



Hedgehogs: A Clinician's Basic Guide

RSPCA, East Winch Wildlife Center

1. Overview

- I. The clinical exam
- II. Normal hedgehog behaviour
- III. Clinical presentations: the underweight hedgehog
- IV. Clinical presentations: faecal abnormalities
- V. Clinical presentations: dermatology
- VI. Clinical presentations: respiratory disease
- VII. Clinical presentations: neurology
- VIII. General Advice

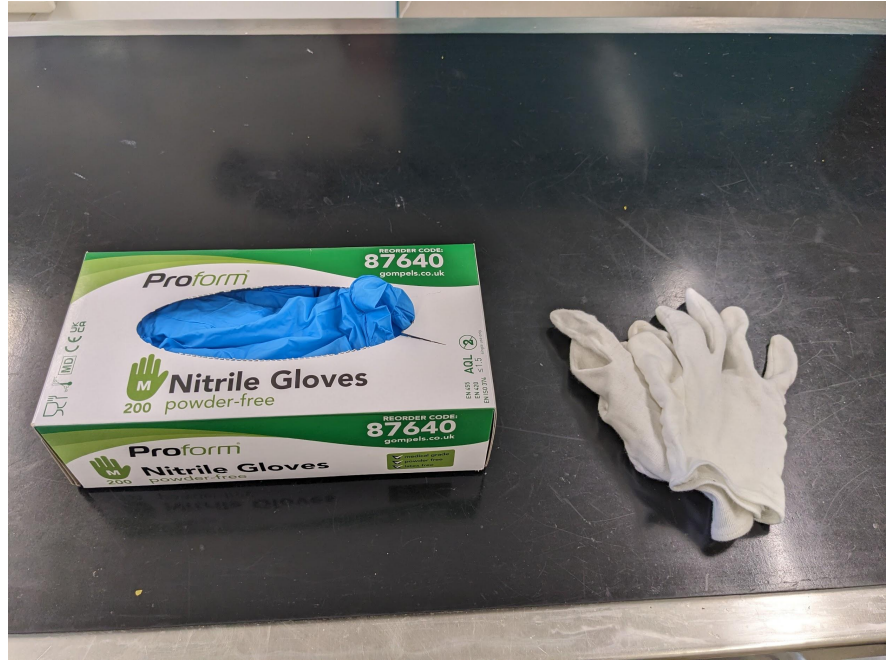
I. The Clinical Exam

Hedgehogs frequently carry ringworm, and their spikes can be very painful!

It is advisable to wear protective gloves under nitrile gloves

Ensure you have a slip-proof surface

Be aware that from about 3 days of age, hoglets can jump! Ensure your patient will not hurt themselves jumping off a surface

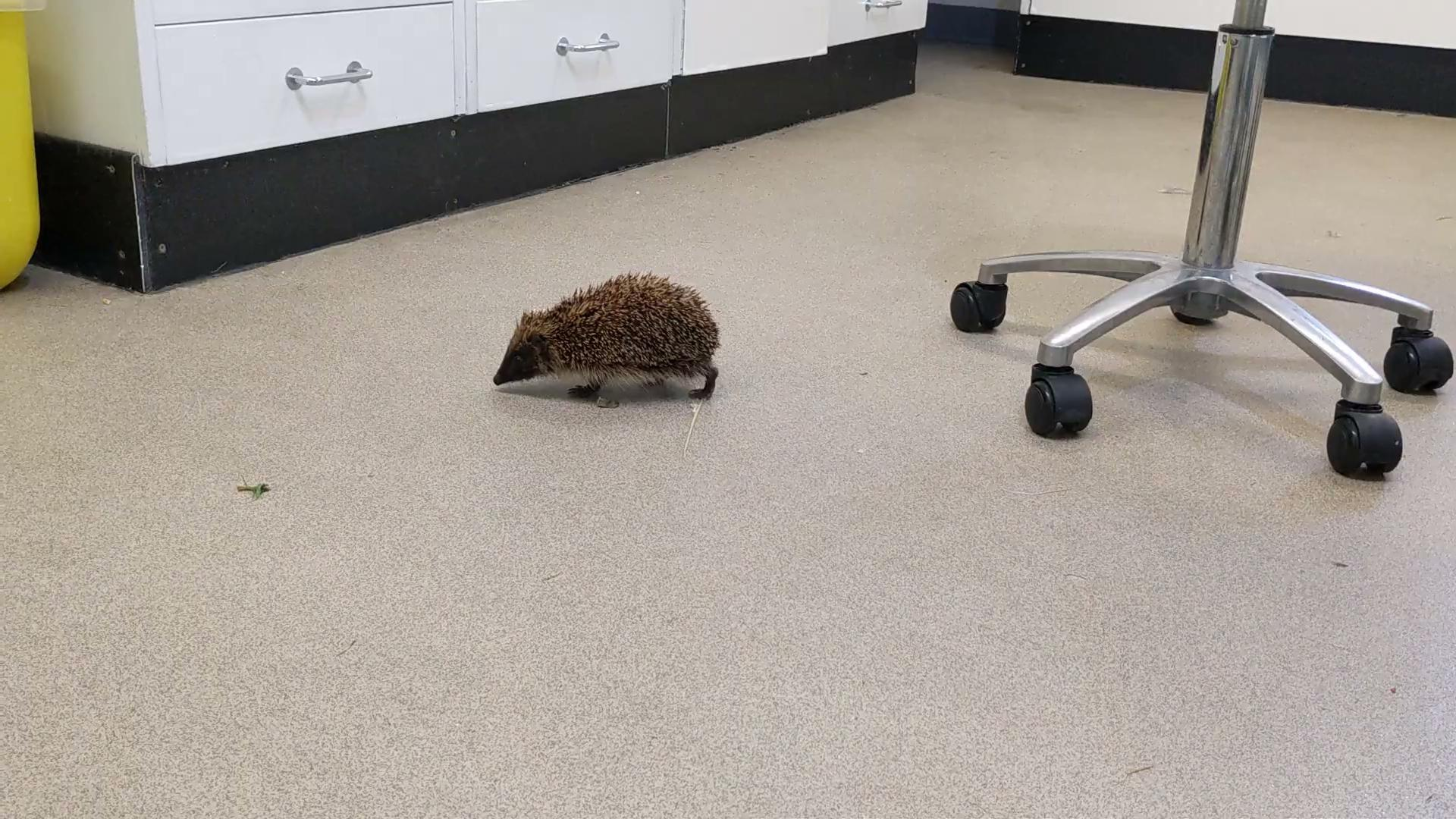


I. The Clinical Exam

Observe from a distance if possible

- Many neurological and orthopaedic issues are apparent from letting the hedgehog explore the examination room
- Hedgehogs have poor eyesight, but ensuring they can navigate around obstacles aids the examination
- Evaluating spine drop, lichenification and alopecia are useful

Many hedgehogs will present *in extremis*, recumbent or obtunded by the time they get to a veterinary center



I. The Clinical Exam

Uncurling

Securing the hedgehog, firm strokes along the caudal spine should encourage them to uncurl

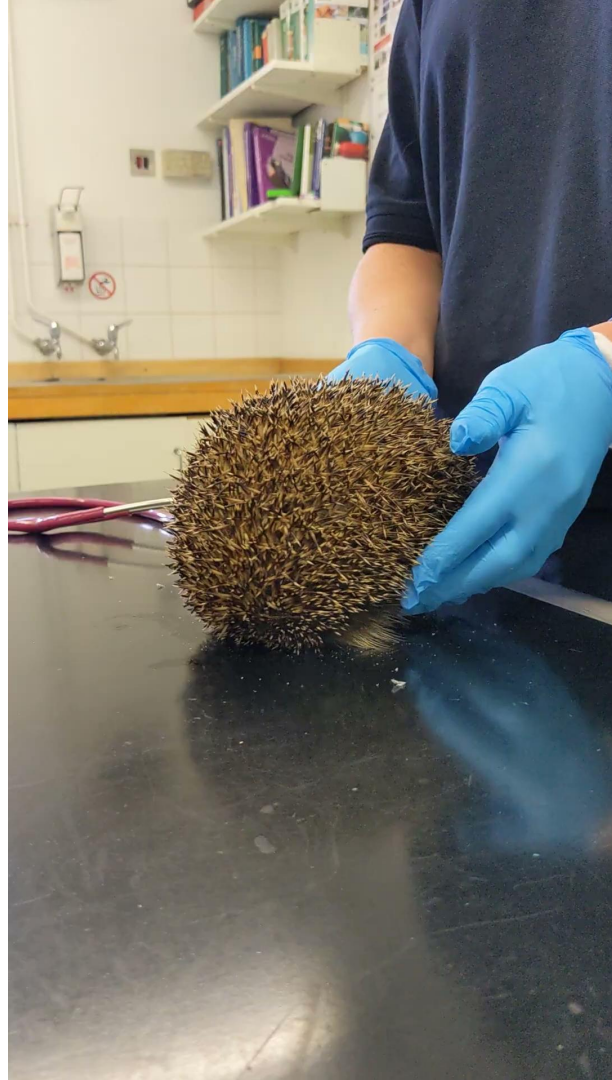
An implement can be used to apply firm and consistent pressure

Do not put them in water as this can be stressful

Do not touch their faces as they hate this and will curl up!

When the hedgehog is uncurled, gently hold their legs in a “wheelbarrow” position, or request an assistant’s help







I. The Clinical Exam

Auscultation

This can be unrewarding!

Often hedgehogs present with “rattles” (see later) which are audible without a stethoscope. However, auscultation the ventral lung fields can show subtle wheezes and crackles.

Cardiac disease is under-reported in hedgehogs; tachycardia is generally attributed to stress of the examination and hence auscultation should be kept as brief, but thorough, as possible

Hedgehogs will curl around the stethoscope if not appropriately restrained which is not useful for auscultating lungs!





I. The Clinical Exam

The ventrum

Assess for alopecia

Ensure all limbs are present

Assess ectoparasite burden of the skirt

Sexing

I. The Clinical Exam

Body condition scoring and Assessing Dehydration

Skin tent can be useful in assessing dehydration

There is a poorly defined body condition scoring scale in hedgehogs

Generally, adults should be over 800 g

I. The Clinical Exam

The face and rhinarium

Doing this last will reduce stress to the hedgehog; it will make them curl up unless obtunded and so assessing other elements first is useful

Mucus membranes should be pale pink and moist; their mouths are often too small to take a reliable CRT

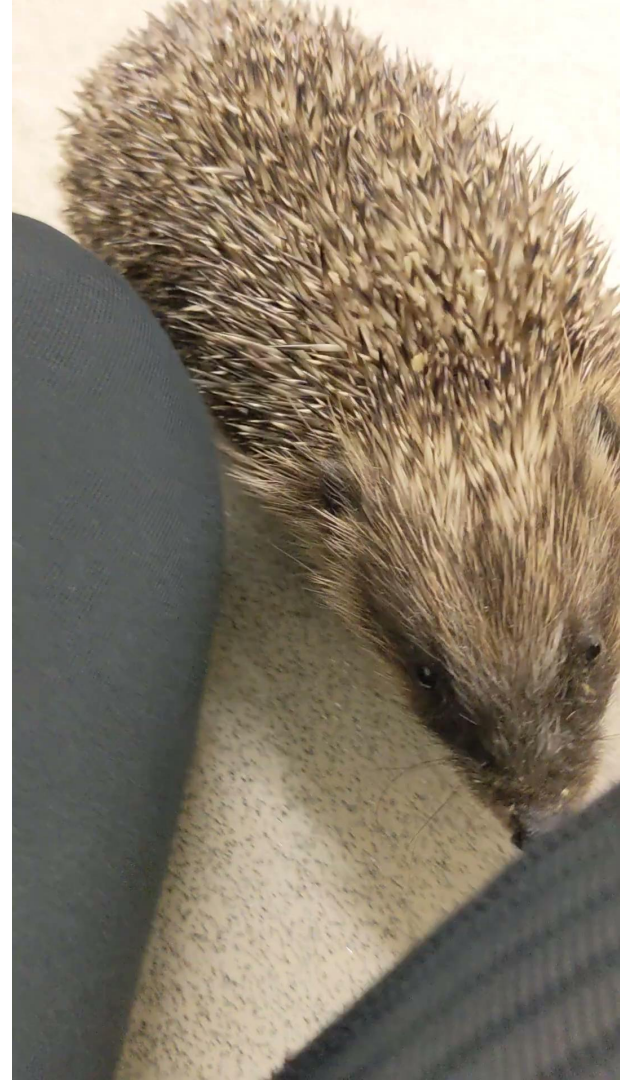
Teeth; elderly hedgehogs will have marked calculus deposits

Damage to the rhinarium significantly reduces a hedgehog's chances of successful release

2. Normal Hedgehog Behaviour

“Huffing”: a defense mechanism, not be be confused with end-expiratory difficulties

“Self-anointing”: bright, curious hedgehogs will do this to familiarise themselves with their environment, although it is not fully understood! Do not confuse what can be quite aggressive contortion and foaming at the mouth with a seizure!



3. Clinical Presentations: The Underweight Hedgehog

GIT disease:

- Salmonella
- Endoparasitism

Young hoglets:

- Orphaned

Older hedgehogs:

- Orthopaedic disease; unable to forage and hunt
- Neurological disease; unable to forage and hunt
- Rhinarium damage; unable to forage and hunt
- Ophthalmic issues; many hedgehogs cope very well - do not presume presence of cataracts equates to why they are underweight!



3. Clinical Presentations: The Underweight Hedgehog

Initial approach

- Faecal cytology; be aware of false negatives due to intermittent shedding
- Appropriate worming: ivermectin is a good first line although will not cover *Brachylaemus* (see later)
- Secondary infections; common sequelae to lungworm. LA betamox is an appropriate choice
- Feeding! Hedgehog food or A/D, offering hard kibble as well as wet food
- Orphans; **exceedingly labour-intensive with a risk of aspiration when stomach tubed.** Advisable to refer these to hedgehog rescues or wildlife centers if 1st generation spines (below) or <50g



4. Clinical Presentations: Faecal Abnormalities

1. **Haemorrhage**

- a. *Brachylaemus erinacei*; faecal flotation, although false negatives are likely.
- b. *Salmonella*; *Salmonella enteritidis* (PT 11, 66, 9a) or *typhimurium*. More commonly seen in rehabilitation centers than in the wild. Unfortunately there is no commercially available diarrhoea panels for hedgehogs, and presumptive treatment is often undertaken with high-dose amoxicillin.

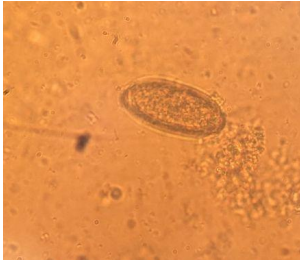
1. **Green and mucoid**

- b. *Capillaria*. Can be diagnosed on faecal cytology, flotation increases sensitivity. Intermittently shed hence false negatives and many veterinarians will choose to treat presumptively.
- c. *Coccidiosis*. Less common.

4. Clinical Presentations: Faecal Abnormalities

A flotation method is the most sensitive:

- Smear a cotton bud with fresh faeces onto a microscope slide
- Add 1 - 2 drops of ZnSO₄ or saline
- Allow to settle for 5 minutes before applying a cover slip
- Evaluate at x10 for an overview
- Evaluate at x40 to identify eggs more closely



Capillaria sp; identifiable by their ovoid shape and miracidium. Species pathogenic to the lungs can be difficult to differentiate from those that are pathogenic to the gastrointestinal tract. Ivermectin 5 days apart is the preferred method of treatment. Image at x40

Crenosoma larvae are frequently identified as small, motile parasites from a faecal smear and cause significant lung pathology. Image at x40



5. Clinical Presentations: Dermatology

Ringworm

Very common! Spine loss, lichenification of the pinnae and peri-ocularly, alopecia of the ventrum.

Oral terbinafine and barrier nursing.

May take several weeks to resolve.

Unless significant secondary pyoderma, shouldn't be a reason for hedgehogs having to come into a vet practice - look for another reason!

Capinaria - often together with ringworm. Can be diagnosed on skin scrape.

Abscesses - very common. Need drained and flushed.

Zinc-deficiency spine loss is less common than ringworm hence barrier nurse and use PPE if any concerns.

Severe ringworm, dermatophytosis, caused by Trichophyton erinacei, although Microsporum species can also be involved. Note the severe loss of spines with lichenification of the ears and face.

Generally systemic treatment is preferable to external, e.g. terbinafine tablets/intrafungol rather than enilconazole due to risk of ocular contamination and stress to hedgehogs from washing/interventions.

(The patient is recovering from a GA in the first and last images)



6. Clinical Presentations: Respiratory Disease

- Exceedingly common; tachypnoea may be stress related, but increased expiratory effort, wheezes and crackles and nasal discharge are reliable indicators of respiratory disease

- ***Crenosoma and Capillaria***
 - Can be diagnosed on faecal cytology
 - Tracheal washes are very stressful for hedgehogs and intubation is very difficult!
 - Secondary infections are very common
 - Ivermectin and LA Betamox commonly used and very effective. These can be administered subcutaneously.



7. Clinical Presentations: Neurology

Trauma can present with a wide range of neurological presentations

Need to differentiate between ataxia, cachexia and normal behaviour

Causes of neurological disease most commonly include head and spinal trauma, although other causes e.g. morbillivirus and B-vitamin deficiency can present as ataxia, paresis or circling



8. Initial Stabilisation

Rehydration: often given at 10% body weight by sterile subcutaneous injection and voluntary feeding established in adults

Feeding: short-term, dog food is acceptable, although commercially available hedgehog foods are available. Mealworms have a poor calcium profile. AD is often used at our wildlife hospital for convalescing patients.

Housing: quiet areas with sufficient space for movement and substrate for nesting is essential.

NSAIDs: subcutaneous metacam is often the most appropriate option, although buprenorphine can be used peri-operatively. Take care in potentially hypovolaemic or hyporexic/inappetent patients.

GA: induction using sevoflurane or isoflurane is often the quickest and least stressful for short procedures. Hedgehogs are difficult to intubate. Take care in dehydrated/hypotensive patients.

Radiography: rewarding for fractures.

Faecal smears: interpret in light of clinical signs. *Coccidia*, *Brachylaemus*, *Crenosoma* or high *Capillaria* burdens are considered pathogenic.

General Advice

- Some mainstays of diagnostics such as temperature and blood samples are difficult to obtain in hedgehogs!
- Be considerate that they are nocturnal, wild animals; ensure teams minimise any handling.
- IV access is very difficult; subcutaneous routes are often the most appropriate.
- Offer a thermal gradient in their housing.
- Hedgehogs carry ectoparasitic burdens; *excessive* ticks and fly strike are deemed issues, several ticks and fleas are not.
- Hedgehogs can bite!
- Be aware of zoonotic diseases, namely but not exclusively Salmonella and ringworm