What You Know that Ain't Necessarily So

An Evidence-based Approach to Common Beliefs & Practices in Veterinary Medicine

To be conscious that you are ignorant is a great step to knowledge.
Benjamin Disraeli

The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.
Daniel J. Boorstin

Perplexity is the beginning of knowledge
Khalil Gibran

The only true wisdom is in knowing you know nothing.
Socrates

Real knowledge is to know the extent of one's ignorance.
Confucius

To know that you do not know is the best.

To think you know when you do not is a disease.

To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge.
Nicolaus Copernicus

Recognizing this disease as a disease is to be free of it.
Lao Tzu

"Veterinarians significantly underestimated the desire of clients to be told about uncertainties in treatment [and] significantly overestimated the loss of client confidence resulting from saying 'I am not sure about this'

This study suggests that most clients want to be told about their veterinarian's clinical uncertainties."

Mellanby, R.J. (2007).

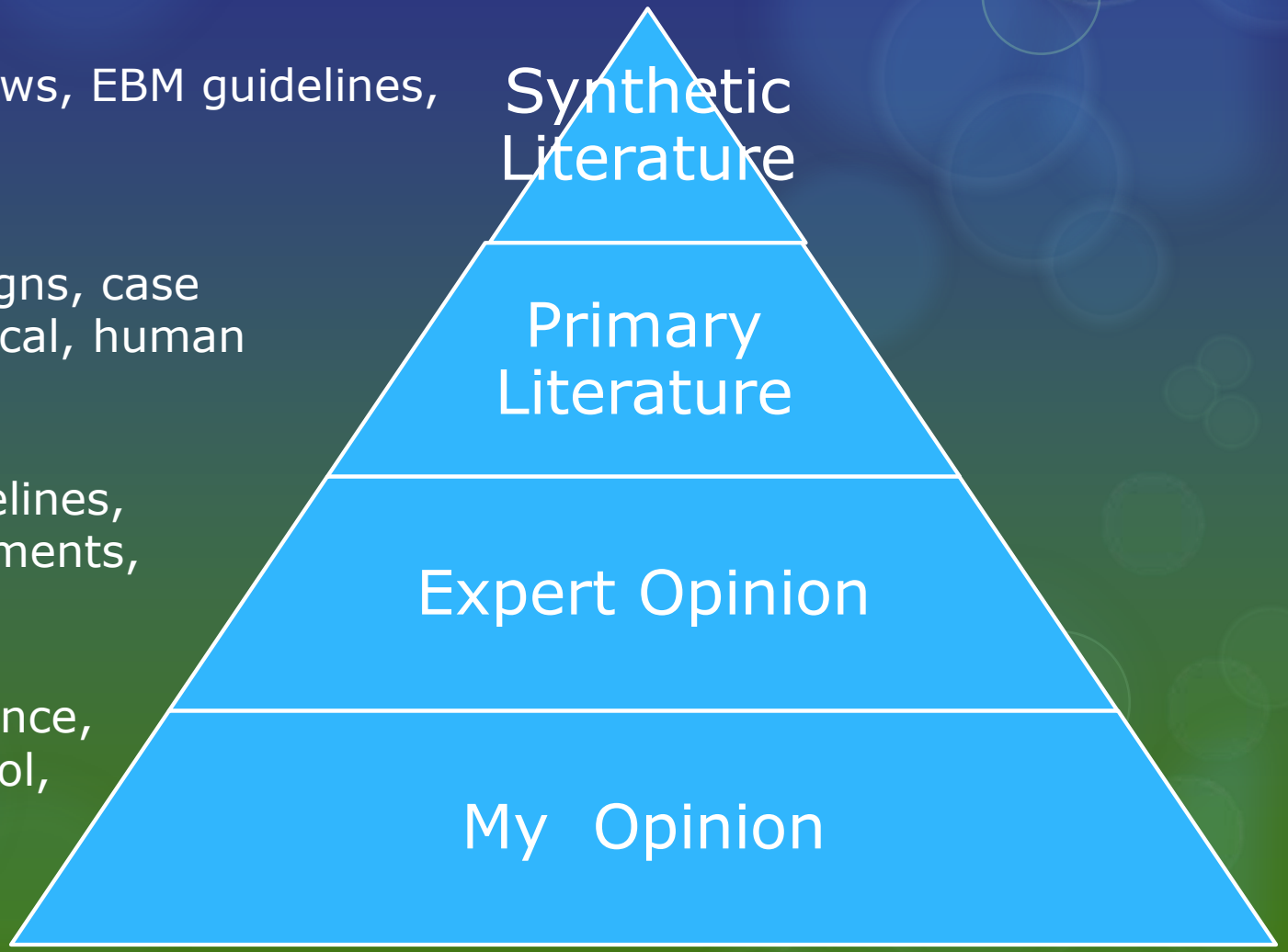
Hierarchy of Evidence

Systematic reviews, EBM guidelines, CATs

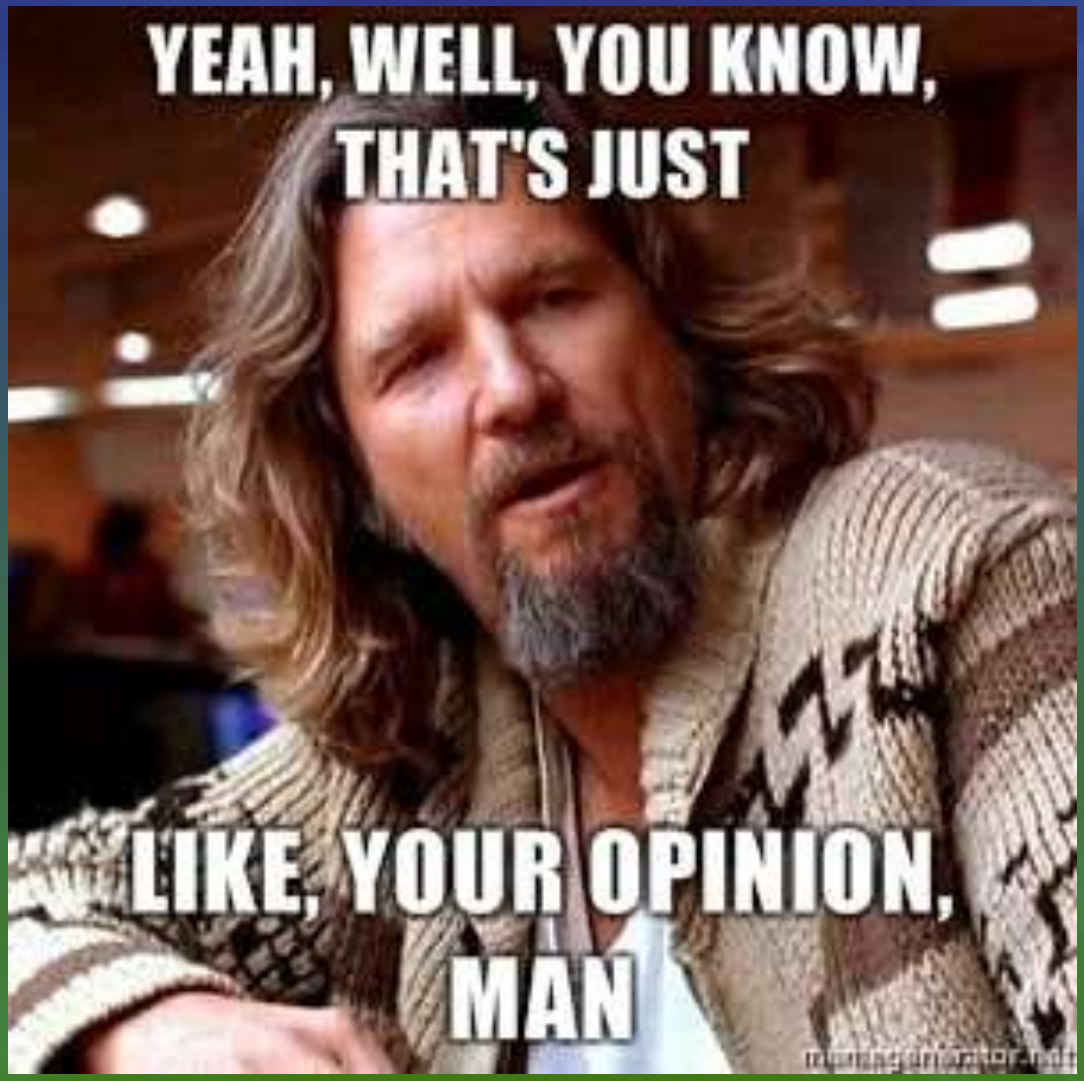
RCTs, other designs, case reports, pre-clinical, human studies

CE, clinical guidelines, consensus statements, textbooks

personal experience, colleagues, school, CE, ??????????



Hierarchy of Evidence



Pheromones

A chemical secreted by one individual that generates a behavioral or physiologic response in other members of the same species.

Bombykol
The sex pheromone
of the silk moth

Pheromones

Pheromones


Spice up your life. Discover the power of pheromones!
F
...and attract
Men.
PHEROMORE
WOMAN TO ATTRACT MEN

Pheromones


ADAPTIL®
The secret to happy dogs


FELIWAY®
The secret to happy cats

Pheromones

Synthetic Vet Literature-

Systematic Reviews-

Frank,D. Beauchamp,G. Palestrini,C. **Systematic review of the use of pheromones for treatment of undesirable behavior in cats and dogs.** JAVMA 2010;236(12);1308-1316.

Meta-analyses-

Mills DS, Redgate SE, Landsberg GM **A Meta-Analysis of Studies of Treatments for Feline Urine Spraying.** PLoS ONE 2011;6(4): e18448.

Pheromones

Synthetic Vet Literature-

- 7 reports on FFP in cats
  - 4 urine marking
  - 1 FIC
  - 1 IVC placement
  - 1 behavior/food intake hospitalized cats
- 7 reports on DAP in dogs
  - 2 noise phobia
  - 5 stress, fear, anxiety-related behaviors

(Frank, 2010)

Pheromones

Synthetic Vet Literature-

- FFP studies
  - 1 RCT w/ placebo control
  - 3 blinded, controlled w/ unclear randomization
  - 3 case series

  - Highly variable
    - spray vs diffuser
    - duration of Tx
    - outcome measures
    - other Tx
    - sample size

(Frank, 2010)

Pheromones

Synthetic Vet Literature-

- DAP studies
  - 2 RCT w/ placebo control
  - 2 placebo-controlled w/out randomization
  - 3 case series

  - Highly variable
    - spray, diffuser, collar
    - duration of Tx
    - outcome measures
    - other Tx
    - sample size

(Frank, 2010)

Pheromones

Synthetic Vet Literature-

- Overall weak, low-quality evidence
- FFP
  - Insufficient evidence for FIC, IVC placement
  - Evidence does not support stress reduction in hospital
  - Some effect on urine-marking but overestimated
- DAP
  - 1 study showed reduced fear/anxiety during training
  - Insufficient evidence for travel-related problems, fear or anxiety in the veterinary clinic, and stress- and fear-related behavior in shelter dogs as well as vocalizing and house soiling in recently adopted puppies.

(Frank, 2010)

Pheromones

Synthetic Vet Literature-

- 4 studies evaluated
- Only 1 blinded RCT
- the quality of studies was variable

- Primary Outcome- spraying stopped or reduced by 90%
  - No significant effect (4 studies)

- Secondary Outcome- some reduction in spraying
  - Significant effect (3 studies)

(Mills, 2011)

Pheromones

Primary Vet Literature-

Conti, LMC. Champion, T. Guberman, UC. et al. **Evaluation of environment and a feline facial pheromone analogue on physiologic and behavioral measures in cats.** J of Feline Med and Surg. 2015. Epub before print.

- Blinded RCT
- 30 cats
- 4 groups
  - Home and clinic
  - placebo and FFP

- Outcomes
  - HR, HRV (ECG), RR, SBP
  - Behavioral score

Pheromones

Primary Vet Literature-

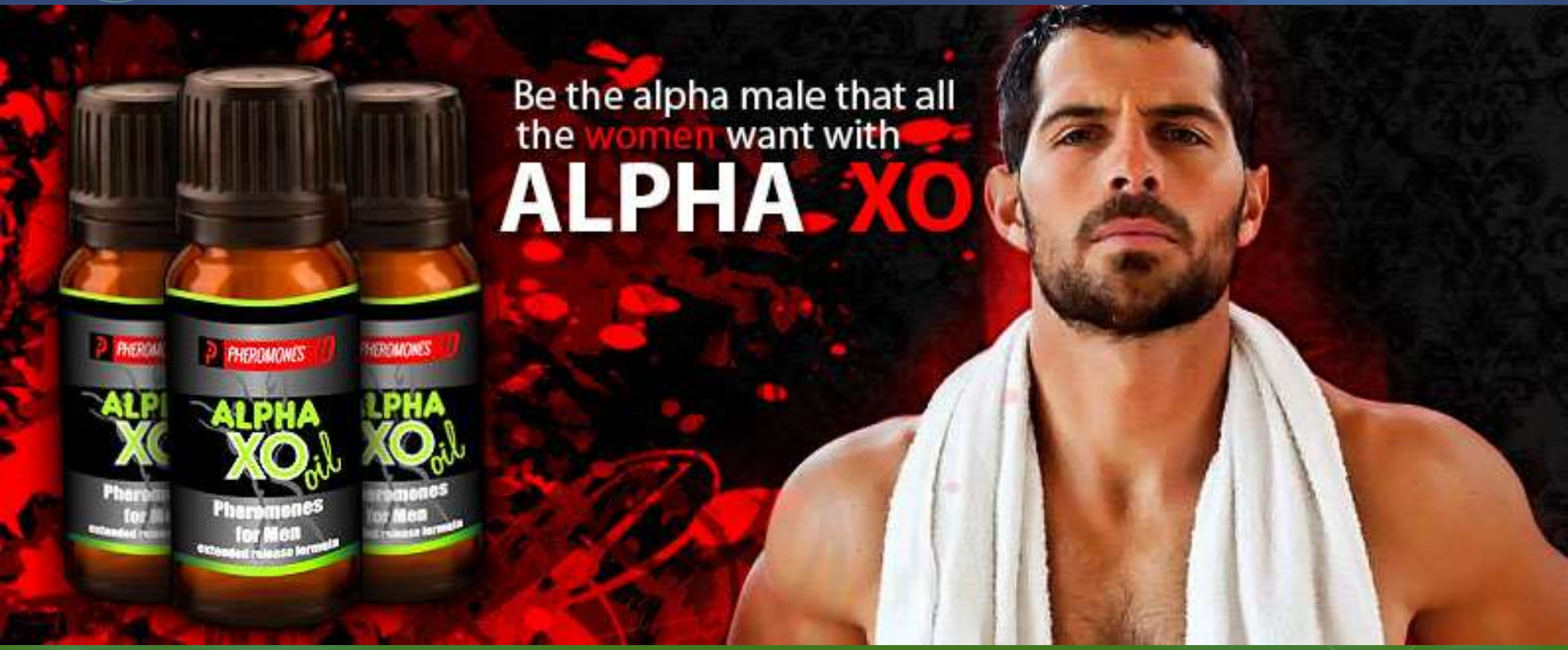
- RR, HR higher in clinic
- SBP same in both environments
- Behavioral signs of stress greater at home

- No influence of FFP on any variable in either environment

(Conti, 2015)

Pheromones

Human Literature-



Antihistamines & Atopy

Synthetic Vet Literature-

Systematic Reviews-

Olivry T, DeBoer DJ, Favrot C, et al. **Treatment of canine atopic dermatitis: 2010 clinical practice guidelines from the International Task Force on Canine Atopic Dermatitis.** Vet Dermatol. 2010 Jun;21(3):233-48.

Olivry T, DeBoer DJ, Favrot C, et al. **Treatment of canine atopic dermatitis: 2015 updated guidelines from the International Committee on Allergic Diseases of Animals (ICADA).** BMC Veterinary Research 2015;11:210

Antihistamines & Atopy

Synthetic Vet Literature-

- Acute flares-

Because of their mode of action…common 'anti-allergic' antihistamines such as hydroxyzine, diphenhydramine and chlorpheniramine are unlikely to be beneficial 'after the fact' to treat acute flares of canine AD.

There is no conclusive evidence of efficacy for treatment of active AD in dogs.

Whether or not antihistamines would be beneficial in dogs with mild AD signs or to prevent the recurrence of flares has not been determined.

(Olivry, 2010)

Antihistamines & Atopy

Synthetic Vet Literature-

- Acute flares-

Oral type 1 antihistamines might provide a small and limited benefit in some dogs with AD

Should preferably be given before a flare occurs

Clinical benefit might also occur due to the sedative effect

Due to their limited efficacy, type 1 antihistamines are likely to be more beneficial in dogs with mild AD

(Olivry, 2015)

Antihistamines & Atopy

Synthetic Vet Literature-

- Monotherapy-

There is a lack of evidence for efficacy of type 1 antihistamines as monotherapy for the management of chronic canine AD

Antihistamines should be used as preventatives, given on a continuous daily basis, and a combination with other antihistamines or other drugs may improve their beneficial effects although further studies are required to validate this.

(Olivry, 2010)

Antihistamines & ATopy

Synthetic Vet Literature-

- Monotherapy-

Type 1 antihistamines have modest efficacy against pruritus, either alone or in combination with each other, but their effect appears to be variable between individuals. For optimal efficacy, this class of drugs are best used as preventatives before a flare occurs—not during or after it—and they should preferably be given on a continuous daily basis.

(Olivry, 2015)

Antihistamines & Atopy

Synthetic Vet Literature-

- Combination Therapy-

an early crossover trial reported that a combination of the antihistamine trimeprazine and the glucocorticoid prednisolone had a higher antipruritic efficacy than trimeprazine or prednisolone given alone

Whether or not such steroid-sparing effect would be seen with other antihistamines has not been established.

(Olivry, 2010, 2015)

Antihistamines & Atopy

Human Literature-

Klein PA, Clark RAF. **An Evidence-Based Review of the Efficacy of Antihistamines in Relieving Pruritus in Atopic Dermatitis.** Arch Dermatol 1999;135(12):1522-1525.

Although antihistamines are often used in the treatment of atopic dermatitis, little objective evidence exists to demonstrate relief of pruritus. The majority of trials are flawed in terms of the sample size or study design…There is no evidence to support the effectiveness of expensive nonsedating agents.

Antihistamines & Atopy

Human Literature-

van Zuuren EJ, Apfelbacher CJ, Fedorowicz Z, et al. **No high level evidence to support the use of oral H1 antihistamines as monotherapy for eczema: a summary of a Cochrane systematic review**. Systematic Reviews 2014;3:25.

There is currently no high-level evidence to support or refute the efficacy or safety of oral H1 antihistamines used as monotherapy for eczema.

Antihistamines & Atopy

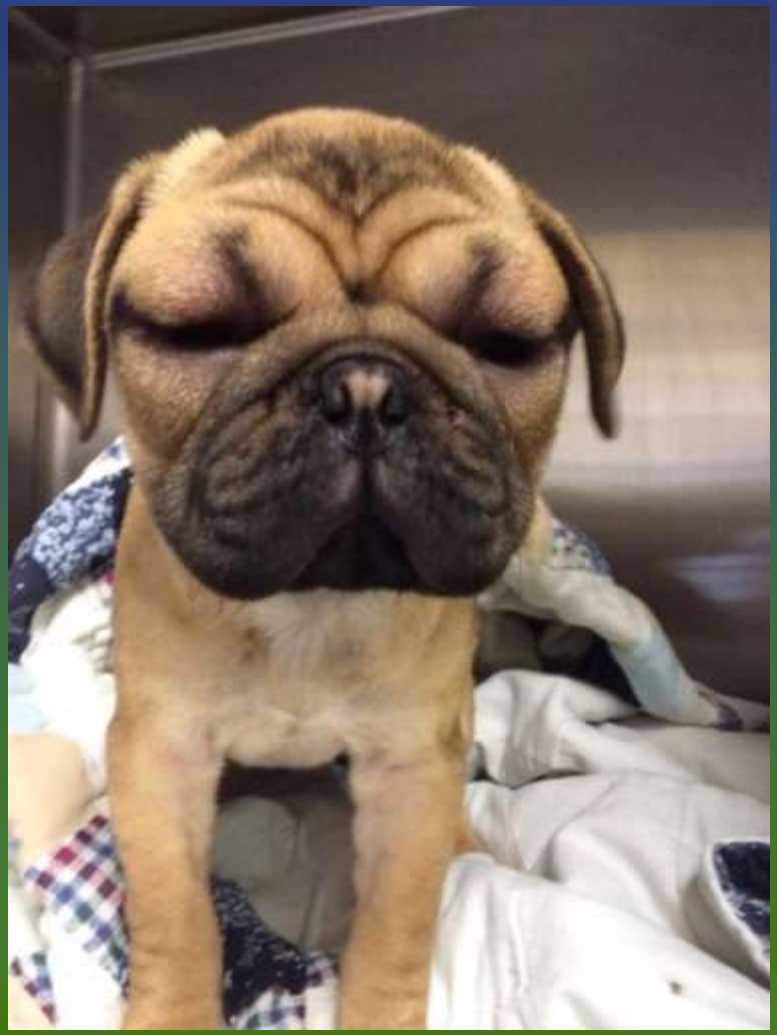
Human Literature-

Sidbury R, Davis DM, Cohen DE, et al. **GUIDELINES OF CARE FOR THE MANAGEMENT OF ATOPIC DERMATITIS Part 3: Management and Treatment with Phototherapy and Systemic Agents**. J Am Acad Dermatol 2014;71(2):327–349.

There are numerous randomized, controlled trials that have examined whether systemic antihistamines benefit AD as a disease process, and whether their effects specifically benefit AD patients via itch relief. Both sedating and non-sedating medications have been studied. The evidence is mixed and favors no benefit, with many patients reporting as much improvement with placebo.

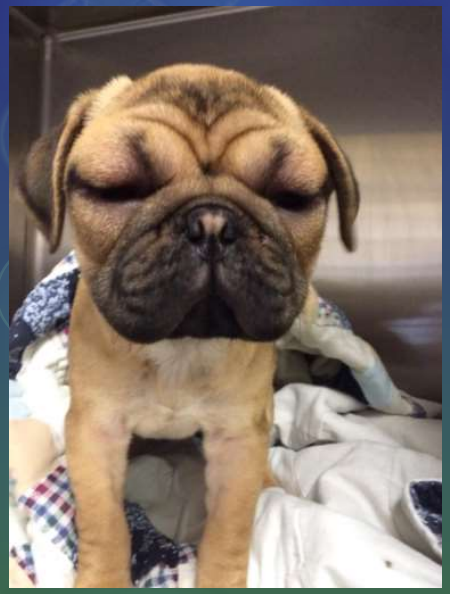
Treatment of Allergic Reactions

Acute Hypersensitivity



Treatment of Allergic Reactions

Acute Hypersensitivity



- Antihistamines
  - H1
  - H2
- Steroids
  - Dex SP
  - Other?
- Anything Else?

Treatment of Allergic Reactions

Anaphylactic Shock

Treatment of Allergic Reactions

Anaphylactic Shock

- Epinephrine
- Steroids
- Antihistamines?
- Supportive Care
- Anything Else?

Treatment of Allergic Reactions

Synthetic Veterinary Literature-

Systematic Reviews-

None

Clinical Guidelines-

None

Narrative Reviews-

Shmuel DL, Cortes Y. **Anaphylaxis in dogs and cats.** J Vet Emerg Crit Care (San Antonio) 2013 Jul-Aug;23(4):377-94.

Treatment of Allergic Reactions

Antihistamines

- Histamine concentrations peak at the onset of anaphylaxis and return rapidly to normal, despite severe hemodynamic compromise…although antihistamine pretreatment may ameliorate some early changes, they have little effect after the first 10 minutes.
- In a canine model, treatment with antihistamines seemed to be ineffective…In a rat model, pretreatment …worsened hypotension and decreased survival time.
- Pretreatment with antihistamines is widely practiced; however, there is little evidence supporting their usefulness in preventing an anaphylactic response.

(Shmuel, 2013)

Treatment of Allergic Reactions

Antihistamines- H1

- Although H1-antihistamines are expected to relieve cutaneous and nasal symptoms in anaphylaxis, they are neither expected to prevent or relieve the more serious clinical signs and symptoms….
- A Cochrane systematic review found no high-quality evidence for or against the use of H1-antihistamines in treatment of anaphylaxis.
- Recommendations for the use of H1-antihistamines have been outlined in numerous anaphylaxis guidelines…without a demonstrated effect ever being confirmed.

(Shmuel, 2013)

Treatment of Allergic Reactions

Antihistamines-H2

- H2-antihistamines are recommended in only a few current anaphylaxis guidelines
- Although H2-antihistamines have been studied in anaphylaxis, limited evidence supports their role in treatment of this syndrome.
- May relieve cutaneous symptoms and decrease gastric acid secretion

(Shmuel, 2013)

Treatment of Allergic Reactions

Antihistamines- Bottom Line

- Who knows?
- Try it if you want

Treatment of Allergic Reactions

Glucocorticoids-

- Glucocorticoids continue to be frequently used
- This class of drug does not relieve the initial symptoms…should never be used as a first-line drug
- Onset of glucocorticoids' beneficial effects takes several hours (at least 4–6 hours) regardless of the route of administration
- A Cochrane systematic review found no relevant evidence for the use of glucocorticoids in the treatment of an acute episode of anaphylaxis

(Shmuel, 2013)

Treatment of Allergic Reactions

Glucocorticoids-

- A common misconception among practitioners is the belief that pretreatment with corticosteroids and antihistamines will prevent anaphylaxis from occurring.
- Will not prevent reaction, may blunt symptoms
- Several glucocorticoid drugs are among the most commonly reported triggers of anaphylaxis in people. Although this occurrence is rare in veterinary patients, a case [report] describing a fatal case of anaphylaxis in a dog associated [with] a routine dexamethasone suppression test…

(Shmuel, 2013)

Treatment of Allergic Reactions

Glucocorticoids- Bottom Line

- Who knows?
- Everybody's doing it
- Pick your favorite

(Dex SP, solu-medrol, solu-delta-cortef)

Treatment of Allergic Reactions

Epinephrine

- Universally recommended first line treatment for anaphylaxis
- Sometimes recommended for acute allergic reactions
- No controlled clinical research (and not going to be!)
- In some model studies doesn't help or even makes things worse
- CRI works best, but delayed administration is bad so often IM dose given initially

(Shmuel, 2013)

Treatment of Allergic Reactions

Etc.

- Fluid resuscitation
- Oxygen
- +/- bronchodilators
- Pressors
- Glucagon

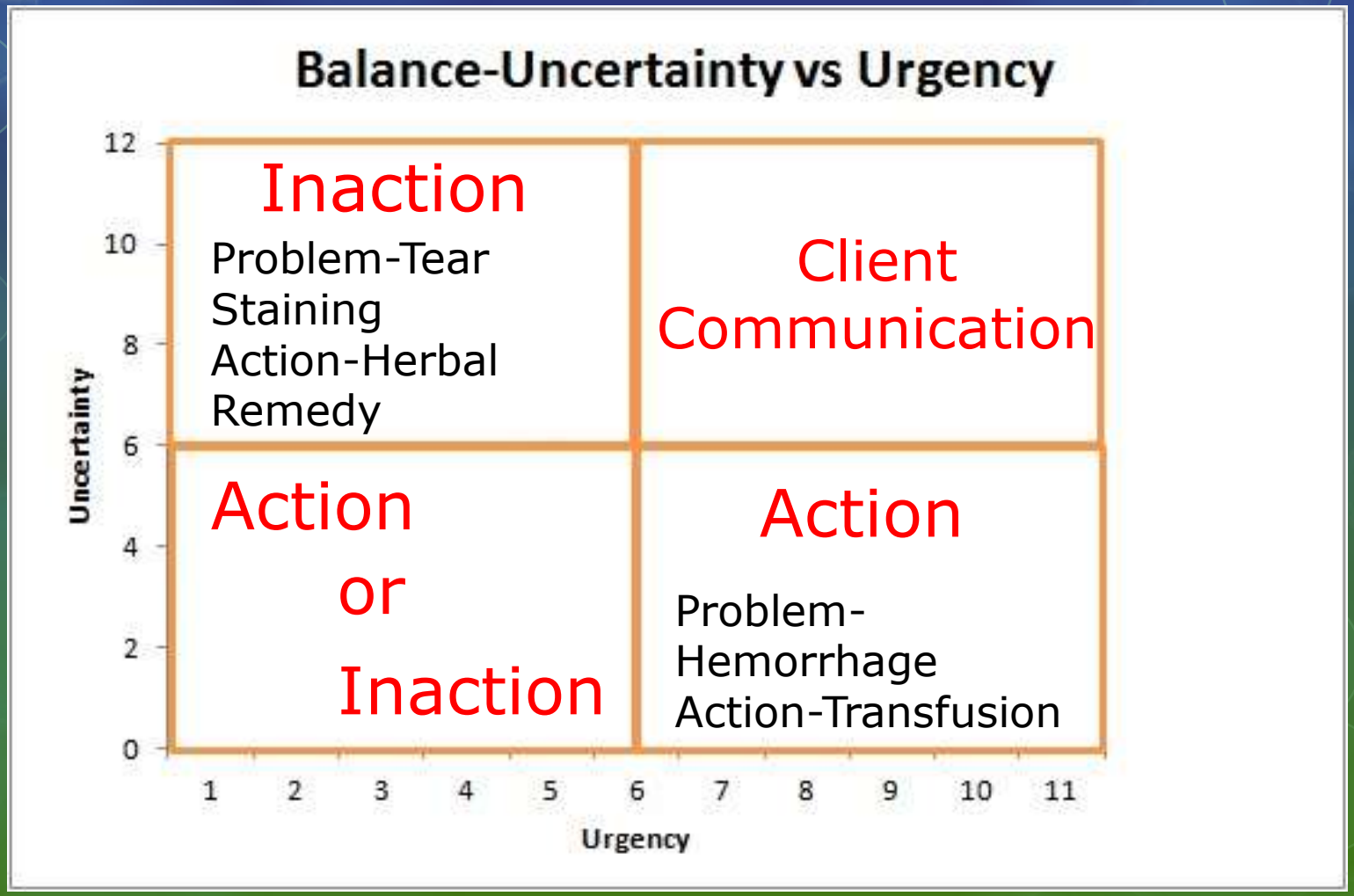
(Shmuel, 2013)

Treatment of Allergic Reactions

Bottom Line

- Epinephrine
- Supportive care
- Maybe glucocorticoids
- Maybe antihistamines

Uncertainty & Urgency



Treatment of Allergic Reactions

Bottom Line

- Lots of allergic reactions resolve spontaneously, even anaphylaxis!
  - Risk of death, so have to treat
  - Recovery may not be due to treatment