Introduction to Wildlife Euthanasia

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RSPCA Stapeley Grange Wildlife Centre

RSPCA FOR EVERY KIND.

Learning Objectives

- Preparation for practical training
- Wildlife triage & decision making
- Appropriate use of euthanasia & the legal requirements
- Be familiar with commonly used techniques and be able to select the most appropriate method to minimise suffering

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Wildlife Triage

Triage

- Establish urgency of treatment
- Assess whether treatment or rehabilitation required
- Assess whether release likely
- Determine which cases to prioritise

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Some knowledge of normal

Behaviour

Seasonality

Diurnal
Nocturnal
Crepuscular

Hunting/
Feeding
behaviour

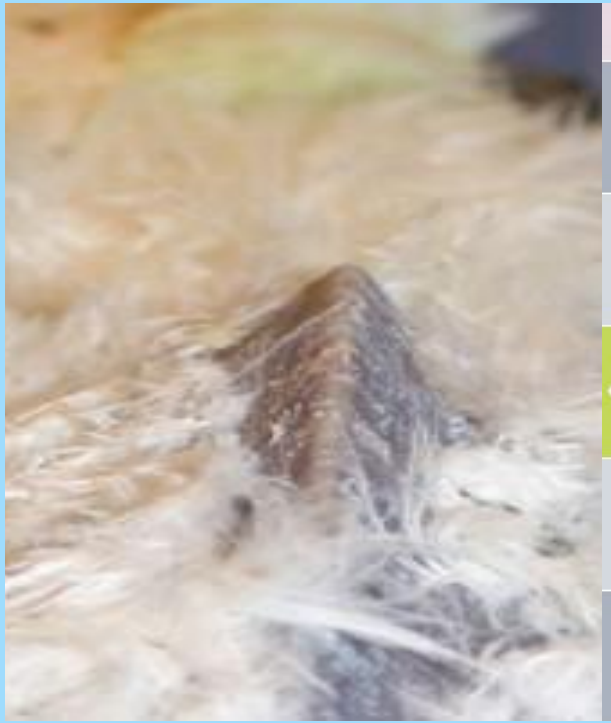
Normal
Preening/
Self
anointing

Adaptations
For evading
predators

Highly
adapted
senses

Breeding
status

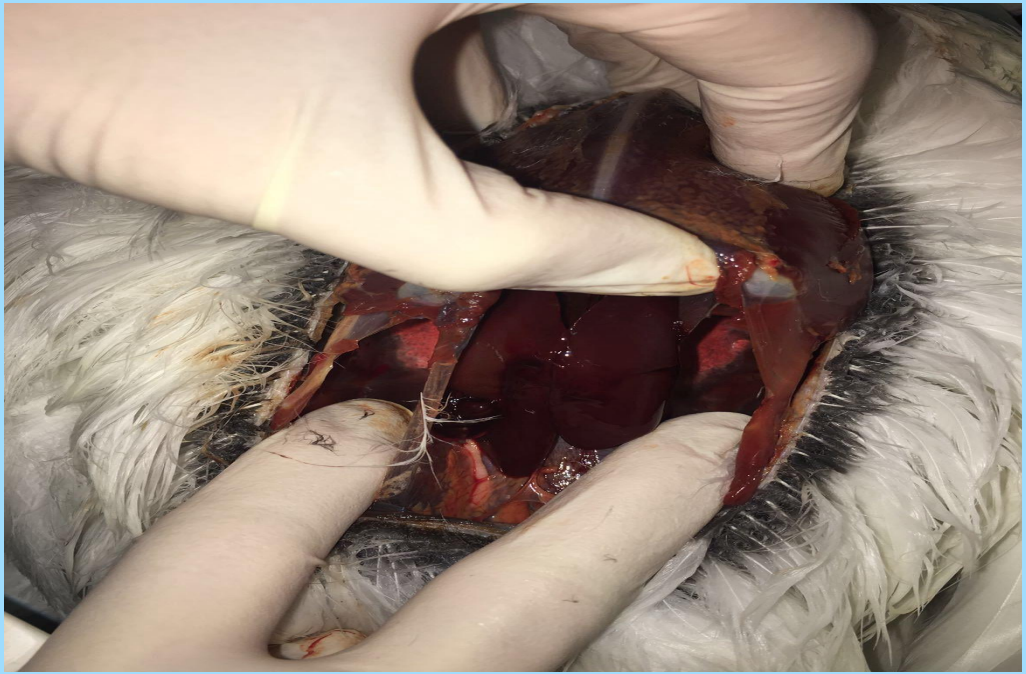
Physical Examination- Bird



Size-O-Meter Score:		viewed from above	skyline view of breast bone and muscle	Characteristics:
1	Very Thin			• Breast bone is very sharp to the touch • Loss of breast muscle and no fat cover
2	Thin			• Breast bone is easily felt and sharp • Loss of breast muscle and little or no fat cover
3	Ideal			• Breast bone easily felt but not sharp • Breast muscle rounded
4	Overweight			• Pressure is needed to feel the breast bone • Well rounded breast muscle and some fat cover • May see some fat below where breast bone ends
5	Obese			• Very hard or not possible to feel the breast bone • Very rounded muscle and possible to feel or see fat moving under the skin. • Fat also obvious below where the breast bone ends

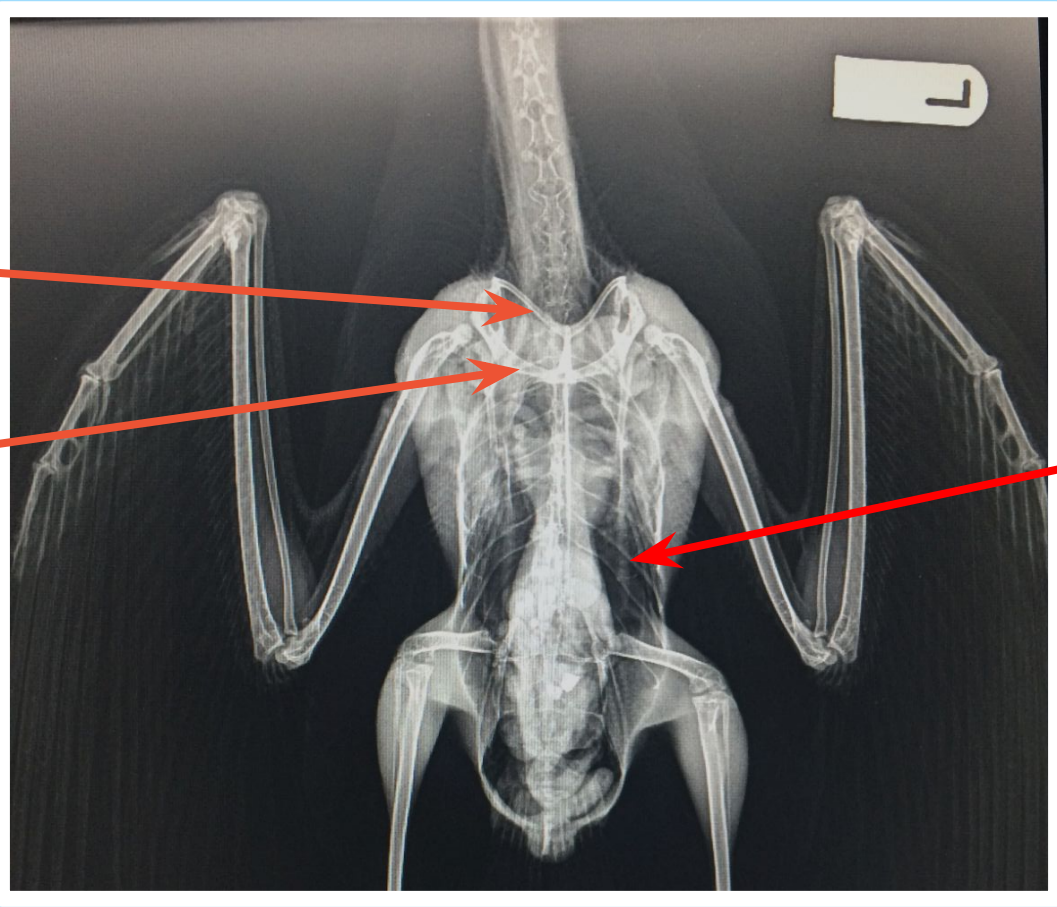
Bird Anatomy

- Birds have coracoid bones
  - part of shoulder girdle
- Birds have air sacs
  - act as bellows to move air through lungs
- Air sacs throughout body and coelomic cavity
  - implications for euthanasia



Clavicle

Coracoid



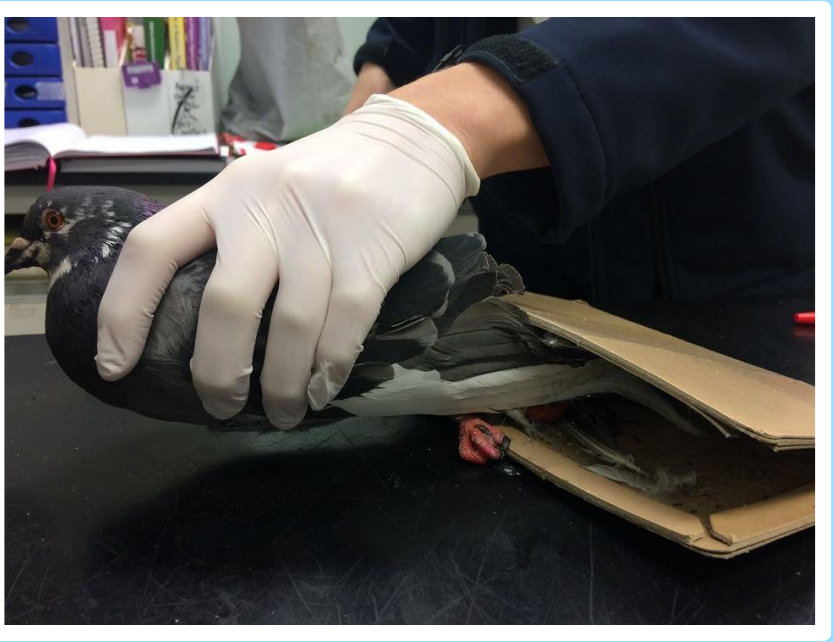
Air Sacs

Some knowledge of common diseases & reasons for presentation

- Orphans
- Attacks (eg. cats, dogs, hawks)
- Collision (eg. RTC, windows, powerlines)
- Toxins (eg. Lead, Botulism)
- Infections (eg. Parasites, bacteria, viruses)
- Anthropogenic (eg. shot/Trapped/Snared)
- Contamination (eg. Oil, glue)
- Nutritional (eg. MBD, feather abnormalities)

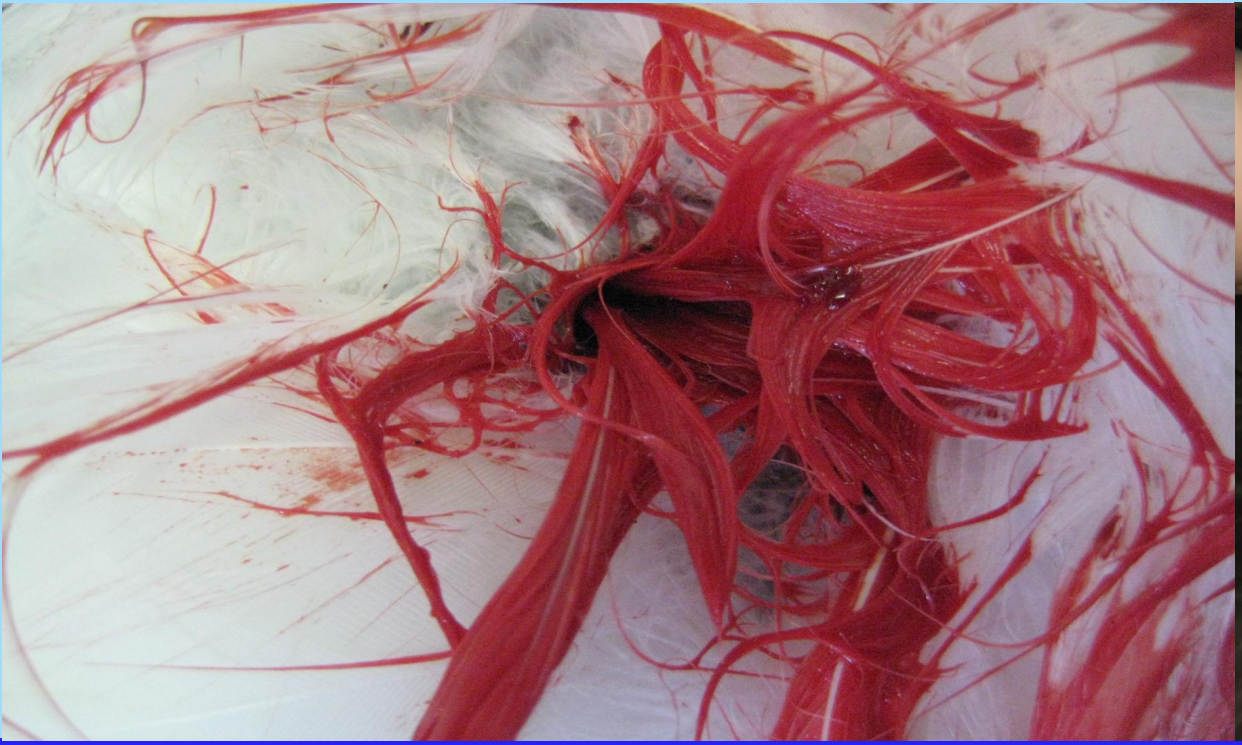
Nutritional Deficiencies

Glue Traps



Contamination

Shot Vs Cat Bite



Fishing Litter

Parasites

Can it be left in situ?

Wing damage

Health & Safety

Physical hazards

Zoonotic diseases

Safe Handling of Mammals

Bites

Scratches

Spikes

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Safe Handling of Birds

Bites & Long Bills

Talons & Kicks

Wing Beating

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Cormorant Restraint

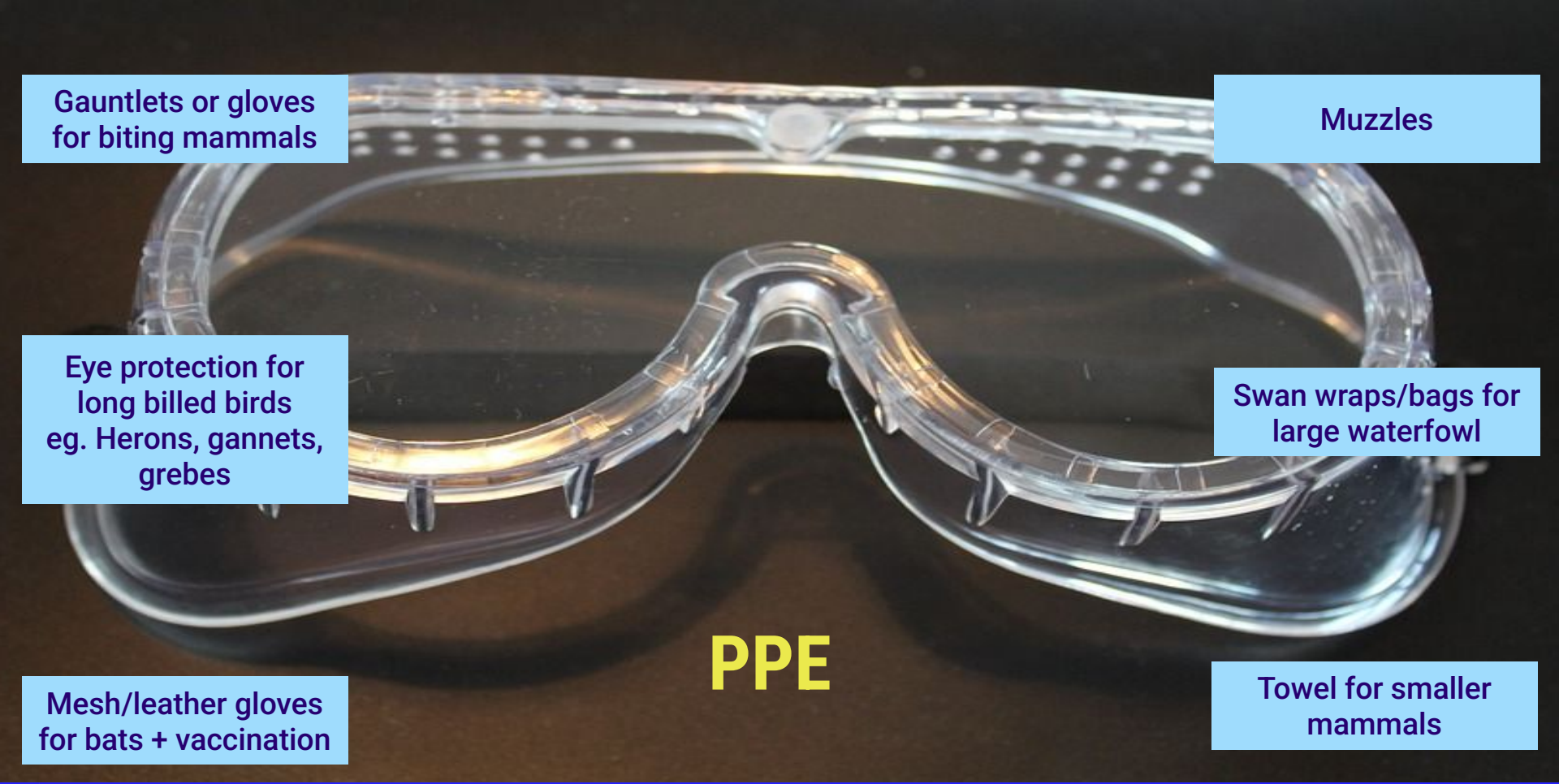
Safe Handling of Others

Venomous Snakes

Venomous Invertebrates

Bufotoxins

Crustaceans


Gauntlets or gloves for biting mammals
Muzzles
Eye protection for long billed birds eg. Herons, gannets, grebes
Swan wraps/bags for large waterfowl
PPE
Mesh/leather gloves for bats + vaccination
Towel for smaller mammals

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Zoonotic Disease

- What is a zoonotic disease?
- Awareness of possible diseases, species affected, method of spread
- Know clinical signs in humans and animals
- Appropriate level biosecurity
- Species specific PPE

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Zoonotic Disease

- Most species can be affected
- Infectious without any clinical signs
- Made worse by stress
- Inhalation, oral (faeco-oral), fomite, contact,
- Vector transmission
- Hygiene, disinfection and PPE

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Zoonotic Infection	Carrier Species	Clinical Signs in Wildlife	Clinical signs in humans
Tuberculosis	Badgers, Deer, Foxes	Lethargy, inappetance, emaciation, respiratory signs, cough	Lethargy/fatigue, inappetance, emaciation, fever, cough
Ringworm	Hedgehogs, foxes	Scaling especially around face and ears, any skin signs	Round, red, scaly lesions
Rabies (EBLV2)	Bats (Foxes in Europe)	Sometime asymptomatic, nervous signs	Flu like signs, hydrophobia, nervous signs, tingling, agitation
Sarcoptic Mange	Foxes	Alopecia, crusting, thickened skin	Intense itching, tiny red papules, crusting
Leptospirosis	Foxes, Rodents, Deer	Icterus, emaciation, signs of kidney & liver failure	Weil's disease, flu like signs , organ failure, muscle fatigue
Salmonellosis	Most species	Asymptomatic, diarrhoea, swollen joints	Diarrhoea, can cause severe disease
Campylobacteriosis	Most species	Diarrhoea	Diarrhoea
Chlamydiosis/ psittacosis	Pigeons & other birds	Asymptomatic, diarrhoea, upper respiratory signs	Mild illness to severe pneumonia
Avian Influenza	**All birds (waterfowl, seabirds, poultry, birds of prey)**	**Can be asymptomatic, Sudden death, respiratory signs, diarrhoea**	**Flu like signs, Diarrhoea, vomiting, abdominal & chest pain**
Seal finger (*Mycoplasma* spp. infection)	Seals	Thought to be normal commensal	Cellulitis, infection, can infect joints
Tick borne disease eg. Borrelia burgdorferi (Lyme disease)	Deer, rodents, hedgehogs, various (*Ixodes spp)*	Presence of ticks, muscle paralysis	Rash around bite, flu like signs muscle pain, fatigue

Biosecurity

Hygiene

- Wash hands & arms when dirty & before eating or drinking
- Good disinfectant scrub – use after every patient/after removing gloves

Disinfect

- Clean before applying disinfectant
- Appropriate disinfectant for vans, carriers and equipment
- Disinfect boots/ waterproofs

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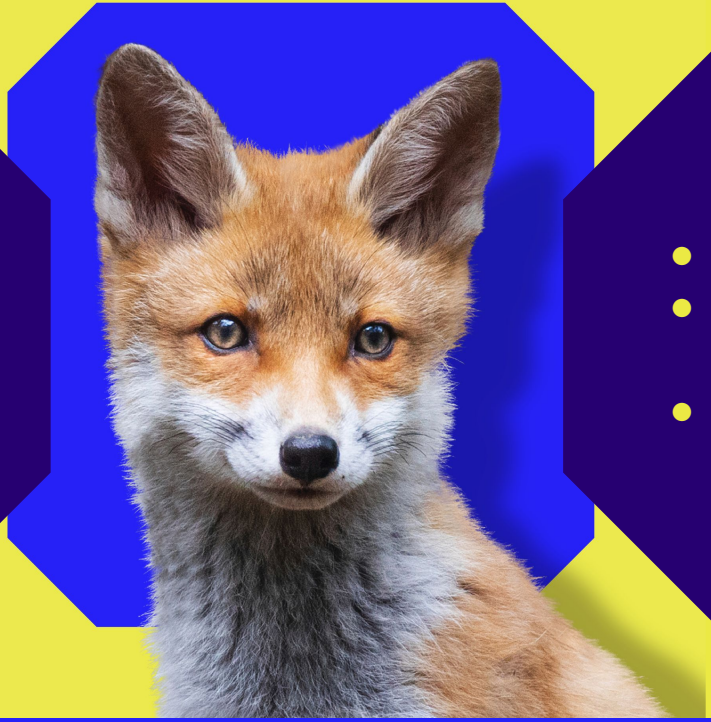
Biosecurity

PPE

- FFP3 face mask when handling all birds in confined space or cleaning out faeces
- Aprons/coveralls/ waterproofs to protect uniform



Wear Gloves At All Times

- Your protection
- Patient protection eg feather integrity
- Human scent

Avian Influenza

- Notifiable zoonotic disease of all bird species
- High risk species - poultry, waterfowl, seabirds, birds of prey
- Euthanase if any suspicion - Neuro signs/wobbly, respiratory signs
- Double bag immediately, disinfect van/prevent contamination
- Full PPE - FFP3 mask, goggles, plastic gown and gloves
- Discard PPE after every case

Any Questions ?

Decision Making

Possible Outcomes of Triage

- Immediate release
- Immediate euthanasia
- Transfer for assessment and treatment
- Patient dies

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Immediate Release

- Animal may not require rehabilitation
- Usually 24-48 hours observation

Certain circumstances:

- Simple entanglement
- Short term trapped
- Orphans that aren’t orphaned

Immediate Euthanasia

- Can be a difficult decision
  - RSPCA Inspectors and Wildlife vets on hand for advice
- Early decision important
  - Welfare implications of transport
- Does species cope in temporary captivity ?
- Must be releasable

Euthanasia considerations

- Could the animal be owned ?
- Does the species impact on the decision ?
- Availability of resources to care for animal ?
- Fitness to travel if required

Condition	Justification
In Extremis	Patient is beyond help, euthanasia to relieve suffering
Extensive soft tissue injuries	Poor prognosis, especially if multiple sites affected or organs exposed, infection likely
Emaciation	Likely long standing underlying disease
Open fractures	Exposed bone contaminated with high risk of infection
Permanent disability/Missing limbs	Disability severely affects survival (food, predators etc)
Contagious disease eg: Myxi/lepto/ psittacosis	Untreatable with v.poor prognosis. Contagious/zoonotic
Very old/young animals	End of natural life expectancy/ young juveniles v difficult to rear, with low success
Severe deep flystrike/mange	Underlying cause. Toxin production from maggots, deep invasion of tissue. Many cases can be treated if not severe
Pelvic Fracture	Risk of difficulty giving birth. Usually needs consultation with vet

Hedgehogs (Erinaceus europaeus)

- Collapsed/dying
- Severe fly strike or ringworm
- Missing limbs
- Compound fractures
- Skull fractures/severe nose damage
- Spinal fracture

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Flystrike

Ringworm

Vs

Foxes
(Vulpes vulpes)

- Emaciation
- Mange
- Missing limbs or eye
- Missing several canine teeth
- Fractured spine
- Leptospirosis/Jaundice
- Exposed viscera
- > 4 weeks care may preclude release
- Behavioural (tame/imprint)

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Mange

Leptospirosis/Jaundice

Pigeons & Doves

- Missing limbs
- Old, compound or joint fractures
- Neurological signs (PMV)
- Permanent blindness/missing eye
- Multiple, open or fragmented fractures
- Severe Trichomoniasis (canker)
- Purulent conjunctivitis/nasal discharge (psittacosis)
- NB RACING PIGEONS

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Other Birds

- Corvids with poor feathering
- Emaciation
- Severe intoxication
- Blind/naked neonates

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Rabbits & Hares

- Myxomatosis
- Spinal fracture
- Multiple limb fracture
- Blind
- Abnormal dentition
- Juveniles < 100g

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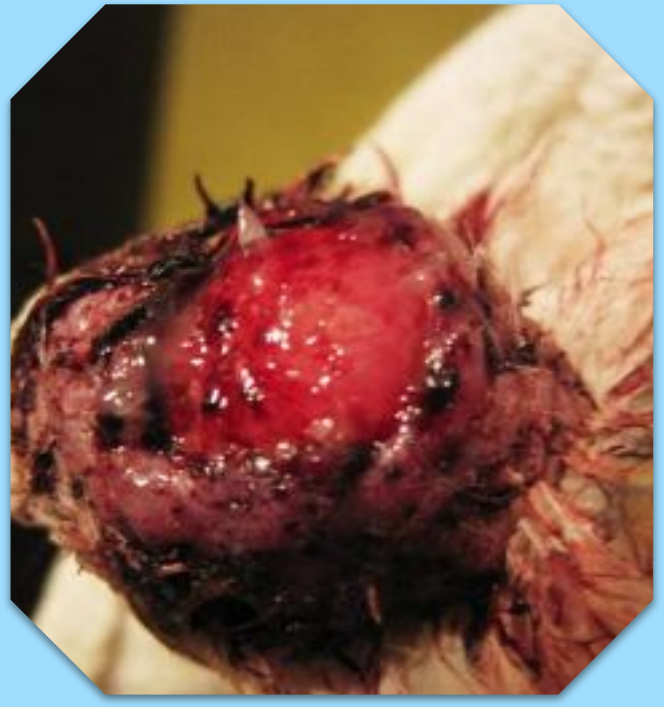
Immediate euthanasia ?
Not necessarily…

- Suspected spinal damage
- Temporary blindness
- Closed fractures

Immediate euthanasia? Not necessarily…



Scalped birds

If in doubt…



Euthanasia at any stage can be subjective, emotive and controversial, and decisions vary based on season, time, resources & staff involved.



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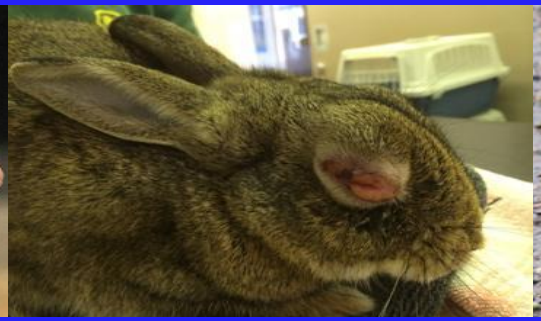
If in doubt…


ALWAYS seek a second opinion from an experienced colleague or a vet



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Euthanasia- Context

There are a number of reasons for euthanasia of wild animals:

- Health/Suffering
- Prognosis for successful release
- Behavioural
- Legal
- Other

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Euthanasia- Legal

RSPCA responsibilities

- To employ euthanasia responsibly within Society
- Home office group authority for Inspectorate PBS under CVO
- Ongoing training
- Recording
- Audit
- Understanding of Invasive Alien Species Regulations

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Euthanasia - Legal

Individual responsibility

- To follow RSPCA protocols
- Ongoing training
- Appropriate use
- Follow and maintain secure storage guidelines
- Recording use
- Verification

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Legal Aspects of Euthanasia

- Euthanasia is NOT an act of veterinary surgery
- **Wildlife only** - Owned animals must not be euthanased without a signed consent form from the owner (must be over 18 years old)
- Racing pigeons,
- Stray cats/dogs,
- Escaped exotic pets,
- Birds with IBR rings

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Euthanasia - Legal

- A Veterinary Surgeon or Police Officer only can act as agents of necessity under the Animal Welfare Act 2006 in order to mitigate suffering

- Clinical notes and evidence essential

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Euthanasia Ethics

- Not to witness or be made aware of death of another animal unless absolutely unavoidable
- Avoid exposure to dead bodies where at all possible

Compassion Fatigue & Euthanasia related stress

- Animal lovers
- Caring – killing paradox
- Support colleagues
- Shared responsibility for euthanasia

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Understanding PBS

Danger of drug to people

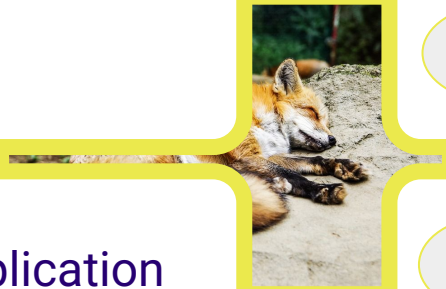
- Drug of choice for veterinary suicides
- Recognise and report any concerns regarding mental health

Euthanasia- Techniques and practicalities

Humane Euthanasia

5 Basic Elements:

1. Compassion
2. Appropriate application
3. Knowledge
4. Technical skills and experience
5. Careful consideration of when it should/ should not be performed



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Euthanasia Objectives- ‘Kind or good killing’

1	Rapidly cause a loss of consciousness(total time not a factor)
2	Minimise pain, distress and fear **BEFORE** loss of consciousness
3	Be followed rapidly by death
4	Require minimum restraint
5	Be reliable & irreversible
6	Be acceptable (aesthetically) to observers
7	Leave tissues suitable for pathology & safe for scavengers

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Methods of humane euthanasia

Chemical/ pharmacological

Physical

Shooting /captive bolt
Decapitation
Cervical dislocation
Head trauma

Adjunctive

Captive Bolt
Pithing
Exsanguination
Stunning

Physical Euthanasia

- No requirement for use of controlled drug
- Can be fed to other patients
- No issues re. correct disposal
- Care re public perception
- Varying skill levels
- Many people reluctant
- Very effective when done
- Different techniques

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Manual Neck Dislocation

Small Birds only

Neck dislocation should involve sudden stretching of the neck to instantly damage the brain stem, the lower part of the brain from which the spinal cord arises, and cause extensive damage to the major blood vessels.

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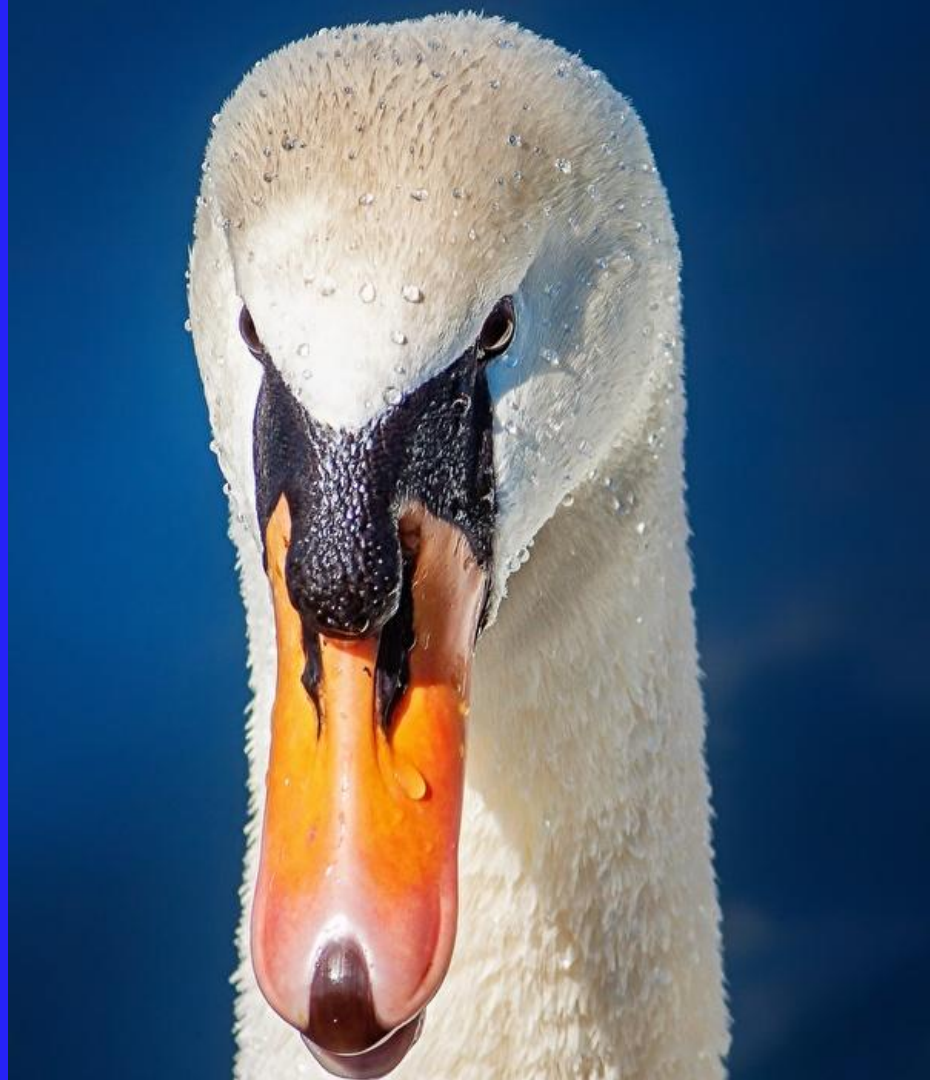
Chemical/ pharmacological

- POM-V
- Can only be accessed & handled by those certified to use it
- Controlled Drug
- (Schedule 3) - storage and stock control



Pentobarbitone Sodium

Usage:

- Spillage
- Expiry date
- Proper disposal of carcasses and OOD/excess drug required

Pentobarbitone Sodium

Human Safety:

- Barbiturate
- Sedation, cardiac & respiratory depression leading to death
- Toxic if swallowed or absorbed through skin
- Wear gloves
- Copy of Material Safety Data Sheet
- Training and First Aid action

First Aid

General

- Wash hands and eyes immediately
- If ingested/injected seek medical attention
- If in doubt or symptoms evident, seek urgent medical attention

Specific

- No specific antidote
- Administer supportive and symptomatic treatment

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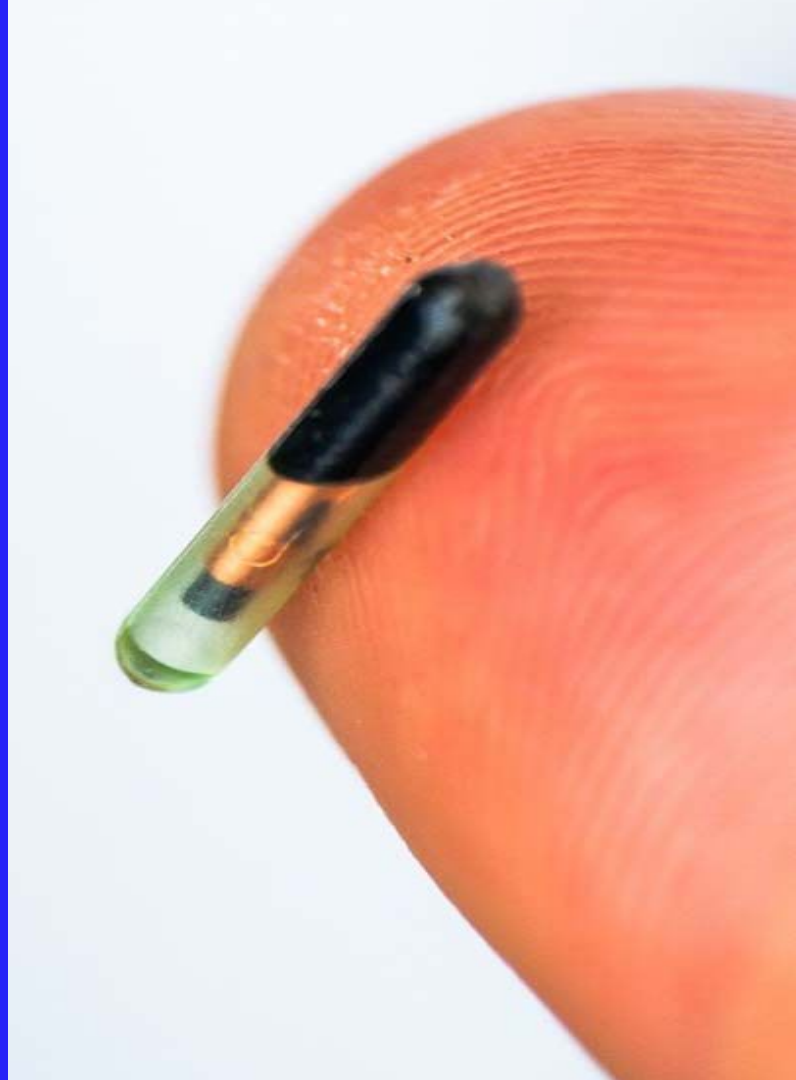
All Those Undertaking Euthanasia

Will sign an undertaking that:

a) They have received and understood euthanasia training
b) They have read and will abide by the rules as laid down in the training, at all times
c) they will abide by the rules and legislation for storage and recording of usage of PBS
d) They are personally responsible for keeping up to date with best practice and maintaining competency

Equipment required

- Microchip scanner
- Restraint/control aids
  – towel, gloves, brush, muzzle
- Appropriate sized syringe
- Appropriate sized needle
- Alcohol for IV injection
- Appropriate volume of Pentobarbitone



Syringes

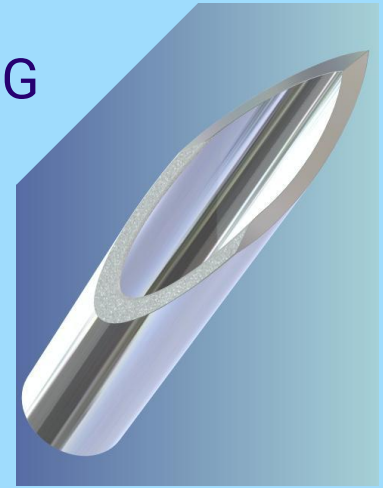
- Size
- Volume
- Concentric vs. Eccentric
- Tips – mount vs lock

Concentric Luer **Luer Lock** **Eccentric Luer** **Catheter**

Needles

Gauge

- Grey/Brown – 27G
- Orange – 25G
- Blue - 23G
- Green – 21G
- Pink – 18G

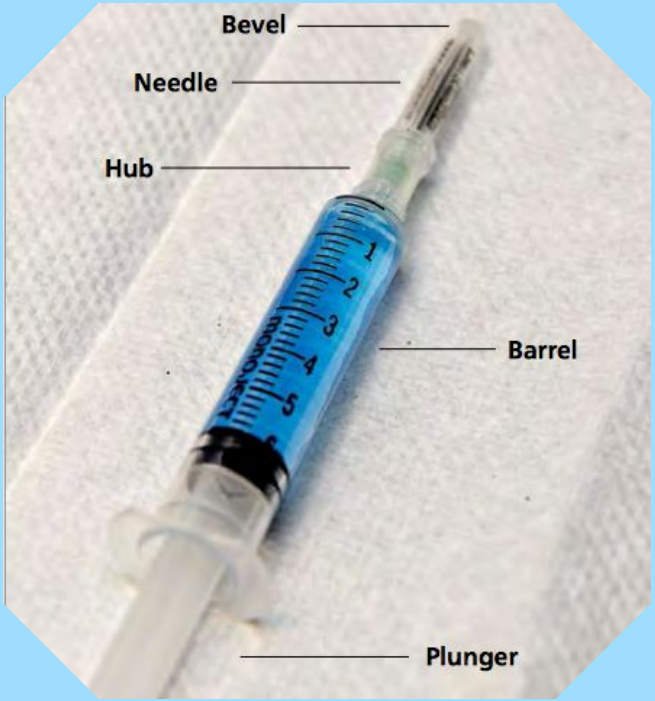


Length

- Standard 5/8”
- Intrahepatic use 1”

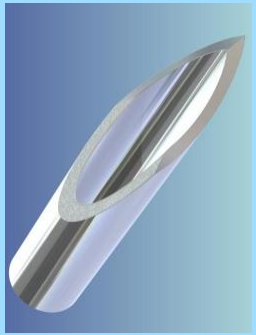
Using syringes

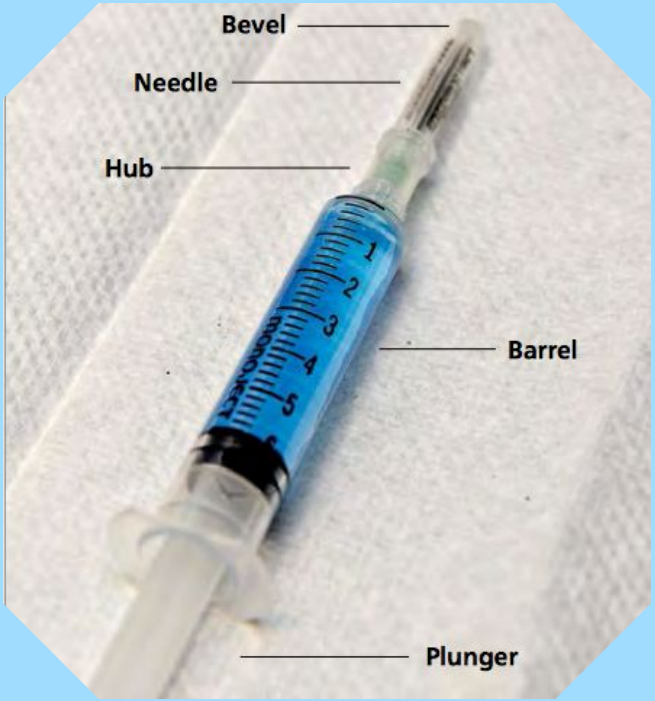
- Select appropriate size of syringe for volume
- Eccentric syringe best for IV injection
- Scale facing upwards
- Read from top of black line on plunger
- Remove air set in syringe and loosen gasket/plunger
- CAN reuse PBS only syringes
- Dispose of with needle in sharps bin



Using Needles

- Select smallest gauge practical
- Mount needle firmly
- Bevel facing upwards
- Don’t reuse needles – blunt
- Disposal regulated
- DO NOT replace needle cap
- Use needle remove in sharps bins
- Don’t overfill



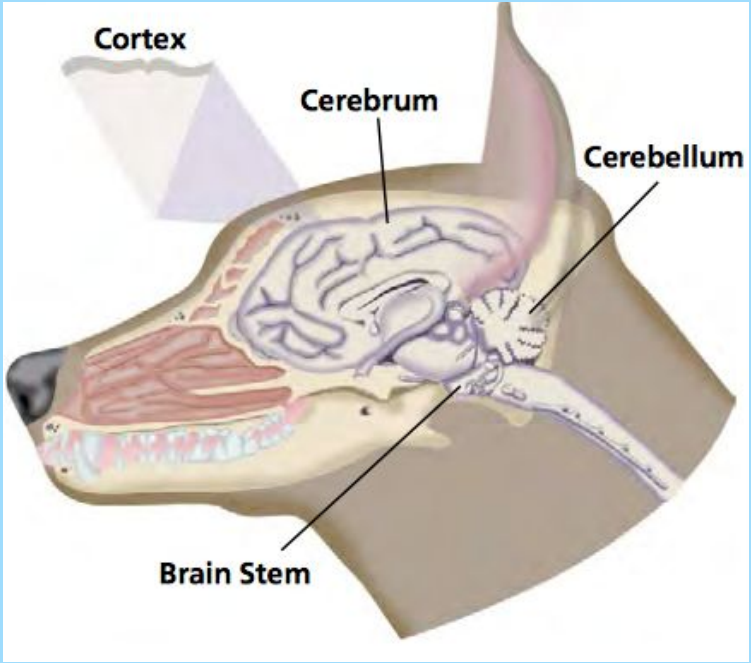


Understanding PBS

Effects of PBS: 4 Stages

1) voluntary excitement
2) involuntary excitement
3) surgical anaesthesia / unconsciousness
4) medullary (brainstem) paralysis

*** After medical death, involuntary death reflexes (heart fibrillations, agonal breathing, vocalisation) may occur



PBS Administration Routes

Intravenous

Drug reaches brain via circulation therefore fastest results if inject directly into vein

Intrahepatic

Into the liver

Intraperitoneal

Into abdominal cavity (never in birds)

Intracardiac

Into the heart only when under anaesthesia

Never Subcutaneous or Intramuscular
NB - Circulation/collapsed veins

Intrahepatic or Intravenous ?

- IV is route of choice for all birds over 1kg and all mammals over 2kg
- Fast metabolism in small animals therefore rapid drug absorption from liver
- As body size increased, metabolism and therefore drug absorption slows - takes longer to reach brain from liver
- Excitement phase and slow to reach unconsciousness in larger animals

PBS Dose Rates

Vary with route, animal size, health status

Large Mammals
IV
0.7 - 1 ml/kg
should be enough

Large birds
IV
1 - 2.5ml/kg

Small mammals
IH
1 – 2.5ml/kg

Small birds
IH
2.5 – 6 ml/kg

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Euthanasia Procedure - Example doses for Birds

Species	IV route (mls)	IH route (mls)
Mute Swan	8 - 12mls	NA
Herring Gull	1 - 1.5ml	2 - 3mls
Mallard Duck/Pheasant	1.5 - 2mls	2.5 - 3mls
Raptor	1ml	1.5-2mls
Crow/Owl	(0.5 – 1 ml)	1 – 1.5mls
Wood Pigeon (300-600g)	0.5 - 0.8 mls	1.5 – 2mls
C. Dove (150-250g)	0.3 - 0.5 mls	0.5 – 0.8ml
Blackbird (100g)	NA	0.3 – 0.5mls
House Sparrow (30g)	NA	0.2 – 0.3mls

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Euthanasia Procedure - Example doses for Mammals

Species	IV route (mls)	IH route (mls)
Badger	5 - 12mls	NA
Seal	10-30 mls	NA
Squirrel	NA	1-3
Hedgehog	NA	2 – 3mls
Rabbit	0.5-1.5	1-2
Rat	NA	0.5-1
Mouse	NA	0.2

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Route	ADVANTAGES	DISADVANTAGES
INTRAVENOUS	**PREFERRED ROUTE WHERE POSSIBLE** Quicker More certain Lower doses required	Skill required Can be difficult to locate Contact with dangerous animals May require prior sedation Restraint required May require two operators
INTRAHEPATIC	Minimal handling Less skill than IV Rich blood supply Easier in small/young animals Recommended route in small birds	Slower than IV May be more stressful Potentially painful
INTRAPERITONEAL	Still Effective Less skill required Usually doesn't require sedation	Slower than IV or IH Risk of injection into bladder, bowel. **Not in birds** Pain

Routes of Administration In Summary:

- IV preferred in larger birds
- IH in small birds
- IP in small mammals only
- Consider technical difficulty of IV vs slow time to death of IH
- Potential pain of IH/IP

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Restraint for Euthanasia Birds

- **Passerines**
  Ringers grip
  Restrains beak & wings for IH/IV
- **Birds of Prey**
  Ice cream cone hold
  Restrains talons
- **Swans**
  Swan bag
- **Gulls** and other species
  Wrap in towel

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Intravenous injection - Birds

- Don’t pluck feathers
- Surgical spirit
- Not always necessary to raise vein
- Insert needle bevel up
- Can bend the needle
- Draw back small amount blood (care if vein fragile)
- Rapid injection

Basilic Vein (Wing/Ulnar)

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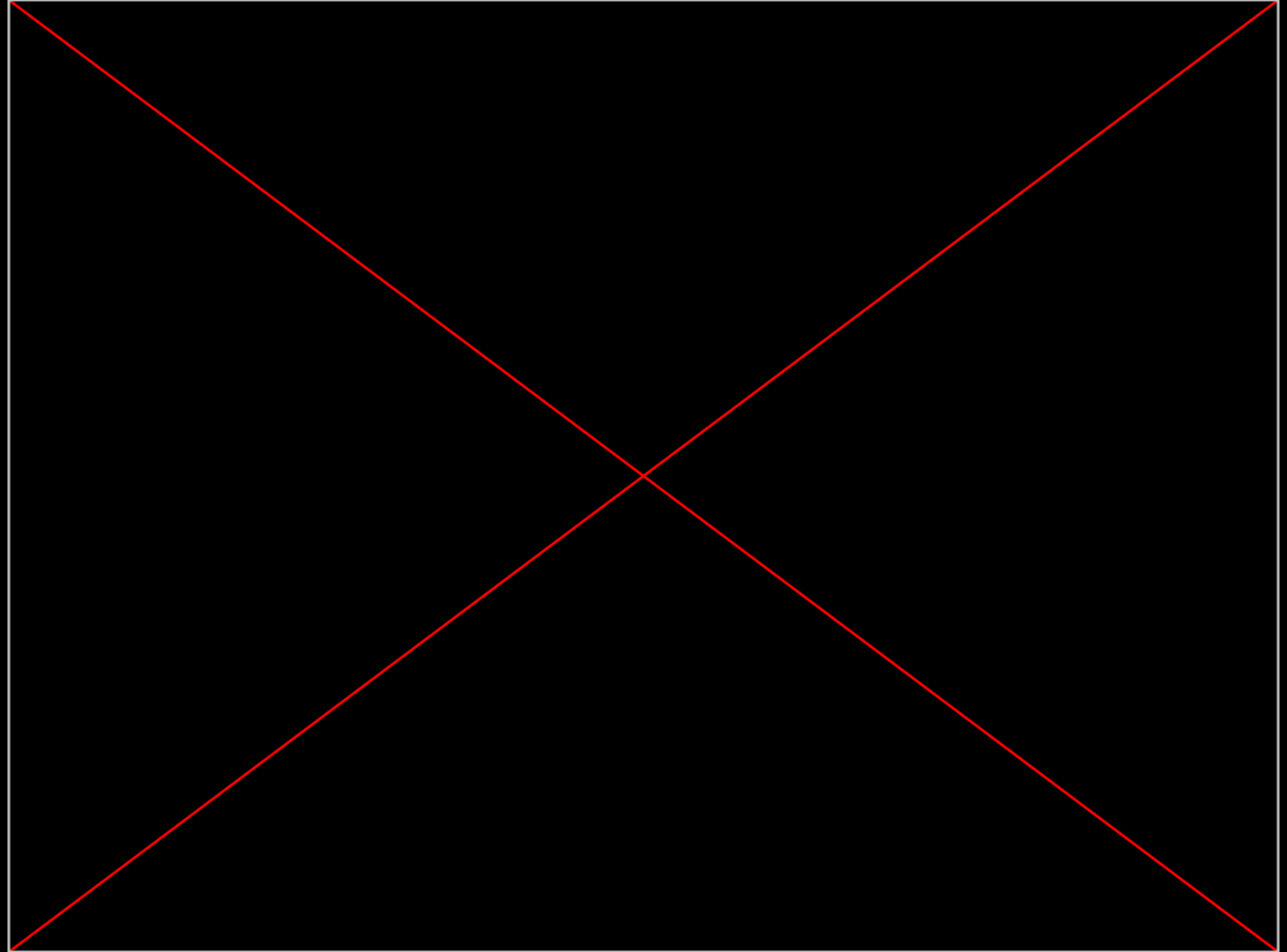
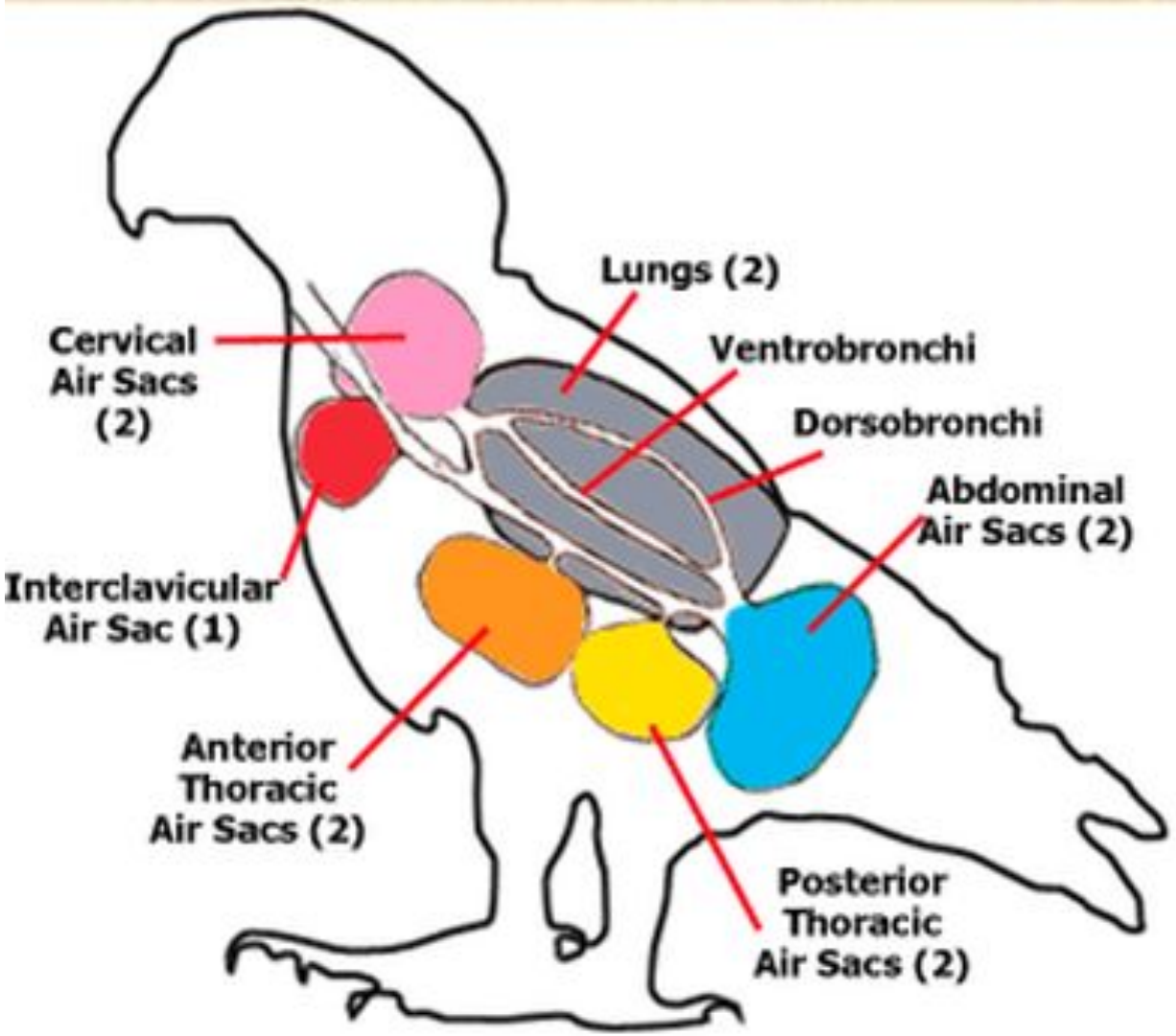


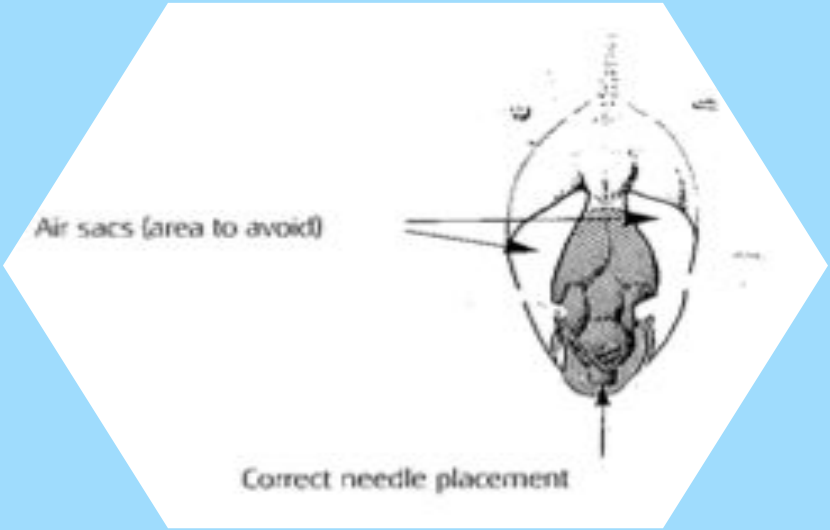
Medial Tarsal Vein (Waterfowl)

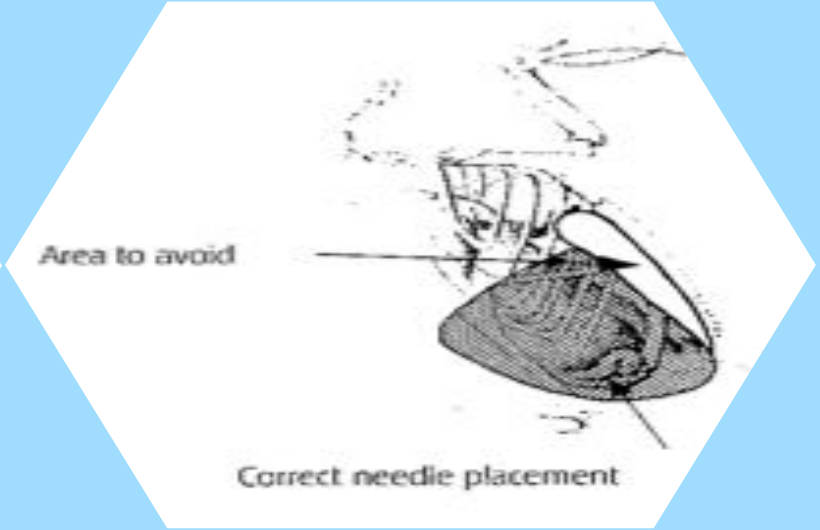
Intrahepatic injection - Birds

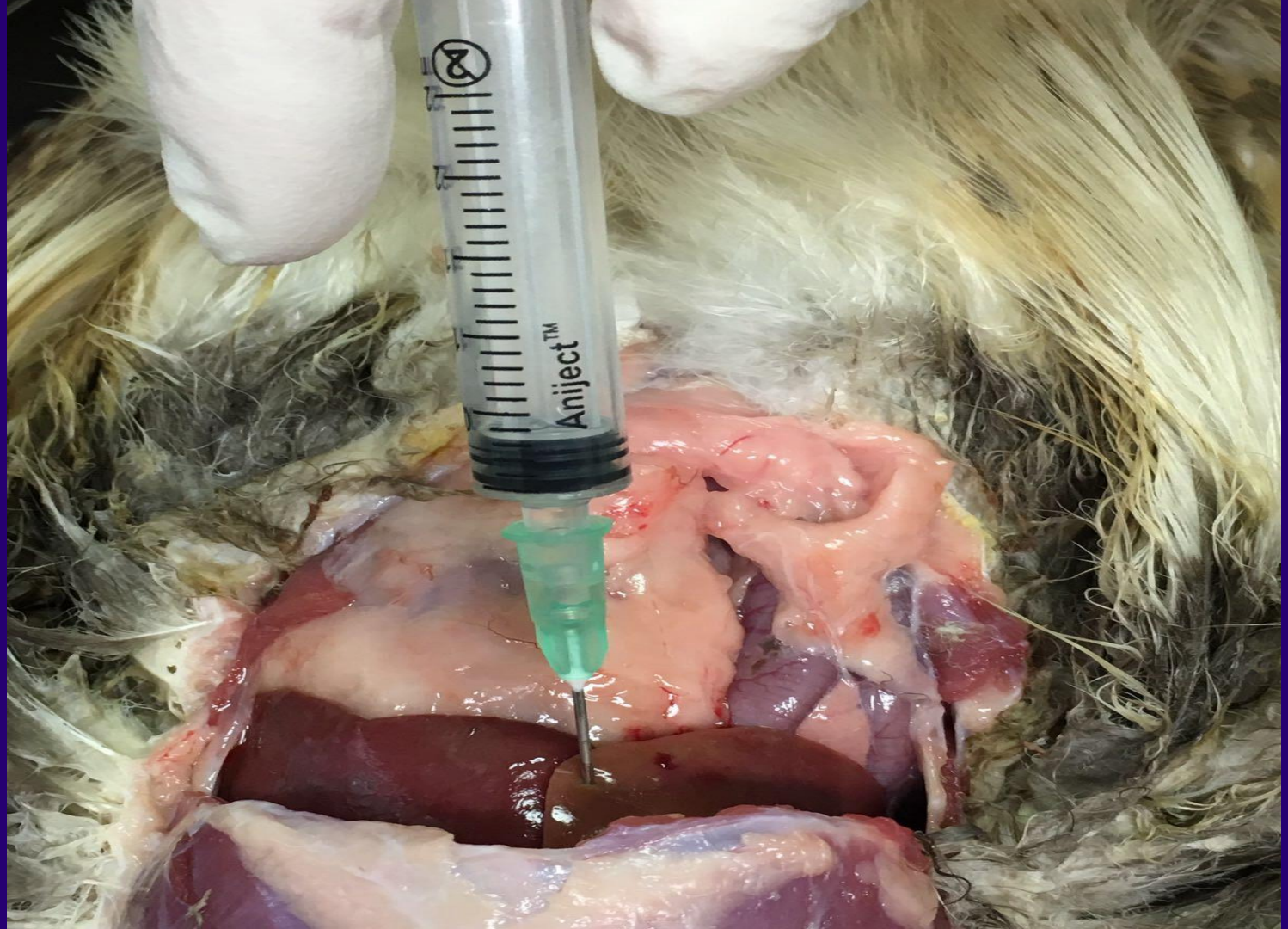
- Liver is midline and slightly larger on left
- Parallel to keel to avoid air sacs
- Draw back negative pressure or blood
- Do not inject if draw back air !
- 30 degree angle (species differences)


Lungs (2)
Cervical Air Sacs (2)
Ventrobronchi
Dorsobronchi
Abdominal Air Sacs (2)
Interclavicular Air Sac (1)
Anterior Thoracic Air Sacs (2)
Posterior Thoracic Air Sacs (2)

Intrahepatic injection






Anijject™

Restraint for Eunthanasia - Mammals

Rabbits

IH - Support legs by holding scruff with back end on floor (so rabbit 'sitting')
IV - wrap in towel so ear exposed

Foxes

Grasper
Crush cage
Muzzle
Sedation

Badger

Often need sedation

Rodents

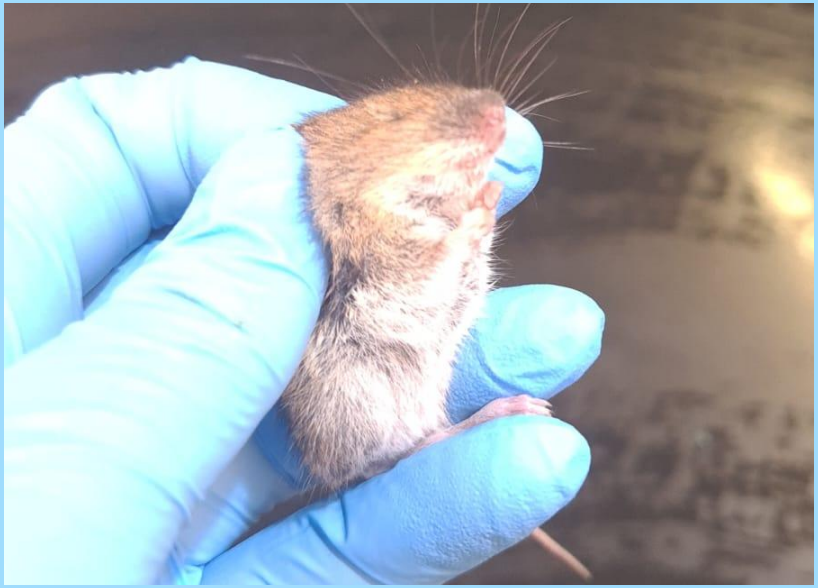
Scruff to prevent bites

Hedgehogs

Do not need to uncurl to euthanase
Towel or Protective gloves

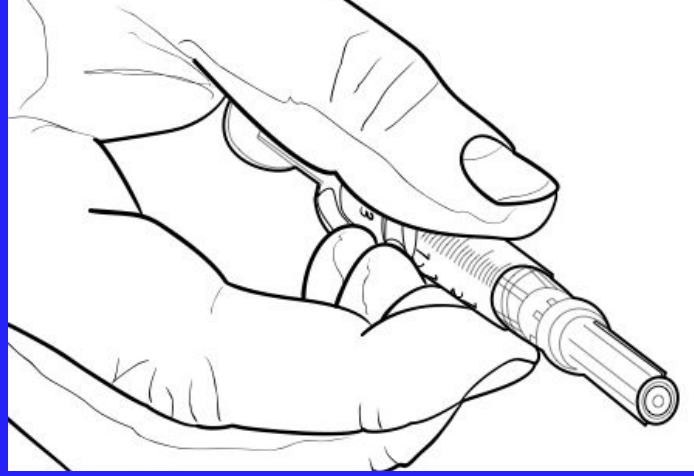
RSPCA

Restraint for Euthanasia - Rodents

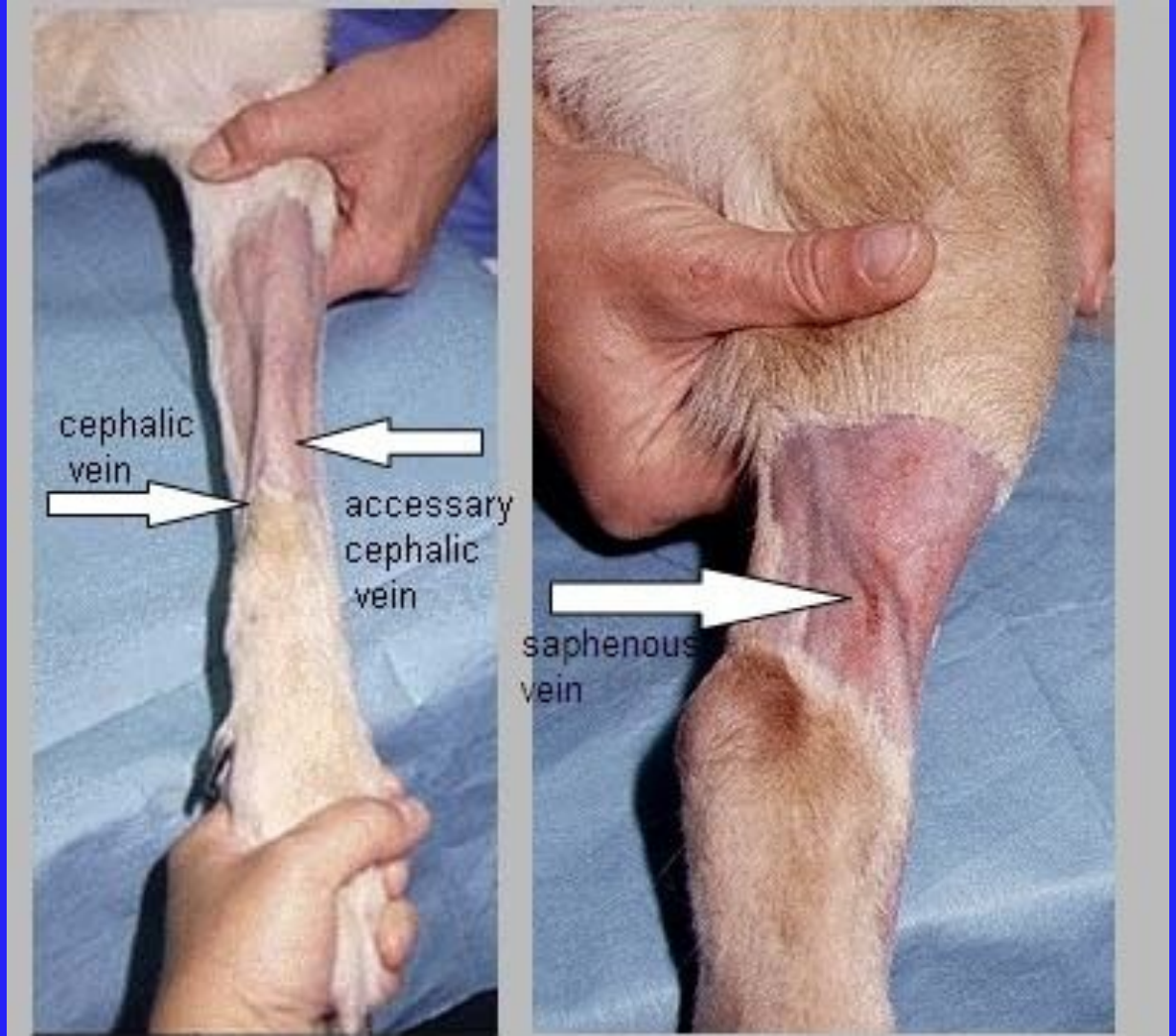


Intravenous injection - Mammals

- Trim fur with scissors
- Surgical spirit
- Raise vein if appropriate
- Insert needle bevel up
- Draw back small amount blood
- Rapid injection



RSPCA



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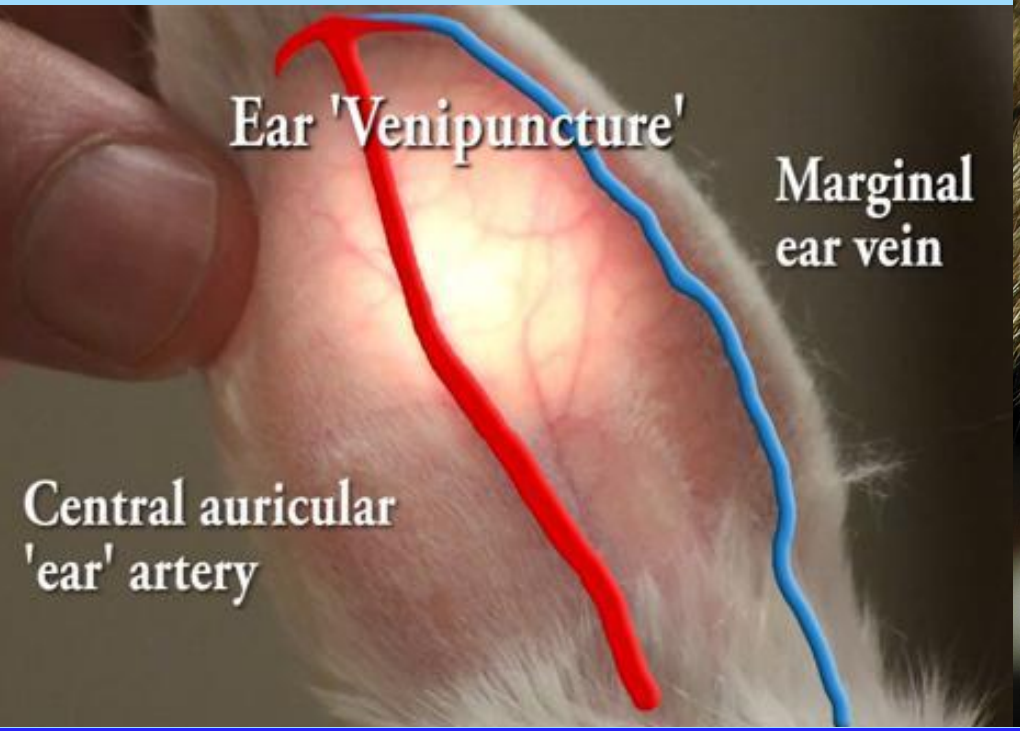
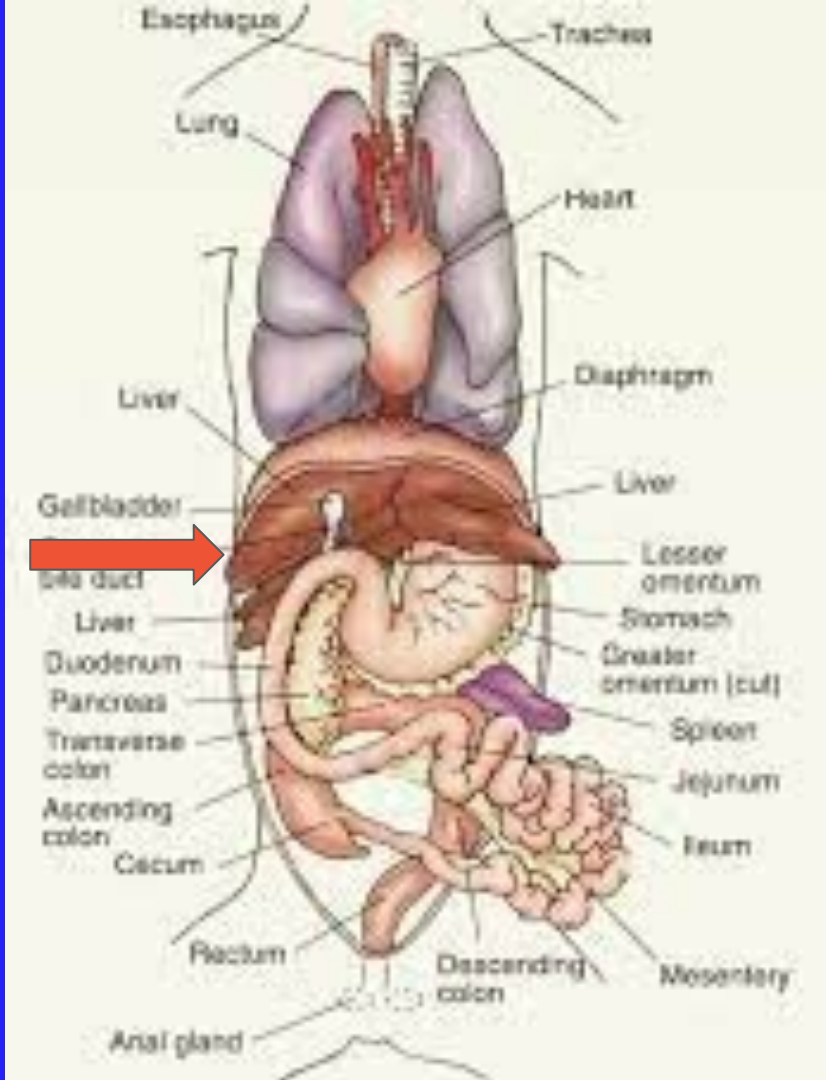
Marginal Ear Vein (Rabbits)



Extradural Venous Sinus (Seals)

Intrahepatic injection Mammals

- Liver is immediately behind last rib
- Slightly larger on right hand side
- Aim for midline but no air sacs
- Still drawback



Intrahepatic Injection - Hedgehogs

- Relatively large liver
- Aim for centre of hedgehog
- Use 1” needle
- Avoid spine
- Can give intracardiac once heavily anaesthetised

Routes of Euthanasia Summary

Species	Preferred Routes of Euthanasia
Large Mammals	IV only Cephalic, saphenous, jugular. CB
Seals	IV only Extradural (venous sinus) or free bullet (CB juveniles only)
Rabbits/Hares	IV marginal ear vein, IH/IP or CD
Hedgehogs	IV cephalic, IH/IP
Garden Birds	IV right jugular, IH or CD
Pigeons/Doves	IV Basilic or Medial Tarsal, IH or CD
Corvids	IV Basilic or Medial Tarsal, IH or CD
Waterfowl	IV only Medial Tarsal, Basilic
Seabirds	IV Medial Tarsal, Basilic or IH
Birds of Prey	IV Basilic or Medial Tarsal (juvenile) or IH
Reptiles/amphibians	Vet only

Euthanasia Procedure

Assessing when to desist:

- There may be times when problems occur
- Unable to locate vein, repeated blowing of vein, animal requires sedation
- Staff should realise when to cease and
- when to find help

Steps for verification

1. Absence of blink palpebral/corneal reflexes

2. Use stethoscope to check that heartbeat and respiration have stopped

3. Verify onset of rigor mortis only 100% step Usually within 30 minutes to 2 hours

Only a Vet should confirm death without rigor mortis

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After verification, ensure..

- Out of sight of live animals
- Cannot be eaten by other animals
- Correct waste disposal
- If any possibility of Post Mortem Examination – DO NOT FREEZE
- Fill in paperwork
- PBS Book
- Clinical notes including final result

In Conclusion

Triage

- Knowledge of what's normal, physical examination, common presentations
- Health and safety - physical and zoonotic - PPE

Decision Making

- Release, euthanasia or treatment
- Reasons for euthanasia - some species specific, not always clear

In Conclusion

Legal

- Wildlife only
- Home office license, storage, clinical notes, training
- Ethics and compassion fatigue

Practical Techniques

- Rapid loss of consciousness with min fear
- Controlled drug and human safety
- IV - ideal for larger animals, 1 ml/kg average
- IH - Small animals only, care of air sacs in birds

References:

- Yeates, J. (2010) Ethical aspects of euthanasia of owned animals. In Practice [online] 32 (2) p 70-73
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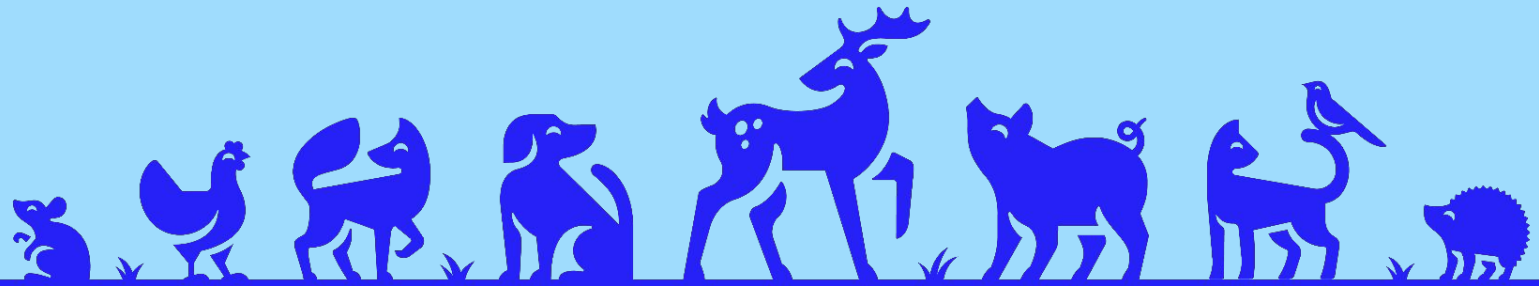
Any questions ?



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