

Preventing and Rehabilitating Common Healthcare Procedure Aversions

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1. Introduction

As a companion to Robin Foster's opening presentation on scientific principles of animal learning relevant to handling horses for healthcare procedures, this presentation will focus on specific application of these principles to gaining and maintaining patient compliance with veterinary care. In addition to general comments, specific recommendations will be outlined for each of five example common healthcare procedures, for routine application aimed at preventing aversions, as well as for rehabilitation of established aversions.

The 2000 *Proceedings of the American Association of Equine Practitioners* includes a detailed discussion of rehabilitation of injection shyness and other treatment aversions using scientifically sound learning principles and behavior modification techniques. The *Proceedings* paper is available on the University of Pennsylvania Havemeyer Equine Behavior Lab web page.¹

2. General Comments

Restraint and Assistance

A substantial part of the art of positive reinforcement-based behavior modification for gaining compliance with a mildly aversive procedure involves judging

and implementing the most helpful restraint for the particular animal, procedure, environment, and skill of personnel. For many horses, it is worthwhile arranging for some wiggle room and planning to safely ride out some movement. The patient's ability to move, even a little bit, as opposed to being trapped, typically reduces the risk of explosive escape or defensively aggressive responses. Care should be taken to survey the environment in anticipation of obstacles, for example a water bucket, that if contacted could cause a commotion that would add negative consequences (punishment). Particularly when rehabilitating a horse that has developed dangerous avoidance responses, personal safety gear, such as safety shoes, vest, and helmet can be helpful.

The benefit of one or more assistants will similarly vary with the procedure, the environment, and the skills of available assistants. When positive distraction and/or reward (food or scratching) is needed during the procedure, as opposed to only before and after, an assistant can be very helpful to hold the horse and deliver the distraction.

Shaping Compliance with Mildly Aversive Procedures

When *shaping* compliance with a mildly aversive procedure, attention should focus on maintaining

NOTES

the patient's relaxation and tolerance of the procedure rather than on any undesirable avoidance behavior. This enables recognition and well-timed reinforcement of relaxation with each increment of tolerance. While it helps to be prepared for any anticipated undesirable behaviors, simply ignoring undesirable responses whenever possible will speed progress. The most efficient results can be expected when assistants (as well as any observers) remain calm, relaxed, and non-reactive to any undesirable responses. Those working with the patient should maintain focus on prompting, anticipating, and immediately positively reinforcing progress. Any response that can be perceived as punishment, such as verbal or physical reprimand or punitive restraint, should be avoided.

Avoiding the "Avoidance Cycle"

It goes without saying that reactivity to aversive stimuli is a natural adaptive response. When the reaction interrupts the procedure, a common inadvertent mistake is to keep repeating the same approach. This is essentially a negative reinforcement (pressure and release) paradigm, which is particularly effective at teaching avoidance. A good rule of thumb is that if the patient successfully avoids more than once, it is best to discontinue or significantly modify the approach. Successful rehabilitation often requires a toolbox of multiple approaches to various procedures, along with a variety of positive distractors and generous rewards to offset the aversive aspect.

Primary and Secondary Positive Reinforcement/Distractor Options

For most horses, a small food tidbit is an effective primary positive reinforcement, both for routine preventative purposes or for rehabilitation of an established aversion. For extended rehabilitation sessions, a variety of treat items can be alternated to maintain interest and higher motivation than a single type. If for any reason (e.g., owner preference;

NPO restrictions) food is not an option, vigorous rhythmic scratching at the withers for most horses may be an effective substitute. For routine maintenance of compliance, a reasonable percentage of patients will quickly learn to associate the health-care provider with food treats. To prevent the food-urgent patient from becoming nudgy or nippy, food reinforcement can be delivered from a small feed pan, always reaching under the head to deliver the treat on the off side. Most horses will learn to anticipate food only when the pan is presented. When expecting a reward the horse will turn the head to the off side rather than toward the person. In some cases it may be necessary to switch from food to scratching at the withers as the primary reinforcement. An auditory secondary reinforcement, e.g., a clicker sound or a word or short phrase spoken in consistent volume and tone, if paired with the primary reinforcement, will quickly take on positive value (conditioned positive reinforcement), such that it can be effective when used alone intermittently as needed.

Caretaker "Homework"

Horse owners/caretakers can often work effectively on their own to introduce young horses comfortably to a battery of potential health care procedures, or even to perform systematic desensitization procedures for horses with established or developing aversions. As with any client education, clear instruction and follow up will ensure best results.

Acknowledgments

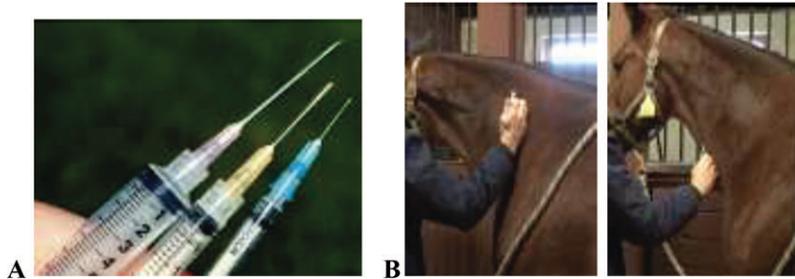
Declaration of Ethics

The Author has adhered to the Principles of Veterinary Medical Ethics of the AVMA.

Conflict of Interest

The Author has no conflicts of interest.

Table 1. Needle Sticks



Routine Preventative

Equipment and Supplies

- 1) Finest needle practical: 21 gauge or 22 gauge for blood withdraw; 22 gauge to 25 gauge for low-viscosity aqueous solutions (Image A).
- 2) Small feed pan with highly palatable treats (carrot, candy, apple, alfalfa).

Behavior-Modification Principles

- 1) Select least-stressful environment available, both for animal and technician.
- 2) Consider minimal restraint necessary, allowing some safe wiggle room.
- 3) All personnel present relaxed and calm.
- 4) Make the needle stick as comfortable as possible.
 - a) Use finest needle practical.
 - b) Stabilize hand against horse, maintaining contact with any movements of the horse during the stick (Image B).
- 5) Ignore any undesirable behavior.
- 6) Offer highly palatable food treat immediately before and immediately after, always paired with verbal secondary reinforcement; e.g., the word “good” in consistent tone.
- 7) Scratch vigorously and rhythmically at the withers, simulating mutual grooming, for at least 30 seconds before and if possible continuing during skin stick (psychologically distracts, maintains positive motivational state, releases endorphins, and may compete with afferent transmission).

Established Aversion

Rehabilitation

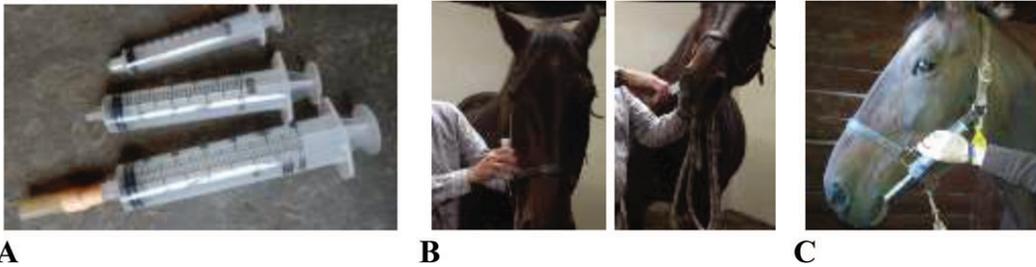
Specific Behavior-Modification Approaches to Consider, Alone or in Combination

- 1) Positive reinforcement–based systematic desensitization: pair primary and secondary reinforcement with each step in the process, first simulating injection with a skin pinch and then actual sticks of varying increasing levels of discomfort (30 g 5/8-in. to 20 g 1-in. needle). Ten sticks per increment is usually adequate.
- 2) Counter-conditioning as needed to eliminate effective avoidance behaviors: e.g., stationary-target training, teaching the horse to hold muzzle to target for several seconds or until actively released to receive food reward.

Emergency Care “Get it Done Immediately with Least Further Harm”

- 1) Overshadowing: it may be effective to perform the needle stick while leading the horse forward.
- 2) Respectfully applied skin twitch, gum-chain, or lip twitch.

Table 2. Oral Dosing



Routine Preventative

Equipment and Supplies

- 1) Smallest-diameter dose syringe practical, with mouth-friendly tip (if tip is sharp, an extension of soft tubing can be secured over the tip; Image A).
- 2) Sweet liquid (molasses, corn syrup, maple syrup, applesauce, simple syrup).
- 3) Small feed pan with highly palatable treats (carrot, candy, apple, alfalfa).

Behavior-Modification Principles

- 1) Select least-stressful environment available, both for animal and technician.
- 2) Consider minimal restraint necessary, allowing some safe wiggle room.
- 3) Select personnel who can remain relaxed and calm, safely ignoring any undesirable behavior.
- 4) Interact for a minute or so with the goal of relaxing the patient; e.g., soothing rhythmic scratching at withers, rubbing of face.
- 5) Make the dosing itself as comfortable and palatable as possible.
 - a) Use smallest dose syringe practical, with most mouth-friendly tip.
 - b) Add sweet liquid to treatment, and coat the tip of syringe with sweet liquid.
 - c) Respectful, unrushed insertion, avoiding contact of syringe tip with palate, gums, or teeth.
- 6) Suggested technique: stabilize hand and dose syringe against cheek piece of halter (Images B and C), with tip near crease of the lips, maintaining stability of the syringe and contact with the horse should it move; maintain a relaxed arm and ride out any raising or shaking of the head until the horse relaxes; then advance tip to gently contact the crease of the lips, which typically stimulates voluntary opening of the mouth, and licking of the sweetened tip; then gently rotate the syringe aiming the tip ventrally onto the tongue; calmly express liquid onto tongue, avoiding an explosive bolus.
- 7) Offer a highly palatable food treat immediately before and immediately after, always paired with verbal secondary reinforcement; e.g., the word “good” spoken in consistent tone.

Caretaker “Homework” (Discretionary)

Frequent doses of 10 cc of sweet liquid, alternating flavors following suggested routine procedure (initially daily for 10 days, then weekly or monthly) to maintain a positive interest in oral dosing.

Established Aversion

Rehabilitation

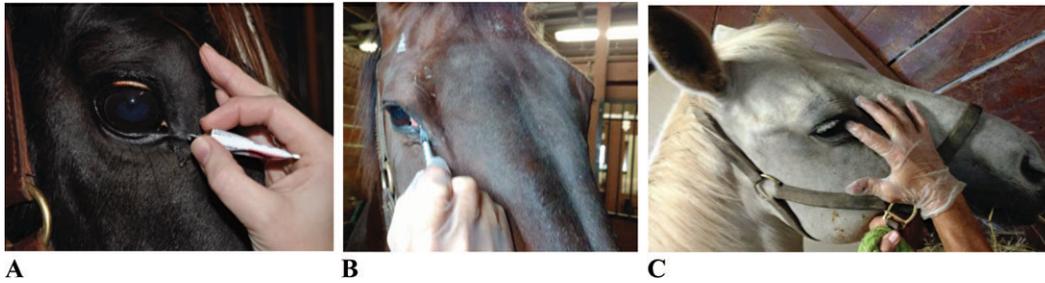
Specific Behavior-Modification Approaches to Consider, Alone or in Combination

- 1) Positive reinforcement–based systematic desensitization, first gaining tolerance of placement of the syringe along cheek piece of the halter by distracting and drawing the head low with food.
- 2) Counter-conditioning as needed to displace head lifting or shaking—stationary-target training, teaching horse to hold muzzle to target positioned at low convenient height.

Emergency Care “Get it Done Immediately with Least Further Harm”

- 1) Respectfully applied skin twitch or gum chain.

Table 3. Eye Medications



Routine Preventative

Equipment and Supplies

- 1) Eye-friendly applicator options: ophthalmic tube (Image A), soft rounded tip tuberculin syringe (Image B), or clean disposable glove (Image C).
- 2) Small feed pan with highly palatable treats (carrot, candy, apple, alfalfa).

Behavior-Modification Principles

- 1) Select least-stressful environment available, both for animal and technician.
- 2) Consider minimal restraint necessary, allowing some safe wiggle room.
- 3) Select personnel who can remain relaxed and calm, safely ignoring any undesirable behavior.
- 4) Direct application: make the application itself as comfortable as possible.
 - a) Rub face in soothing manner, rhythmically stroking approaching the medial canthus
 - b) Stabilize hand on face with relaxed arm so that hand maintains contact should the head move.
 - c) When the horse is relaxed, gently advance the applicator to the medial canthus to apply treatment.
 - d) Repeat soothing rubbing of face around eyes.

Sub-palpebral catheter:

- a) Avoid pushing air through the catheter.
- b) Express treatment slowly.
- 5) Offer highly palatable food treat immediately before and immediately after, always paired with verbal secondary reinforcement; e.g., the word “good” in consistent tone.

Caretaker “Homework” (Discretionary)

Daily routine of rubbing the face near each eye in a soothing manner, maintaining hand contact while approaching and touching the medial canthus in a respectful, soothing manner (initially with fingertip, then with a more rigid item such as tuberculin syringe or needle cap), offering a highly palatable food treat immediately before and after, as well as during as needed, paired with the verbal secondary reinforcement; e.g., “good” spoken in consistent tone just before food delivery.

Established Aversion

Rehabilitation

Specific Behavior-Modification Approaches to Consider, Alone or in Combination

- 1) Positive reinforcement–based systematic desensitization to touching of the face approaching the medial canthus. Food can be used to simultaneously draw the head to a comfortable position, distract, and then reward relaxation and increments of tolerance.
- 2) Counter-conditioning as needed to displace disruptive avoidance behaviors—stationary target training, teaching horse to hold muzzle to target positioned at low convenient height.

Emergency Care “Get it Done Immediately with Least Further Harm”

- 1) Respectfully applied skin twitch, gum-chain, or lip twitch.
- 2) Examination stocks to limit body movement.

Table 4. Intranasal Vaccination



Routine Preventative

Equipment and Supplies

- 1) Intranasal-friendly mist applicator (Image A).
- 2) Small shallow feed pan with highly palatable treat (carrot, candy, apple, alfalfa).

Behavior-Modification Principles

- 1) Select the least-stressful environment available, both for animal and technician.
- 2) Consider minimal restraint necessary, allowing some safe wiggle room.
- 3) Select personnel who can remain relaxed and calm, safely ignoring any undesirable behavior.
- 4) Make the treatment itself as comfortable as possible.
 - a) Hold the syringe in the palm with a thumb on the plunger and applicator tip extending no more than 1/4 inch beyond the little finger.
 - b) Rest hand on the face just above nostril with applicator tip pointing toward the nostril; relax that arm to move with the horse, so that the hand maintains stable contact (Image B).
 - c) When the horse is relaxed, while maintaining steady contact, rotate the hand to direct tip into the nostril simultaneously expressing the mist (Image C).
- 5) Give highly palatable food treat immediately before and immediately after, always paired with verbal secondary reinforcement; e.g., the word “good” in consistent tone.

Caretaker “Homework” (Discretionary)

Daily routine of rubbing the face near each nostril in a soothing manner, with simultaneous food treat.

Established Aversion

Rehabilitation

Specific Behavior-Modification Approaches to Consider, Alone or in Combination

- 1) Positive reinforcement–based systematic desensitization to manipulation of the muzzle and nostril.

Table 5. Rectal Temping



Routine Preventative

Equipment and Supplies

- 1) Rectal thermometer (Image A).
- 2) Long cotton lead (10–12 ft).

Behavior-Modification Principles

- 1) Select the least-stressful environment available, both for animal and technician.
- 2) Consider simple sliding tether (Image B) to maintain directional control of the head while standing at the hip.
- 3) Remain relaxed and calm, safely ignoring any undesirable behavior.
- 4) Make the procedure itself as comfortable as possible.
 - a) Hold the thermometer in your palm with the tip along the index finger, about 1/2 inch proximal to the fingertip held in place by the thumb.
 - b) Slowly and rhythmically massage in a soothing manner just lateral to the base of the tail, gradually approaching the perineum and anus while continuing massage; this typically induces simultaneous relaxation of the anus and lifting of the tail (Image C); as that happens, give verbal secondary reinforcement.
 - c) With the index finger on the relaxed anus, advance the thermometer tip along the finger into the anus (no need to hold tail or visualize anus).
- 5) Give highly palatable food treat immediately before and immediately after, always paired with verbal secondary reinforcement; e.g., the word “good” spoken in consistent tone.

Caretaker “Homework” (Discretionary)

Daily soothing massage of the tail head, perineum, and anus as above, with food treat before and after. To teach the horse to relax the anus and lift the tail upon verbal request, add a spoken word or phrase to prompt the horse (e.g., “lift tail” or “tail up”) while massaging the tail head and perineum. After only a few pairings of the prompt with physical stimulation of the tail lifting and anus relaxing, most horses respond to just the spoken prompt and/or even your typical approach.

Established Aversion

Rehabilitation

Specific Behavior-Modification Approaches to Consider, Alone or in Combination

- 1) Positive reinforcement–based systematic desensitization massaging gradually from mid back toward the tail head; as patient relaxes at each increment, deliver primary and secondary reinforcement; as needed for distraction and/or primary reinforcement for tolerance, have assistant offer a small food pan during the massage and approach the perineum.

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2. Watson J, McDonnell S. Evaluation of the effectiveness of three non-confrontational handling techniques on the behavior of horses during a simulated mildly aversive veterinary procedure. *Proceedings of the 12th International Equitation Science Conference.* Saumur, France. 2016;68.