resolution. Bridge/Holloway, Jan 2026.

MODULE
COMPLETION

All 5 lessons reviewed · 10-question knowledge check · 80% to advance to Module 7

WHY DENTAL MATTERS

Three Modalities, One Dental Unit

Ozonated water, ozone gas, and ozonated glycerin each address a different clinical problem.

LAVAGE

Ozonated Water

- Flushing the oral cavity and gingival pockets
- High-volume, low-concentration carrier
- Saturates 25–37 µg/mL regardless of generator dial
- Half-life ~30 min — use fresh from the bubbler

DIRECT

Ozone Gas

- Targeted small-volume gas via dental handpiece
- Periodontal pockets, root canal disinfection
- 0.5–2.0 mL increments at 10–15 µg/mL
- Fan/suction required — never let patient inhale

RESIDUAL

Ozonated Glycerin

- Time-release in tissue — weeks of activity
- Socket, periodontal cotton-tip, home rinse
- Full-strength socket · 10% in saline sinus flush
- Hemostatic profile akin to bosmin (Sakai 2014)

CLINICAL
BRIDGE

Most dental cases use two or three of the modalities together — flush with water, treat with gas, finish with OG.

LESSON 6.1

Ozonated Water in Dental

Lavage, soak, flush. The high-volume carrier — fresh from the bubbler.

LESSON 6.1

Ozonated Water — Lavage, Soak, Flush

40–100 $\mu\text{g}/\text{mL}$ generator · 25–37 $\mu\text{g}/\text{mL}$ actual saturation · use it fresh.

INDICATIONS · DENTAL APPLICATIONS

Where ozonated water earns its place

- Periodontal pocket irrigation — gingivitis, mild-to-moderate periodontitis
- Pre- and intra-operative oral lavage during dental cleaning
- Stomatitis and oral ulceration — flushing affected mucosa
- Post-extraction socket rinsing before closure
- Sinus and ear flushing (oroantral cases, sinusitis)
- Frozen into cubes — sucked for abscess or toothache pain relief

CORE DOSING

40–100
 $\mu\text{g}/\text{mL}$ generator · saturates at 25–37 $\mu\text{g}/\text{mL}$

SUPPLIES & SET-UP

- 1,000 or 1,500 mL ozone fluid bubbler
- NaCl or distilled water (no LRS in glass)
- 60–100 mL syringe or IV macro drip set
- Ozonate 5 min per 250 mL fluid

HALF-LIFE
DISCIPLINE

Potency halves every 30 min · refrigerated in ozone-resistant cap $\leq$ 3 days · frozen as ice cubes for weeks.

LESSON 6.1

Ozonated Water — Procedure

Bubbler to bowl. Draw fresh. Lavage thoroughly. Discard within the session.

1

Charge the bubbler

Fill the 1,000 or 1,500 mL ozone fluid bubbler with NaCl or distilled water. Avoid LRS in glass.

2

Ozonate

Run 5 min per 250 mL of fluid. For an IV glass bottle, allow 30 min to ensure proper sterilization.

3

Set generator

Concentration 40–100 µg/mL. Actual saturation 25–37 µg/mL regardless of dial. ⅓ LPM is typical.

4

Transfer to syringe

Draw directly from the bubbler into a 60–100 mL syringe or attach an IV macro drip set.

5

Lavage the oral cavity

Flush gingival pockets, ulcerated mucosa, extraction sites. Suction or evacuate excess fluid.

6

Repeat — or finish

Re-draw fresh fluid as needed within the session. Discard at session end; half-life is ~30 min.

CAUTION

Do not inject ozonated water into vessels — distilled water is for external/oral lavage only.

LESSON 6.2

Ozone Gas in Dental

Targeted small-volume gas via dental handpiece. The direct route.

LESSON 6.2

Ozone Gas — Direct via Dental Handpiece

10–15 $\mu\text{g}/\text{mL}$ · 0.5–2.0 mL into pockets and sockets · 1–2 $\times$ per week $\times$ 2–4 treatments.

INDICATIONS & HEALTH BENEFITS

Where small-volume gas is the right tool

- Dental and endodontic infections — root canal disinfection
- Stomatitis, gingivitis
- Extractions and extraction-site management
- Dental pain or discomfort
- Oral ulcers, neoplasia
- Periodontal disease and deep gingival pockets
- Postoperative wound healing

CORE DOSING

10–15

$\mu\text{g}/\text{mL}$ · 0.5–2.0 mL per site · 1–2 $\times$ /wk $\times$ 2–4 tx

SUPPLIES NEEDED

- Ozone dental handpiece + silicon tubing
- 3–12 mL syringes; cup & blunt luer-tip
- Small fan or vacuum to evacuate gas
- Ozonated water, OG, ozone oil on tray

VOLUME RANGE Per-site 0.5–2.0 mL · total per session 1–15 mL or more depending on dental condition.

LESSON 6.2

Ozone Gas — Procedure

Five connection steps. One absolute safety rule: never let the patient inhale undiluted ozone.

1

Connect handpiece

Place handpiece tubing into the ozone OUT port. Add silicon tubing for reach.

2

Set concentration

Generator 10–15 µg/mL. Flow 1/16 to 1/32 LPM for fine-tip delivery.

3

Attach tip

Luer needle for endodontic / deep pocket · soft silicon tooth cup for full-tooth coverage.

4

Inject 0.5–2.0 mL

Into or around teeth, gums, or pockets. Hold position long enough for the gas to dissipate.

5

Evacuate excess

Fan or portable vacuum disperses ambient gas. Even intubated animals can absorb ozone via airway.

**AIRWAY
SAFETY**

Avoid inhaling ambient ozone gas. Never allow a patient to inhale undiluted ozone — even intubated animals can absorb ozone through the respiratory tract.

LESSON 6.3

Ozonated Glycerin in Dental

Time-release in tissue. Socket, sinus, periodontal, home rinse.

FOUR APPLICATIONS

Ozonated Glycerin — Dental Applications

Adopt them in any order. Together they cover the dental work that brings practice into routine OG use.

1

POST-EXTRACTION

Socket infusion

Full-strength · volume = whatever fits the socket cavity (anatomy determines) · curved-tip cannula · rapid hemostasis. Sakai 2014 + Wang 2018.

2

CHRONIC RHINITIS

Sinus flush

10% OG in saline · dogs 5–10 mL/side · cats 2–5 mL/side · sternal head-down recovery.

3

PROPHYLAXIS

Periodontal application

Full-strength via cotton-tip · pockets 0.2–0.5 mL via cannula · 30-sec dwell · no rinse. Furukawa 2018 + Niinomi 2004.

4

OWNER HOME-CARE

Halitosis rinse

Full-strength · 2–3 mL once daily evening along gumline · all 4 quadrants · 30-day course.

LESSON 6.3

Ozonated Glycerin — Dosing & Preparation

Full-strength for socket and home rinse. 10% dilution for sinus flush. One bottle, four applications.

APPLICATION	CONCENTRATION	VOLUME / DOSE	TECHNIQUE
<i>Socket infusion</i>	Full-strength	Fills socket cavity	Curved-tip cannula 2–3 mm into socket; 30-sec dwell
<i>Sinus flush</i>	10% in saline	Dogs 5–10 mL/side · Cats 2–5 mL/side	Syringe via nostril; sternal head-down recovery
<i>Periodontal pockets</i>	Full-strength	0.2–0.5 mL per pocket	Cotton-tip across mouth or fine cannula in pockets
<i>Home halitosis rinse</i>	Full-strength	2–3 mL once daily	Owner applies along gumline · 30-min food/water hold

10% DILUTION RECIPE

In-clinic 20 mL syringe: 2 mL full-strength OG + 18 mL sterile isotonic saline = 10% working solution. High-volume 240 mL: 1 saline packet + 240 mL treated water + 24 mL full-strength OG. Use immediately or refrigerate ≤ 24 hours.



LESSON 6.4

Oil Pulling — Home Adjunct

Ozonated olive oil applied along the gumline. Owner-led between visits.

LESSON 6.4

Oil Pulling — A Home Adjunct

Ozonated olive or other ozonated oils. Owner-driven. Augments — does not replace — in-clinic protocols.

WHAT IT IS

Ozonated oil swished or applied along the gumline

Ozonated olive oil — or other ready-made ozonated oils — applied directly to teeth and gums 2–4× daily. Brushed on like toothpaste, or used as an oil-pulling product. The lipid-bound ozonides extend contact time on mucosal surfaces compared with ozonated water alone. Buy oils; do not make them — they're best purchased from an ozone supplier (e.g., Tre Bien™).

CLIENT INSTRUCTIONS

- Apply to teeth and gums 2–4× daily
- Brush in like toothpaste — or use as oil-pulling product
- Frozen ozonated-water cubes ease abscess or toothache pain
- Reduce frequency if soft-tissue irritation develops
- Sits alongside, not in place of, in-clinic protocols

BUY DON'T MAKE *Home oil-ozonation is not recommended — concentration is uncontrolled and oil destroys generator cells.*

ANCHOR CASE

Basil — Cat Periodontal Resolution

Topical OG flushing of affected oral tissue and gingival margins. Bridge / Holloway Veterinary OG Webinar, January 2026.

PRESENTATION

Severe periodontal abscesses

Adult cat with severe periodontal abscesses. Standard-of-care treatment plan would be surgical extraction of affected teeth.

MECHANISM

Cytokine + biofilm + sparing

Furukawa IL-6/IL-8 reduction quiets the inflammatory drive. Niinomi 2004 bactericidal-sparing reduces pathogen load without leveling the commensals that maintain oral mucosal balance.

OBSERVATION

Reverse-periodontitis

Measurable pocket-depth reduction · gingival color shift red → pink · resolution of bleed-on-probing. Teeth retained. OG dental gel is in development for the next-generation format.

Source: Bridge / Holloway Veterinary OG Webinar, January 2026 — slide p.32. Cross-referenced to Module 8 (HP) Lesson 8.6 Anchor Case.

MECHANISM

One Biology — Three Delivery Systems

Oxidative stress on microbial cell walls. Modulated host inflammation. Tissue regeneration.

SHARED MECHANISM

Ozone — and the trioxepane in OG — exerts its effect through oxidative stress on microbial cell walls: rapid destruction of bacteria, viruses, fungi, and biofilms. It also enhances oxygenation, promotes tissue regeneration, and modulates immune response.

ANTIMICROBIAL

Pathogen load down

Bactericidal action against biofilm and resistant pathogens — including the anaerobes driving periodontal disease and the resistant flora in failing root canals.

ANTI-INFLAMMATORY

Cytokine signal quieted

Furukawa 2018 documented IL-6 and IL-8 suppression in P. gingivalis-stimulated gingival fibroblasts. Nrf2 activation, NF-κB modulation — covered in Module 3.

TISSUE REGENERATION

Healing accelerated

Increased local oxygenation supports osteoblast activity (Wang 2018) and mucosal closure. Hemostatic profile of full-strength OG comparable to bosmin (Sakai 2014).

DOSING QR CARD

Module 6 Dosing — One Card

By modality and application. Laminate alongside the Module 5 Storage Protocol.

MODALITY	CONC.	VOLUME / DOSE	FREQUENCY	NOTES
WATER (LAVAGE)	40–100 µg/mL	Per syringe (60–100 mL)	Each session, fresh	Saturates 25–37 µg/mL · use within 30 min
GAS (HANDPIECE)	10–15 µg/mL	0.5–2.0 mL per site	1–2× per week × 2–4 tx	Fan/vacuum required · never inhaled
OG · SOCKET	Full-strength	Fills socket cavity	Single intra-op application	30-sec dwell · hemostasis support
OG · SINUS	10% in saline	Dogs 5–10 mL · Cats 2–5 mL/side	Per case	240 mL high-volume = 1 packet + 24 mL OG
OG · PERIODONTAL	Full-strength	0.2–0.5 mL / pocket	Per dental visit	Cotton-tip · no rinse
OG · HOME RINSE	Full-strength	2–3 mL gumline	Daily evening · 30 d course	Pre-treat sensitivity test first
OIL PULLING	Ready-made	Apply directly to gums	2–4× daily	Buy oils; do not make them

CASE - FLOW PATTERN *Lavage (water) → treat (gas at pockets / socket) → finish (OG into socket or along gumline) → dispense (home rinse or oil pulling).*

SAFETY

What to Avoid — and Why

Three rules carry across all dental modalities. Two more apply only to specific applications.

UNIVERSAL

Never let the patient inhale ozone gas

Use a fan or small vacuum to disperse ambient gas during handpiece work. Even intubated animals can absorb ozone through the respiratory tract, posing pulmonary toxicity risk.

UNIVERSAL

Don't inject distilled water

Ozonated distilled water is for external and oral lavage only. Use ozonated NaCl for any in-cavity application. LRS-type fluids precipitate in glass — skip them.

UNIVERSAL

Use ozonated fluids fresh

Ozonated water loses half its potency every 30 min. Refrigerated in an ozone-resistant cap, holds ≤ 3 days. Frozen ice cubes hold for weeks.

OG-SPECIFIC

Pre-treat sensitivity test

Before sustained mucosal exposure (home rinse), one drop of full-strength OG inside the lip, observed for 5 minutes. Standard for OG-naïve patients.

OG-SPECIFIC

Don't combine oxidative products

Allow washout from peroxide-based or chlorine-based dental products. Don't mix OG with chlorhexidine, peroxide water additives, or bleach-based oral products.

M O D U L E C L O S E

Three Modalities. Five Applications. One Dental Unit.

Module 6 delivered the three dental modalities — ozonated water for lavage, ozone gas for direct site treatment, and ozonated glycerin for residual contact. Together they cover prophylaxis, periodontal disease, post-extraction healing, sinus management, and owner-led home care. Module 7 extends ozonated glycerin into systemic routes — nebulized, nasal, eye drops, IVOG and the local/SQ injection family.

N E X T U P — M O D U L E 7

Ozonated Glycerin — NOG, Nasal, Eye, IVOG, OGI/OGSQ, OGUB

THE OGPRO COLLABORATIVE · EST. 2025



Medical Ozone in Practice

Clinical Content · Ozone Basic

MODULE 7 · OZONATED GLYCERIN (OG)

Nebulized · Eye Drops · SQ · IV · Bladder · PROG Joint

Six lessons. Two species tracks. One 12-point framework.

VET TRACK

HUMAN TRACK

CLINICAL CONTENT · AAOT-ENDORSED

OGPro.org · Connecting · Collaborating · Advancing Ozone Therapy

MODULE 7 · AT A GLANCE

Six Procedures · Two Tracks

Each lesson presents the AAOT vet protocol and the human protocol side-by-side, followed by a shared equipment slide. Every OG route runs through the same 12-step framework.

LESSON 7.1

Nebulized OG

- Vet: 5–10% in saline · air-compressor
- Human: 5–10% · 5–10 min BID acute
- Nasal spray: 10% · 1 pump per nostril

LESSON 7.2

OG Eye Drops

- Vet: 1% in saline · 2–4×/day
- Human: 1% · prepare fresh daily
- Conjunctivitis · keratitis · ocular adjunct

LESSON 7.3

SQ Circle the Dragon

- Vet: 5% OG · 22 g × 1.5"
- Human: 5% OG · perimeter depots
- NEVER intralesional · q2 weeks

LESSON 7.4

IV OG (IVOG)

- Vet: BW ÷ 6 in 1 L warm saline
- Human: 10 mL in 250–500 mL saline
- Hospital-based · sterile filter mandatory

LESSON 7.5

Bladder Infusion

- Vet: 10% buffered OG (OG-LAST)
- Human: 30–50 mL · dwell 10–15 min
- Recurrent UTI · interstitial cystitis

LESSON 7.6

OGI & PROG Joint

- Vet: PROG 3:3:3:1 stock · weekly × 8
- Human: PROG 1 mL per joint
- IA only · NOT for back/neck/disk

LESSON 7.1 · NEBULIZED OG & NASAL SPRAY

Nebulized OG · Same Route, Two Tracks

5–10% OG in saline via air-compressor nebulizer. Mask for sinus/upper respiratory, mouthpiece for deeper lung. Nasal spray for sinus indications.

VET PROTOCOL · AAOT

Companion Animal

CONCENTRATION	5% (sensitivity screen) · 10% (established)
VOLUME	~6 mL fill (0.5 mL OG + 5.5 mL saline at 5%)
DURATION	5–10 min per session
FREQUENCY	2×/day acute · 1×/day maintenance
NASAL SPRAY	10% in polypropylene fine-mist bottle
INDICATIONS	URI · chronic sinusitis · pneumonia adjunct · fungal pulmonary
BUFFER	8.4% NaHCO ₃ if it stings (1 mL/100 mL)

FIELD NOTE Polypropylene cup only — ultrasonic nebulizers cavitate and degrade the peroxide. Watch cats and small patients closely.

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

CONCENTRATION	5% start · 10% deeper-lung indications
VOLUME	~6 mL fill cup (1 mL OG + 9 mL diluent at 10%)
DURATION	5–10 min · BID acute · daily maintenance
FREQUENCY	BID acute · 1×/day chronic · destruct active
NASAL SPRAY	10% · 1 pump per nostril · 1–2× daily
INDICATIONS	Chronic sinusitis · post-viral · asthma adjunct · bronchitis
BUFFER	8.4% NaHCO ₃ buffer if sensation reported

FIELD NOTE Air-compressor (jet) nebulizer required — not ultrasonic. Patient may experience initial cough; reduce session length if persistent.

Nebulized OG (NOG) & Nasal Spray

5–10% OG in 0.9% NaCl · ~6 mL fill cup · 5–10 min BID acute · air-compressor preferred

CARRIER & REAGENT

- Ozonated glycerin — full-strength 10,000 ppm (Module 7 source)
- NaCl 0.9% (preferred — tonicity match) or distilled water
- 8.4% sodium bicarbonate — buffer if sting (1 mL / 100 mL)
- Polypropylene cups + polypropylene syringes (no metal)

NEBULIZER

- Air-compressor (jet) nebulizer — preferred over ultrasonic
- Polypropylene nebulizer cup (~6 mL capacity)
- PVC or silicone tubing (single-patient or fully cleanable)
- Mask (sinus / upper respiratory) AND mouthpiece (deeper lung)
- Timer

NASAL SPRAY

- Polypropylene fine-mist spray bottle (10–30 mL)
- 10% OG: 1 mL OG + 9 mL diluent in the bottle
- Label with prep date — use within the week

FIELD NOTE

Ultrasonic nebulizer cavitation degrades the peroxide. Compatible-materials only: polypropylene · glass · silicone · PTFE · HDPE.



LESSON 7.2 · OG EYE DROPS

Eye Drops · Mucosa Is Sensitive — 1% Only

Topical ocular application for conjunctivitis, keratitis, and adjunct ocular indications. Prepare fresh; discard at end of visit.

VET PROTOCOL · AAOT

Companion Animal

CONCENTRATION	1% only (10 mL OG : 990 mL saline)
DOSE	1–2 drops per affected eye
FREQUENCY	2–4×/day acute · taper with response
PREPARATION	0.1 mL OG + 9.9 mL sterile saline
BOTTLE	Sterile polypropylene or HDPE eye dropper
INDICATIONS	Conjunctivitis · keratitis · KCS adjunct · post-surgical
DISCIPLINE	Prepare fresh · discard at end of patient visit

FIELD NOTE *Cats and brachycephalic dogs may need extra patience. Warm the bottle in palm before instilling to reduce flinch response.*

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

CONCENTRATION	1% only — never higher on ocular mucosa
DOSE	1–2 drops per affected eye
FREQUENCY	2–4×/day acute · taper as healing progresses
PREPARATION	0.1 mL OG + 9.9 mL sterile preservative-free saline
BOTTLE	Sterile polypropylene or HDPE eye dropper
INDICATIONS	Conjunctivitis · dry-eye adjunct · post-surgical · chemical irritation
DISCIPLINE	Prepare fresh · discard daily · sterile technique

FIELD NOTE *Pre-cleanse with sterile saline. Counsel the patient that mild stinging on first drop is expected and resolves.*

OG Eye Drops

1% OG in sterile saline · prepare fresh · drops per eye 2–4× daily

CARRIER & REAGENT

- Ozonated glycerin — full-strength 10,000 ppm
- Sterile 0.9% NaCl for dilution
- 1% prep example: 0.1 mL OG + 9.9 mL sterile saline
- Polypropylene mixing cup

DELIVERY

- Sterile eye-dropper bottle (polypropylene or HDPE)
- 1–3 mL polypropylene syringe (for filling bottle)
- Label — concentration · prep date

PATIENT CARE & PPE

- Nitrile gloves
- Sterile gauze (for periocular wipe)
- Sterile eye-wash saline (gentle pre-cleanse)

FIELD NOTE Mucosa is sensitive — 1% only for eyes (Module 8 mucosal-prep rule). Prepare immediately before use; discard at end of patient visit.



LESSON 7.3 · SQ CIRCLE THE DRAGON

Circle the Dragon · Perimeter, Never Intralesional

5% OG in 0.9% saline injected through INTACT skin around the perimeter of soft-tissue masses. NEVER inject into the tumor body.

VET PROTOCOL · AAOT

Companion Animal

CONCENTRATION	5% OG (0.5 mL OG + 9.5 mL saline = 10 mL)
VOLUME	10–20 mL per session (mass-size dependent)
TECHNIQUE	4-cardinal points + beneath-the-mass infiltration
NEEDLE	22 g × 1.5" luer-lock polypropylene syringe
FREQUENCY	Every 2 weeks until resolution
INDICATIONS	Soft-tissue tumors · vaccine-associated fibrosarcoma · lipoma
ANCHOR CASE	Spirit — 14-yr cat, fibrosarcoma, 2-wk resolution

FIELD NOTE Expect benign seroma at the SQ injection site — known response, resolves in ~2 weeks. Counsel owner ahead of time.

HUMAN PROTOCOL · AAOT / PROMOLIFE

Adult Human

CONCENTRATION	5% OG (0.5 mL OG + 9.5 mL saline = 10 mL)
VOLUME	10–20 mL per session · split by depots
TECHNIQUE	Perimeter depots through intact skin only
NEEDLE	22 g × 1.5" luer-lock polypropylene syringe
FREQUENCY	Every 2 weeks · co-manage with oncology
INDICATIONS	Soft-tissue masses (with oncology) · keloid · scar tissue
ANCHOR CASE	Use only as adjunct under oncology supervision

FIELD NOTE Document baseline photos. Coordinate with oncology team. If ulcerated, switch to topical OG + Circle the Dragon perimeter only.

OG Subcutaneous Infiltration · Circle the Dragon

5% OG in 0.9% NaCl · 22 g × 1.5" · perimeter of mass through INTACT skin · NEVER intralesional

SOLUTION PREP — 5% OG

- Ozonated glycerin — full-strength 10,000 ppm
- Sterile NaCl 0.9% diluent
- 5% stock: 0.5 mL OG + 9.5 mL saline = 10 mL
- 8.4% sodium bicarbonate — buffer if sting (1 mL / 100 mL)
- Polypropylene cups + polypropylene syringes (no metal)

DELIVERY

- 3–10 mL luer-lock polypropylene syringes
- Needle — 22 g × 1.5" (perimeter depots)
- Hemostats — syringe swap at the hub

ASEPTIC FIELD

- Clippers — shave perimeter
- 10% OG disinfectant spray (or clinic standard)
- Surgical scrub · alcohol · sterile gloves · gauze
- Sedation per patient and site

FIELD NOTE

Circle the Dragon: depot the perimeter through intact skin only. Ulcerated tumors → topical OG on the ulcer + margin Circle the Dragon. Never inject into the mass.



LESSON 7.4 · INTRAVENOUS OG (IVOG)

IV OG · Hospital-Based, No-Metal Path

Diluted OG infused slowly through a sterile filter. OG oxidizes stainless — every contact surface must be compatible material.

VET PROTOCOL

DOSE	BW (kg) ÷ 6 = mL OG · always 5% (saline volume scales to patient)
ESCALATION	¼ → ½ → ¾ → Full across sessions
RATE	Slow IV reinfusion · sterile filter in-line
CATHETER	Polypropylene/polyurethane — NEVER stainless
INFUSION SET	IV macro drip · polypropylene/glass container
MONITORING	Vitals · ≥30-min post-infusion observation
INDICATIONS	Systemic infection · oncology adjunct · chronic disease

FIELD NOTE Warm patient (heating blanket + thermometer) and warm the infusion bag. Compatible-materials path: polypropylene · glass · silicone · PTFE · HDPE only.

HUMAN PROTOCOL

DOSE	10 mL OG in 250–500 mL warm 0.9% saline
ESCALATION	¼ → ½ → ¾ → Full · Herxheimer-paced
RATE	60–120 min total infusion · sterile filter mandatory
CATHETER	Polyurethane peripheral IV catheter · 18–22 g
INFUSION SET	PVC-free administration set · glass or PP bag
MONITORING	Vitals q15 min during · ≥30-min post observation
INDICATIONS	Chronic infection · oncology adjunct (per protocol) · post-COVID

FIELD NOTE Hospital-based or licensed infusion suite only. Pre-warm bag to 37°C. Document lot number of the OG source for every infusion.

Intravenous OG (IVOG)

Diluted OG in saline · slow IV reinfusion · hospital-based · sterile filter mandatory

SOLUTION PREP

- Ozonated glycerin — full-strength 10,000 ppm (tested batch)
- Sterile NaCl 0.9% or LRS (LRS already contains buffers — acceptable carrier)
- 8.4% sodium bicarbonate — buffer (1 mL/100 mL, optional when using LRS)
- Polypropylene mixing cup + syringes (no metal)

IV PATH

- IV catheter — 18–24 g (patient size)
- IV macro drip infusion set
- Sterile blood filter (in-line on reinfusion)
- IV extension set as needed
- Polypropylene / glass infusion container

PATIENT WARMING & FIELD

- Heating blanket + thermometer (warm patient)
- Warmed water bowl for IV line
- Clippers · surgical scrub · alcohol
- Tape 1" white medical · vet wrap · sterile gloves · gauze

FIELD NOTE *Compatible-materials path: polypropylene · glass · silicone · PTFE · HDPE only. No metal*



LESSON 7.5 · INTRAVESICAL OG (OGUB)

Bladder Infusion · Dwell-and-Drain

10% buffered OG (OG-LAST sequence) instilled into an empty bladder via species-appropriate urinary catheter. Dwell 10–15 min, then drain.

VET PROTOCOL

CONCENTRATION	10% buffered OG (OG-LAST sequence)
VOLUME	75–80% of bladder capacity (or 1–2 mL/lb)
PREP	100 mL saline → 1 mL NaHCO ₃ → 10 mL OG LAST
DWELL	10–15 min · sedated patient
FREQUENCY	Per indication · q2wk → monthly
CATHETER	Sterile urinary catheter — size per practitioner discretion
INDICATIONS	UTI · resistant UTI · interstitial cystitis · TVT · oncology adjunct

FIELD NOTE Catheter size is at clinician discretion based on patient. Walk patient to void first.

HUMAN PROTOCOL

CONCENTRATION	10% buffered OG (Promolife: 30–40 µg/mL gas equivalent)
VOLUME	30–50 mL · start 10 mL · titrate as tolerated
PREP	OG-LAST same sequence · scale to 50 mL total
DWELL	1–5 min · release if discomfort
FREQUENCY	1–3×/week · course 5–10 sessions
CATHETER	Sterile urethral catheter · drain residual urine
INDICATIONS	Recurrent UTI · interstitial cystitis · post-cystoscopy · bladder onc

FIELD NOTE Inject slowly — initial discomfort is normal. Reduce volume if excessive sensation. Retain ~1 min then release if unable to dwell longer.

Intravesical OG / Bladder Infusion (OGUB)

10% buffered OG in warm saline (OG-LAST) · catheter dwell 10–15 min · drain · remove

SOLUTION PREP — 10% OG

- Ozonated glycerin — full-strength 10,000 ppm
- Sterile NaCl 0.9% — warmed to 100–110°F
- **8.4% sodium bicarbonate (buffer)**
- OG-LAST sequence: 100 mL saline → 1 mL NaHCO₃ → 10 mL OG LAST
- Dry crockpot + thermometer for warming

CATHETER

- Sterile urethral / urinary catheter
- Size selected at practitioner discretion based on patient
- Sterile catheter pack · clamp · collection basin

ASEPTIC FIELD

- Sterile lubricating gel
- Sterile gloves · drape · gauze
- 10% OG disinfectant spray for perineal prep
- Polypropylene infusion syringe (60 mL)
- Sedation at practitioner discretion

FIELD NOTE

Catheter sizing is left to the clinician — choose the smallest catheter that achieves a tight seal to avoid urethral trauma.



LESSON 7.6 · OGI & PROG JOINT

PROG · Intra-Articular Only (3:3:3:1 Stock)

PROG (Prolozone-OG) delivers ~7.5× the singlet-oxygen payload of traditional Prolozone and lasts up to 4 weeks. IA use ONLY — never back/neck/disk.

VET PROTOCOL

PROG STOCK 3 OG : 3 Lidocaine or Procaine 2% : 3 B₁₂ (1,000 IU) : 1 NaHCO₃ (10 mL)

DOSE 1 mL PROG per joint

OGI (5 %) 5% OG paralumbar/perilesional · 22 g × 1.5"

SCHEDULE Weekly × 8 visits · assess at week 12

PAYLOAD ~3,000 mcg singlet O₂ vs 400 (traditional)

INDICATIONS Osteoarthritis · stifle · hip · elbow (IA only)

STABILITY 30-day fridge stability after mixing

FIELD NOTE *PROG is intra-articular ONLY. Back / neck / disk indications use 5% OG paralumbar (OGI family) — NOT PROG.*

HUMAN PROTOCOL

PROG STOCK 3 OG : 3 Lidocaine or Procaine 2% : 3 B₁₂ (1,000 IU) : 1 NaHCO₃ (10 mL)

DOSE 1 mL PROG per joint

OGI (5 %) 5% OG soft-tissue infiltration · perimeter only

SCHEDULE Weekly × 8 · assess at week 12

PAYLOAD ~7.5× payload · up to 4-week release

INDICATIONS Knee · shoulder · hip · ankle OA (IA only)

STABILITY 30-day fridge stability after mixing

FIELD NOTE *PROG is intra-articular ONLY. Coordinate with orthopedics. 1 mL per joint; tribute stifle protocol applies to canine and human knee.*

OG Local Injection (OGI) & PROG Joint

OGI 5% peritumoral / perilesional · PROG 3:3:3:1 stock = 10 joints @ 1 mL · IA only

OGI SOLUTION — 5% OG

- Ozonated glycerin 10,000 ppm + sterile NaCl 0.9%
- 5% stock: 0.5 mL OG + 9.5 mL saline
- 8.4% sodium bicarbonate (buffer)
- Polypropylene mixing cup + syringes

PROG STOCK — 3:3:3:1

- 3 mL ozonated glycerin (10,000 ppm)
- 3 mL lidocaine 2% (or procaine 2%) — NO epinephrine
- 3 mL vitamin B₁₂ 1,000 IU/mL (or dilute 5,000 IU with saline or BiOcean)
- 1 mL sodium bicarbonate 8.4%
- Yields 10 joints at 1 mL each · 30-day fridge stability

INJECTION HARDWARE

- 3–10 mL luer-lock polypropylene syringes
- Needles — 22 g × 1–1.5" (OGI peritumoral) · 22–25 g IA (PROG)
- Hemostats · clippers · gauze
- 10% OG disinfectant spray / surgical scrub · alcohol
- Sterile gloves · sedation for IA work

FIELD NOTE

PROG is intra-articular ONLY. Back / neck / disk indications use 5% OG paralumbar (Lesson 7.3 family) — not PROG.



Six OG Routes · Two Species Tracks · One Framework

You now hold the AAOT vet protocol and the human protocol for the six OG routes — Nebulized · Eye Drops · SQ Circle the Dragon · IV · Bladder · PROG Joint — with paired equipment lists for each lesson. The 12-step framework, the OG-LAST mixing sequence, body-temperature warming, the no-metal IV path, and the compatible-materials discipline carry every route.

Anchor cases — Spirit (vaccine-associated fibrosarcoma), Castle (abdominal hemangiosarcoma), DJ the Shih Tzu (multi-route liver recovery), tribute stifle (PROG canine knee) — are the lived evidence behind these protocols. Submit your own cases — successes and adverse events alike — to the OGPro Practice Database. The community evidence base grows with every report.

LESSONS 7.1 – 7.2

Topical Routes

Nebulized OG · Eye Drops · 1% mucosa rule

LESSONS 7.3 – 7.4

Systemic Routes

SQ Circle the Dragon · IV OG · BW÷6 escalation

LESSONS 7.5 – 7.6

Site-Specific

Bladder Infusion · PROG Joint · IA only