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As I See It

The Low Hanging Apple

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How would you like to earn from \$10,000 to \$50,000 more a year without working any harder? How would you like your practice to be more stimulating and fun?

We think this can be done by adding pet birds to your practice, or by increasing the number of birds being seen. Oh, sure, you say, I suppose I can learn all about birds in ten easy steps.

The truth is, becoming familiar with “ten easy steps” is all that is needed to get a good start, and using the “ten easy steps” can also add 30% to an existing avian practice.

Many clinicians who have wanted to add pet birds to their small animal practices have shied away because of what they believed were insurmountable barriers to becoming avian practitioners. They thought that birds were hard to diagnose, that birds died easily, and that nothing was known about them. Worse yet, they were told over the years that in order to get into bird practice, they must “do necropsies free, donate services to pet shops and offer discounts.” Now, who in their right mind would want to develop a bird

Bird Practice

Going from where you are to where you want to be in 10 Easy Steps.

1. Thorough physical exam, including weight of the bird in grams.
2. Gram's stain of the feces.
3. Chlamydia test.
4. Trim wings, nails and beaks.
5. Evaluation of nutritional status.
6. Recommendations for balanced diet.
7. Nutritional injections for malnourished birds.
8. Basic first aid treatments.
9. Use of vaccinations.
10. Develop relationships with other avian veterinarians for consultations or referrals of more difficult cases.

practice under those conditions?

Learning the ten basic steps to avian practice is not at all difficult. Birds don't die when you handle them — they are very easy to treat. And it's not that birds hide their symptoms, it's just that we have not always been able to distinguish sick from well. We now know that recognizing the very early signs of illness is a basic key to success. Through our working with bird diets, we have begun to discriminate even more subtle signs of early disease, so that the condition can be turned around.

While the ten basic steps are being mastered, more complicated cases can be referred to a more experienced colleague.

Pet bird medicine is such an untapped market. An AVMA survey showed that only 7.6% of pet bird owners use a veterinarian (that's 92.4% who

don't!). Unfortunately, when a bird gets sick, most owners either don't recognize it until it's too late, or they take the bird to a pet shop for medical advice. With the knowledge of basic husbandry, any veterinarian can do a better job than a pet shop. And with some basic guidelines, the veterinarian can do an *outstanding* job and make a difference in pet bird care.

This brings us to the “low-hanging apple” — the apple that is easiest to get to. David Jones, a veterinary marketing expert, coined the phrase “low-hanging apple” to describe business opportunities that are sometimes missed by veterinarians because they are so obvious.

Would you be surprised to learn that many of your potential bird clients are already coming to your office? Cat and dog owners frequently also have birds (some statistics say 40%), and although they appreciate quality veterinary care for their mammalian pets by coming to your office for regular visits, they don't yet realize that a similar quality care is available for their pet birds. These people are the “low-hanging apples” — the ones that are easiest to get to first, once you make the commitment to really develop the avian side of your practice.

Let's say you have 3,000 dog and cat clients. If 40% of them have birds, that means 1,200 potential bird patients without going outside your client base. This could translate into 24 birds a week — a substantial increase over the national average for Associa-

tion of Avian Veterinarians (AAV) members, which is reported to be ten cases per week.

Letting your clients know that you treat birds, applying the “ten easy steps” to bird patients, and encouraging referrals from fellow veterinarians will help take your bird practice from where it is to where you want it to be.

Practice Tips

One Person Restraint

Most birds enjoy beak and nail grindings about as much as cats enjoy bathing. Naturally, this presents some problems for veterinarians and technicians.

With today's economic situation, it's not exactly practical to have two or three people restraining a nervous bird during routine procedures, not to mention the increased chances of injuring the bird.

This led to a one-person, one-handed towel restraint. It's quite simple, and with a little practice, it's much quicker than two people grappling with one bird. And, more importantly, it can be used for nails, wings, beak trims, drawing blood and giving injections.

Small Amazons and cockatoos, large conures, caiques, lorries and Senegals require a hand towel while birds like large cockatoos, Amazons and macaws require a large bath towel.

The towel is first draped over the bird like a cape (A).



With the bird closer to one end of the towel, wrap the towel around the bird like a burrito (B), making sure the beak is exposed and the chest is not restricted. Then the bird is cradled on its back between your lower arm and your ribs, as if you were holding a baby (C). The towel keeps the wings from flapping and it gives the claws something to grasp. Nippy birds will enjoy giving the towel a few good bites as well. Be careful, however, not to apply pressure to the birds' chest as this will impair breathing.

For a nail trim, locate one foot and grasp it with the free hand of the forearm restraining the bird. Your other hand is completely free to run the Dremel moto tool. Use a cone-shaped fine grinding stone.

One trick involves "loading" one-quarter of the stone (proximal half of the distal half) with paint by grinding a

painted board. This smooths out the texture, thus creating heat from the increase friction when it is used. As the nails are shortened and if they nail begins to bleed, this portion is brought into play, and the nail is thus cauterized. This technique works most of the time. The end of the tip is not "loaded" so extra long nails can be cut by that portion rather than ground down.

For a wing clip, reach under the towel and locate one of the wings. Extend the wing to its fullest and grasp it with the free hand of the forearm restraining the bird.

Depress each primary feather under its corresponding covert feather and clip. This method ensures a clean, precise trim.

Amazon Upper Respiratory Case Report

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

A five-year-old Yellow-naped Amazon Parrot was presented with a history of chronic sneezing and rhinitis over the past two years. The bird had been seen previously by three veterinarians and, in response to the culturing of a broad range of organisms, had been treated with numerous antimicrobials (see Table 1).

All three practitioners had encouraged the owner to offer a wide variety of foods. In an effort to comply, the owner had been offering a diet consisting of a commercial bird pellet, "fortified" seed, fresh fruits and vegeta-

bles plus other table food, and bottled water.

The fruit and vegetable offerings for a typical day included: one apple slice, two raw green beans, whole okra, cherry, two grapes, cherry tomato, clump broccoli, slice of whole corn and slice of yellow squash.

Diagnostic Work-up

Physical examination revealed early symptoms of malnutrition including obesity, discolored feathers, dry and peeling skin on the feet and abnormal Gram's stains of the feces (see Table 1). The sinus was flushed with lactated Ringer's solution; cytology revealed large numbers of gram-positive cocci (25/field) and a few (5/field) gram-positive rods. Results of radiologic and endoscopic examinations of the trachea and air sacs were normal.

Therapy

The bird was obviously malnourished, and was assumed to be immunosuppressed based on the history of previous overuse of antibiotics. This unnatural state would predispose the bird to chronic bacterial and yeast infections.

Treatment focused on boosting the immune system through nutritional therapy, and clearing up current problems (see Table 1).

Results

Reexamination at two weeks showed a 30 g weight loss and persistent sneezing and itching. A Gram's stain of a repeated sinus flush revealed budding yeast, so the ketoconazole dose was doubled, and Ornithrush was prescribed.

TABLE 1

Previous Therapy
amikacin, carbenicillin, gentamicin, piperacillin, erythromycin, tylosine, doxycycline, triple sulfa chloramphenicol, EDTA-tris lysozyme/gentamicin flush, ketoconazole, chlorhexidine nasal flush, ivermectin, flucytosine, Benadryl

Initial Fecal Gram's Stain

- 100 bacteria/field:
90% G+ rods
- 10% G+ cocci,
0% G- rods;
- 10-12 yeast/field;
100% budding

Injectable Therapy

- Vitamins A, D₃, E (Injacom 100:0.00046 ml/g BW)
- Vitamin B complex (0.001 mg thiamine/g)
- Vitamin K₁ (0.0002 mg/g)
- Iodine (Renographin 76 [37% iodine]:0.0003-0.0005 ml/g)
- Calcium (Calphosan: 0.0005-0.001 ml/g)
- Selenium (Seltoc: 0.0001 ml/g)
- Iron (Iron Dextran: 0.0003-0.0005 ml/g)
- Immune stimulator (PEP-E: 0.0001 ml/g IM)

Diet Therapy

- Harrison's Bird Foods only (ad lib; can moisten to reduce waste or increase acceptance)

Additional Medications

- Ketoconazole (200 mg/0.5 oz lactulose. Sig 3 drp BID)
- Lincomycin/spectinomycin (LS-50: tsp/qt water; use as only drinking water for 10 days)

Two Weeks Later

- Ketoconazole (400 mg/0.5 oz lactulose. Sig 3 drp BID)
- 70% Sorbic Acid (Ornithrush: 1:10 H₂O. Sig 1 drp/nare BID 30 days)

One month later the sneezing had stopped and the sinus flush was normal. Ketoconazole was stopped; the Ornithrush was continued SID for one month. During reexaminations at six months, one year and two years, the bird was completely normal in appearance and behavior, and no further care was necessary.

Discussion

In an effort to recommend a “balanced” diet for pet birds, avian veterinarians often suggest a wide variety of supplemental foods. With such a varied and plentiful selection, birds overdose on favorite foods and suffer from malnutrition. Birds cannot choose a balanced diet from such an array of foods.

By treating the initial malnutrition in the Amazon and maintaining it on a controlled-formula diet, the immune system was strengthened and the bird was no longer affected by pathogenic or opportunistic organisms in its environment.

It's very satisfying when such a seemingly complicated case responds so well to proper nutrition, and of course, it's nice to have an appreciative client.

Further Reading

Harrison GJ: *Psittacine feeding and malnutrition in the USA. Proc 1st Conf European Com Assoc Avian Vet, Vienna, 1991, pp 230-242.*

Harrison GJ: *Twenty Years of Progress in Avian Nutrition. JAVMA, 1998.*

(Reprints available upon request from HBD, 800-346-0269.)

A Closer Look

Organic Farming

Although it may seem that the seeking out of organic foods for human and animal consumption is just “trendy,” there are actually very valid reasons for this practice.

The term “organic” goes beyond a simple definition of “pesticide-free.” Specific standards have been established by the Organic Crop Improvement Association (OCIA). Chemicals — insecticides, weed-killers, fungicides, synthetic fertilizers — are not only banned on crops, the soil must have been chemical-free for an extended time prior to farming the land.

Organic farming is thought to be more labor-intensive than traditional agriculture. Because a small percentage of the crop is lost to bugs and crops are not falsely stimulated to grow with incomplete ammonia fertilizers, crop yield is slightly lower per acre. An organic farmer has to do a better job — he just can't depend on chemicals — he must plant to discourage bugs and mend holes in fences to keep out rodents. This higher standard of care for the raw ingredients makes them more expensive.

But organic farming, including the practices of crop rotation or use of manure and compost for fertilizer, conserves the topsoil by adding natural nitrogen and increases the humus content for drought resistance. More

importantly, minerals are broken down in organically-farmed soil and are therefore available to animals that eat the plants.

The real benefactor of organic foods is the end-user. Farmers who raise livestock on organic fields have higher production and lower veterinary needs because the animals are healthier. And people report feeling better when their bodies are chemical-free.

Avian veterinarians have discovered that birds are particularly sensitive to pesticides and other chemicals, probably because of their high metabolisms. In some cases, we may not really know if the medical symptoms we see are truly from disease, the foods they are eating, or chemicals in traditionally-grown grains.

We at HBD believe it just makes sense to use the best raw ingredients available because we want to be able to offer birds the purest food forms.



Practice Tips

Use of Spartrix

Stormy Hudelson, DVM
Dipl. ABVP Avian
Tucson, Arizona

Spartrix (10 mg carnidazole tablet) was developed in Belgium for treatment of trichomonads in nonfood pigeons.

I have found Spartrix to be useful for treatment of all flagellated protozoa (eg, giardia)

in companion and free-ranging birds. It is used at the recommended pigeon dosage: 1 tablet per 300 g body weight. It has been very effective in treating birds from the size of sparrows to great horned owls without adverse reactions. Small birds can be easily pillled with a divided tablet.

If caseated lesions are present (eg, trichomoniasis), they should not be debrided unless they block the trachea or esophagus. They will fall out without intervention after 3-7 days. If the caseated mass is disturbed too early, a large amount of bleeding will occur, perhaps enough to exsanguinate the bird.

My only concern is that this drug is available over-the-counter, and indiscriminate use may result in early resistance of the organisms.

Spartrix is available in the United States from Wildlife Laboratories (1401 Duff Drive, Suite 600, Fort Collins, CO 80524; 800-222-9453).

Simple Pulverizer for Pills

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

The LGS Pill Pulverizer is useful for crushing tablets (particularly those made in concentrations for human use) for more accurate mixing and delivery to birds.

Tablets such as ketoconazole can be quickly powdered and mixed with a palatable product. I normally add it to ½ oz lactulose syrup. The medicated syrup can then be administered by the drop several times a day to a bird, making sure the product is

properly suspended prior to each dosing.

The LGS Pill Pulverizer is available from LGS Health Products, South Euclid, OH 44118)

Techniques for Flushing the Proventriculus

*Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida*

For rapid removal of foreign material (eg, heavy metals) from the gastrointestinal tract of vomiting birds, we routinely perform a proventricular flush.

In cockatiels, we palpate the thoracic inlet and insert a metal feeding tube directly into the esophagus and down into the proventriculus. The bird is held upside down, and warm lactated Ringer's solution is gently administered through the tube. First the abdomen and then the crop are gently squeezed while the fluid and foreign particles are flushed out.

Larger birds are anesthetized with isoflurane. The bird is suspended upside down by tying its ankles to an infusion stand with gauze. The choana is packed with a small amount of cotton, an endotracheal tube is passed, followed by the stomach tube through which the flush is performed. Fluid is continuously administered until no particles are observed in the wash.

The procedure is followed with a radiograph to confirm resolution. It is not unusual to flush some particles into the small intestine; these will pass in a few days. The primary adverse effect is potential rhinitis from the gastric

juices, although a saline rhinal flush may help prevent this.

For follow-up therapy for metal toxicosis, Cuprimine (d-penicillamine 52 mg/kg BID) is administered for a maximum of four to five weeks. We use the liquid pediatric size available from a pharmacy. Because treatment with d-penicillamine can result in copper deficiency, watch for clinical signs of lethargy and mild paralysis. Closely monitor with radiography. If particles are gone, stop Cuprimine to prevent overdose.

Use of Harrison's in Neuropathic Gastric Dilatation (NGD) Cases

*Greg J. Harrison, DVM
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Lake Worth, Florida*

Several clinicians have reported that HBD products are increasing the longevity of birds diagnosed with neuropathic gastric dilatation (NGD) or "macaw wasting disease."

In Florida, juvenile macaws diagnosed with NGD were presented with stunting, fluid-filled abdomens, pleural effusion and reduced radiographic liver size. The only effective therapy consisted of a combination of pancreatic enzyme (Prozyme) and Harrison's Bird Foods.

One young Blue and Gold Macaw with severe symptoms was donated to the clinic. The bird has now matured, has normal feathers and looks fantastic.

According to Friedrich Janeczek of Munich, a similar disease has become a serious



VD barium study radiographs of a bird with a dilated proventriculus and stricture of the ileus that are typical of neuropathic gastric dilatation (NGD). Because NGD is not the only cause of this condition, a biopsy must be performed to confirm NGD.

problem in many large German parrot aviaries and is difficult to diagnose in a living bird.

For survivors, he first tried a diet consisting primarily of pigeon food that was cooked for 25-30 minutes, but it wasn't the ultimate choice. He has used Harrison's High Potency diet for about one year with good success. Birds are able to digest it completely and gain weight. To further aid digestibility, he uses rumen enzymes.

A group of birds was confiscated by the U.S.D.I. and divided between a commercial nutritional center and Cornell University. Both groups began to show mortality, and NGD was diagnosed at Cornell. The birds at Cornell were put on Harrison's Bird Foods and are still alive. The birds at the other facility did not survive.

The University of Georgia is conducting a research project

on neuropathic gastric dilatation, specifically whether a diagnosis can be made from a biopsy of the crop. They are willing to accept from practitioners biopsy samples taken from the upper left quadrant of the crop. For research purposes only there is no charge, but the turnaround time may be a month or more. For clinical cases, samples can go through the regular biopsy service of the Pathology Department for \$20 with results within a week. For postmortem diagnosis of NGD, practitioners are advised to submit the whole bird on ice. Please call ahead: Dr. Chris Gregory at 706-542-5850, or Dr. Cheryl Greenacre or Dr. Branson Ritchie at 706-542-3221.

Let Your Practice Soar

Ten Easy Steps

Step 1. Thorough Physical Exam

A thorough physical exam, is probably the most important and is often underestimated as a tool even by experienced practitioners, who sometimes rush to perform laboratory tests after only a quick look at the bird.

In order to really appreciate what the physical appearance of a "normal" bird should be, practitioners are advised to examine several injured wild birds. For example, the feathers of a healthy wild bird are lustrous, strong, smooth, have uniformity of color, are opaque to light and are able

to “zip” closed once they are ruffled. Also the skin is supple without any signs of flakiness.

Then closely examine birds that have been maintained on: 1) all-seed diets; 2) seed plus fruit/vegetable supplemented diets; 3) other pelleted diets; and 4) HBD's diets and notice the difference.

It is helpful to use a standard form such as HBD's Avian Examination Form to develop a protocol for performing a thorough physical examination and for recognizing the early signs of malnutrition (which ultimately translate into the early signs of illness).

Companion birds (especially small species) that are undergoing a change in diet should be examined twice a year for the first two years, then annually thereafter. Once a bird has converted to an adequate diet, immediate improvements in the appearance and behavior will be obvious; however, it can take up to a year of healthy eating to produce physiological changes in reproduction or longevity.

3 AVIAN EXAMINER Number 3

Practice Tips

Comment on Prostaglandins

Stormy Hudelson, DVM
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Tucson, Arizona

I discussed prostaglandins in my article (Egg binding, hormonal control, and therapeutic conditions. *Comp Cont Educ* 5[3], 1993). I felt

it necessary to comment on the Cervical Dilatation discussion in *Avian Examiner #2*.^{*} Research in chickens states:

1. Ovulation is preceded by uterine contractions with or without oviposition (no uterus, no ovulation).
2. PGF_{2α} will cause uterine contractions, but has not been shown to cause cervical dilation, whereas PGE₁ and PGE₂ cause cervical dilation; PGE₂ also causes uterine contractions.
3. Arginine vasotocin is not released until after uterine contractions occur and then acts synergistically with prostaglandins to enhance uterine contractions.
4. Follicles produce prostaglandins and release them to be transported to the uterus, where PGF_{2α} and PGE₂ cause contraction of the uterus, and PGE₁ and PGE₂ cause the uterovaginal sphincter to dilate.

The fact that PGF_{2α} is being used in non-galliformes for cervical dilation would imply either that these birds already have a dilated sphincter or that PGF_{2α} works differently in non-galliformes than it does in mammals and galliformes. If the cervix is not dilated and uterine contractions are stimulated, uterine rupture and/or reverse peristalsis with resulting peritonitis are definite risks with PGF_{2α}.

Products available with PGE₂ (from Upjohn) include: Prostin suppository 20 mg PGE₂ in a 5 pack; Prepidil gel (Dinoprostone gel) = PGE₂ 0.5 mg/3 g or 0.5 mg in 2.5 ml syringes; 0.1 ml into the

cloaca of a cockatiel. Repeat applications may be necessary.

Reply from Greg Harrison

I agree that the use of dinoprost tromethamine (PGF_{2α}) in dystocia cases has risks and it does not dilate the cervix in these cases. On the other hand, our primary goal was to enter a quiescent or diseased oviduct for possible uterine culture or flush. We were able to collect samples within 20 minutes of PGF_{2α} administration; it was not possible to do this with the drug. Why?

** Ed note: The Cervical Dilatation article that this refers to has been removed because of the frequent problems with PGF_{2α}. It has been replaced with other drugs.*

Response to NGD

George V. Kollias, DVM, PhD
Cornell University

I read with interest HBD's *Avian Examiner # 2*. There is good practical advice given on a number of important avian clinical problems.

Relative to the section entitled: “Use of Harrison's in Neuropathic Gastric Dilatation Cases,” I'm not convinced at this point that Harrison's food has specifically made a real difference relative to the progression of NGD in our group of birds. We are also evaluating another commercially available diet fed to birds that are exposed to cagemates with NGD. Since both diets being offered “seem” to be producing similar results, it is difficult to say if one or either is having any effect. It may well be that Harrison's Bird Foods have a positive effect on delaying or preventing the clinical expression of NGD,

but at this point it is premature to make any objective statements concerning its efficacy.

Use of SurgiTel Instrumentation

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Lake Worth, Florida

SurgiTel's advanced vision enhancement system is exactly what avian surgeons have been seeking for a long time—a combination on an operating microscope lens and an endoscopic halogen light source in one instrument. And best of all, it's portable.

The SurgiTel is mounted on a binocular loupe frame or headband. The image is extremely clear with high resolution, and the price is reasonable for the technology.

The company has developed a prototype adapter for attaching the light source to an endoscope. This potentially makes endoscopy accessible as a field procedure with accessible anesthesia.

For further information, contact General Scientific Corporation, 77 Enterprise Dr., Ann Arbor, MI 48103; 313-996-9200.

Contrast Medium to Reduce Liver Size

Greg J. Harrison, DVM
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Lake Worth, Florida

For the past few years, we had been using Gastrographin, an iodine-based radiographic contrast medium, as a therapeutic agent in some birds. Despite its dehydrating properties, we found Gastrographin had a beneficial effect on reducing



Before

Radiograph of a cockatiel one hour after the administration of barium sulfate shows an enlarged liver. The normal liver should extend half the distance from the apex of the heart to the left rib cage. Two days later, the liver measurement is significantly less.



After

the size of an enlarged liver and improving some gastrointestinal problems. Because of the soothing “bandaging” effect in the GI system, the birds responded by eating better and seeming to feel better.

However, the potential for inhalation and other dangers associated with the product prompted us to investigate barium sulfate for the same purpose. We were already aware that barium passed more uniformly and resulted in less regurgitation and fewer post-anesthetic difficulties.

The relative size of the liver on VD radiograph is determined by comparing the measurement from the apex of the heart to the left rib cage, and the measurement from the apex of the heart to the outer edge of the liver.

The illustrations show that the same therapeutic benefits available with barium sulfate, a safer contrast medium, as with iodine-based product.

Classical Music to Calm African Greys

*Diane Walega,
Fort Lauderdale, Florida*

We have tried over the years to discover ways to raise tame, calm and quiet African Grey Parrots. Genetic makeup plays an important role, particularly in the tendency toward nervousness or feather picking.

Environmentally, however, we have found that playing soft classical music to the neonates during the hand-feeding process will produce adult birds that continue to respond to this music during times of tension or distress. As soon as they hear the music, they become quiet and docile.

A Closer Look

Calcium Metabolism

*Sheila E. Scheidler, PhD
University of Nebraska, Lincoln*

Calcium is one of the most important nutrients required by the avian species, not only for its obvious structural functions such as bone development and eggshell formation, but also for its importance in cellular regulation. Dietary calcium is typically supplemented as calcium carbonate since most dietary grains are very limited in their calcium content. Calcium carbonate varies in its availability to the bird depending on its particle size and solubility.

The companion bird requires a fairly small particle size with maximum solubility. Most of the calcium is solubilized by HCl secretions in the bird’s proventriculus and gizzard. A healthy gizzard is very important and can be enhanced in birds by the inclusion of some coarse dietary fiber.

After solubilization of the calcium in the gizzard, most research reports that calcium is actively transported by vitamin D calcium binding protein in the duodenal loop of the small intestine. Vitamin D is extremely important here and should always be supplemented in a complete companion bird ration. Kidney health and function are also important for calcium absorption because the final hydroxylation of vitamin D to 1,25 dihydroxycholecalciferol takes place in the kidney. Any disease or virus that may have

altered kidney function can negatively affect calcium metabolism. Excessive calcium feeding can also stress the kidney in birds, causing a gout condition.

Fortunately, recent research has shown that the large intestine may also play an important role in calcium metabolism. Research at UNL has indicated a very well developed capacity for the chicken to passively transport calcium in the large intestine.

This type of passive transport would be non-vitamin D dependent and actually enhanced by the presence of soluble dietary fiber (such as oat groats). This is promising research since many conditions can mar vitamin D function in older birds. The large intestine has been overlooked in nutrient absorption, but could become an important tissue if birds have a small intestine disease such as coccidiosis or enteritis.

Research will continue to be conducted at UNL to look at the function of fiber to enhance large intestine absorption in avian species.

Calcium metabolism may also play an important role in the condition of profuse egg-laying cockatiels. It is well known that in laying chickens, the best way to stop egg production is to drastically lower the dietary and serum calcium. The lowered serum calcium sends a signal to the ovaries to stop ovulating.

It may be that profuse egg-laying in cockatiels is enhanced by too much dietary calcium and that a calcium restriction could help take these birds out of egg

production. Most birds have plenty of skeletal reserves to produce a small clutch of eggs (4-6) without supplementing calcium. There remains the possibility of an endocrine malfunction in profuse laying cockatiels, but this too could be affected by serum calcium levels.

Let Your Practice Soar

Ten Easy Steps

Step 2. Fecal Gram's Stain

We aren't going to talk here about the technique for fecal Gram's staining. That information can be obtained elsewhere (such as HBD's "Using and Interpreting a Fecal Gram's Stain").

But I know there is a lot of confusion about why I recommend the frequent use of a fecal Gram's stain to monitor a bird. I am not looking specifically for disease-producing bacteria or yeast—that is a separate issue, and this procedure does not replace or necessarily equate with results obtained with a fecal culture. My theory is this:

The normal gastrointestinal bacteria are held in a homeostatic state by several factors: for example, general health, level of environmental stress, and of course, diet. Any change will affect the overall status of the bacteria and the results of a Gram's staining procedure.

"Normal" reference Gram's stain results need to be developed individually for each facility. The following is the ideal composition of a Gram's stain performed on fresh feces from a healthy psittacine companion bird as determined at The Bird Hospital in Lake Worth, Florida (using 10x optic with oil immersion lens of 100x): Total of 150 bacteria per oil immersion field = 70% gram-positive rods, 30% gram-positive cocci and 0% for both gram-negative rods and budding yeast.

Birds with no obvious clinical signs of disease but with subtle signs of malnutrition may show a low total number of bacteria with a high percentage of gram-positive rods (>90%), low percentage of gram-positive cocci (<10%) and occasional gram-negative rods.

If birds have increased clinical signs of illness, the number of gram-negative rods may significantly increase. Frequently in early stages, effective therapy is accomplished by only a diet change to Harrison's Bird Foods, and the body will manage and balance itself. Occasionally, lactulose or an acetic acid solution (vinegar - 1 tsp/pint drinking water for 10 days) may be added, but antibiotics are seldom necessary.

If Harrison's Bird Foods are fed correctly for as little as three weeks (and there is not concurrent illness), the following changes should occur: an increase in the total number of gram-positive bacteria per field; a decrease in the percentage of gram-nega-

tive rods; increase in the percentage of gram-positive cocci; a decrease in the number of yeast (budding or otherwise). If the Gram's stain fails to correct following a diet change, further health investigations are required.

By becoming familiar with how Gram's stain results equate with health in the companion bird, the avian practitioner has at his disposal a quick, easy, and cost-effective tool to evaluate, "Is this bird on a balanced diet?"



Practice Tips

Tyrode's Solution for PU/PD

Dr. Helga Gerlach
Munich, Germany

In Germany, we often see cockatiels with persistent polyuria and polydipsia. Most of these birds are on seed diets.

Although we don't know exactly what we are treating, we have been able to see some response to Tyrode's Solution, a balanced isotonic electrolyte. We use this as the only source of drinking water. We normally try it for 3-4 days to see if the birds respond; however, it is safe to use for extended periods of time if necessary. Not all birds will successfully respond.

Ed note: Since a cockatiel drinks only 10 ml/day, the solution can be extended by filling just a small cup at a time. Packets of appropriately mixed Tyrode's Solution chemicals are available from HBD, International, Inc., 800-346-0269.

Tyrode's Solution

8.00 g NaCl
0.13 g CaCl₂
0.20 g KCl
0.10 g MgCl₂
0.05 g Na₂HPO₄
1.00 g NaHCO₃
1.00 g glucose

Add to 1 L water.

Prostaglandins

Donald Zantop, DVM,
Dipl. ABVP Avian
Fallston, Maryland

Regarding the prostaglandins discussion in *Avian Examiner* #3, according to work by Shimada and Asai in 1979 (Sturkie, p. 420), PGF_{2α} "stimulates shell-gland contractility, relaxes the vagina, and induces premature oviposition." This suggests there is "cervical" dilation.

On a practical note, I have had two cases of ruptured duct at the uterovaginal junction in a canary and a Society finch after the use of Lutalyse, but this seems to be a common site for rupture without the use of prostaglandins.

How to Administer Ketoconazole in Lactulose

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

Crush ketoconazole tablet(s) and mix appropriate amount into a 1/4 oz bottle of lactulose (*Cephulac - Merrill Dow*). Administer dose by dropper per os. For non-responsive or advanced cases the amount of ketoconazole is doubled. (See Table 2).

Notes from South Africa (WSAVA Congress)

Manfred Hochleithner, DVM
Vienna, Austria

Up to 30% of birds that come in for endoscopic sexing have internal signs of disease. African Greys, particularly, show endoscopic evidence of kidney disease without clinical signs.

■ Ionizers are not effective methods for cleansing environmental air. A German researcher found that they are effective for only 10 cm surrounding the unit. Air filters are believed to be more effective.

Ed note: Ionizers actually charge the particles, many of which cling to cages and cups if not captured by a filter.

■ In-house chemistry machines, whether wet or dry models, must be calibrated at least once a month for birds.

Wall Mount for Gram Scale

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

We use a movable mounting arm to provide a stable position for the Ohaus gram scale in each exam room. The scale is permanently attached to the

adhesive surface so the arm can be moved over the exam table for use, and retracted against the wall for storage.

The universal wall bracket (Coded HH) with hardware is available from Elmman Intl. Mfg. Call 800-835-5355.

Weaning Trough

Diane Walega
Fort Lauderdale, Florida

We have designed a large feeding container to introduce weaning babies to a formulated diet and selected varieties of vegetables and fruits. Made of clear acrylic, the trough allows the birds to get a good look at the food and to climb right in to make their selections.

Air Travel with Birds

David L. Wolverton, Manager
Consumer Affairs, Delta Airlines

Delta Airlines permits small pets in the passenger cabin if carried in suitable kennels. The pet, of course, must remain in the kennel at all times. There is a one-way fee for this service, but it is only slightly more than checking an animal in the cargo bin.

Reservations must be made for the pet because only limited numbers are permitted on each flight. This service

enables people who are transporting a bird for medical treatment, for example, to keep the animal in their care throughout the trip. In addition, the environment in the passenger cabin differs from that in the cargo bin on all airlines.

Tube-feeding Tip

Jim Stunkard, DVM
Bowie, Maryland

The following is a quick method for determining the volume of tube-feeding formula to administer to a bird: $\text{Body weight} \div 10 = \text{ml/day} \div \# \text{ feedings/day} = \text{ml/feeding}$.

A Bird's Unusual Aversion to a Perch

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

A client who lost an African Grey Parrot to an adverse reaction became extremely paranoid about her new baby Grey. For example, she would buy fresh dowel rods for perches and wash them well to remove any contaminants.

One day, an extra dowel was washed, dried and store in a plastic bag. When this perch was later placed in the cage, the bird began to act nervous and frightened. It stopped eating and drinking and started pulling its feathers. The bird also avoided standing on the new perch.

When it was replaced, the bird immediately resumed normal activity. The client looked closer at the dowel, and saw some minor gray coloration. The dowel had obvi-

ously been stored in plastic before it was properly dried and was becoming moldy. It's amazing that the bird would detect the contamination so early.

It makes me wonder how many birds pull their feathers simply as a reaction to a "dirty" cage.

A Closer Look

Spirulina Attracts Scientific Attention

Spirulina algae is one of the special ingredients included in HBD formulas. This component supplies natural beta carotenes, xanthophils and other vitamin precursors that are eaten by birds in the wild.

Although we don't completely understand why birds are responding so positively to Harrison's Bird Foods (as clinicians are reporting), spirulina may have a role in this. Several studies have shown the beneficial effects of these pigments on immune stimulation and on the healing of disorders relating to the pancreas, liver, colon and the respiratory system. Some brief summaries are presented here.

Hayashi K, et al: An extract from Spirulina platensis is a selective inhibitor of herpes simplex virus type 1 penetration into HeLa cells. Phytotherapy Res 7:76-80, 1993.

The water-soluble extract of *Spirulina platensis* achieved a dose-dependent inhibition of the replication of herpes simplex virus type 1 (HSV-1) in HeLa cells within the concentration range of 0.08-50.0

TABLE 2

Body Weight	Amount Ketoconazole	Dosage BID
	1/4 tablet (50 mg)	1 drop (= 0.33 mg)
75-100 g	1/3 tablet (100 mg)	1 drop (= 0.665 mg)
150-250 g	1/2 tablet (100 mg)	2 drops (= 1.33 mg)
300 g	3/4 tablet (150 mg)	2 drops (= 1.98 mg)
350-450 g	3/4 tablet (150 mg)	3 drops (= 2.97 mg)
500-700 g	1 tablet (200 mg)	3 drops (= 3.99 mg)
800-900 g	1 tablet (200 mg)	4 drops (= 5.32 mg)
1000-1100 g	1 1/4 tablet (250 mg)	4 drops (= 6.64 mg)
1200 g	1 1/2 tablet (300 mg)	4 drops (= 7.96 mg)

Environmentally Unsound

These chemicals, which have been found in widespread distribution in the environment with reported reproductive (estrogenic) and endocrine-disrupting effects,* have NEVER been used in Harrison Bird Foods.

PESTICIDES

Herbicides

2,4-D
2,4,5-T
Alachlor
Amitrole
Atrazine
Metribuzin
Nitrofen
Trifluralin

Fungicides

Benomyl
Hexachlorobenzene
Mancozeb
Maneb
Metiram-complex
Tributyl tin
Zineb
Ziram

Insecticides

β -HCH
Carbaryl**
Chlordane
Dicofol
Dieldrin
DDT and metabolites
Endosulfan
Heptachlor and H-epoxide
Lindane (τ -HCH)
Methomyl
Methoxychlor
Mirex
Oxychlordane
Parathion
Synthetic pyrethroids**
Toxaphene
Transnonachlor

Nematocides

Aldicarb
DBCP

INDUSTRIAL CHEMICALS

Cadmium
Dioxin (2,3,7,8,-TCDD)
Lead
Mercury
PBBs
PCBs
Pentachlorophenols (PCP)
Penta- to nonylphenols
Phthalates
Styrenes

*From Colborn, T, vom Saal ES, Soto AM: *Developmental effects of endocrine-disrupting chemicals in wildlife and humans. Environ Health Perspect 101(5):378-81, 1993.* Copies of this are available from HBD upon request.

** Ed note: The inclusion of both of these products is somewhat surprising. Experimentally, carbaryl (Sevin dust) had been considered safe as a nest box dust. Although synthetic pyrethroids are included on this list, perhaps natural pyrethins, such as Flea-off Mist may be less threatening.

mg/ml. This extract proved to have no virucidal activity and did not interfere with adsorption to host cells. However, the extract affected viral penetration in a dose-dependent manner.

In an *in vivo* experiment, food containing the extract effectively prolonged the survival time of (HSV-1)-infected hamsters at doses of 100 and 500 mg/kg per day.

Queshi MA, et al: *Immune enhancement potential of Spirulina platensis in chickens. Poultry Sci 73(1):46, 1994.*

The effects of *Spirulina platensis* (SP) on the immune function of chickens were examined. The data suggests that SP exposure improved immune performance of chickens without adversely affecting other performance characteristics.

Belay A, et al: *Current knowledge on potential health benefits of Spirulina. J Appl Phycolgy 5:235-241, 1993.*

Spirulina is a microscopic filamentous alga that is rich in proteins, vitamins, essential amino acids, mineral and essential fatty acids like γ -linolenic acid (GLA). Up to very recently, the interest in *Spirulina* was mainly in its nutritive value.

Currently, however, numerous people are looking into the possible therapeutic effects ranging from reduction of cholesterol and cancer to enhancing the immune system, increasing intestinal lactobacilli, reducing nephrotoxicity by heavy metals and drugs and radiation protection. This paper presents a critical review of some published and unpublished data on therapeutic effects of *Spirulina*.

Henson RH: *Spirulina: Wonder-food for birds. Bird World. July/August:32-33, 1993.*

Anecdotal accounts of how *Spirulina* is producing positive results in pet birds and commercial breeders, including shiny feathers, smooth skin and beaks, bright colors, increased fertility and longer life spans.

Using Harrison's

Blue-fronted Amazon's "Second Chance"

Leslie Rule
Columbia, Missouri

Dillon is a Blue-fronted Amazon that began picking his feathers when his previous owner got married.

When I bought him, he was a mess. All his chest and back feathers were gone, leaving only the gray down. His coloring and feathers were dull and he was thin. I began to offer him a soft diet (vegetables, etc.) and a commercial pellet, but he seemed half-hearted about eating them. So I began adding Harrison's Coarse Grind into his pellet bowl. Very soon he was eating only Harrison's and refusing the other commercial diet.

Dillon came home to live with me early in February of last year. Now he is barely recognizable as the same bird! Several weeks ago I noticed a luminous sheen in his feathers. Recently, he has begun molting, and shiny green feathers are filling in the bare patches. He is no longer thin, his eyes are bright and he

loves to vocalize with my other birds and play with his new toys. When I brought him home, I had doubts that I could save him, but now he's healthy and more beautiful each day. I attribute part of his "second chance" at a good, healthy life to Harrison's... Please continue what you are doing, for it really makes a difference. For anyone I tell about Harrison's who doubts me, I tell them to come look at my birds. They're beautiful, sleek, perfectly feathered, bright-eyed and healthy.

Dear Dr. Harris

(South Kendall Animal Clinic)

When my African Grey was 11 months old, he was diagnosed with a calcium deficiency, for which the veterinarian prescribed a calcium syrup supplement (Neocalglucon). I continued to give this \$20 per week treatment over the next five years. During this time, I tried every pellet on the market but the bird just wasn't doing quite right: he didn't play, he didn't sleep well at night and he was grumpy.

When I changed veterinarians, Dr. Don Harris proceeded with a complete battery of tests through the University of Miami. The results of all tests failed to suggest a diagnosis. Dr. Harris recommended that I try Harrison's Bird Foods.

After a few weeks the bird began to positively respond: he became more active and playful, and his blood calcium level was within normal reference ranges without calcium

supplementation. Dr. Harris suggested that perhaps the bird had an allergy to preservatives. Today the bird is unable to eat anything but Harrison's (not even a saltine cracker) but he continues to do great (and I'm saving a lot of money).

Dana Klingemeir, Florida Keys

Ed note: Situations like this could also be caused by adverse reactions to other components of nonorganic foods, such as pesticides, artificial colors or synthetic sweeteners.

Mash for PU/PD

The original HBD Adult Lifetime Formula was field tested on cockatiels over a five-year period without incidence of polyuria/polydipsia (PU/PD). However, several practitioners have reported that numerous mutation cockatiels, particularly fallows, are showing a tendency toward kidney disorders (PU/PD and gout), and radiographic evidence of reduced kidney mass. Although these birds would have developed the clinical signs eventually, the added nutrient load and perhaps the presence of bean proteins may have exacerbated the signs.

A trial Mash Formula that was produced with a lower protein content (12.5%), has resulted in favorable response in many affected birds. The Tyrode's Solution is used concurrently (from daily to once a week). Some severe cases may benefit from the addition of 30% flaked oatmeal to dilute the protein level even further.

Defining Special Needs

Molting Birds

Many birds will go through a molt after converting to Harrison's Bird Foods. During all molts High Potency Formula is recommended in order to supply the nutrients necessary for brilliant new feathers. Adult Lifetime Formula may be resumed following the molt. Birds that molt more than once a year should be investigated.

Ed note: For free consultation on birds with abnormal molts, contact Dr. Harrison at 561-964-2499.

Aging Birds

Older birds may not be able to digest the food adequately and many benefit from the addition of a vegetable-based enzyme (Prozyme) and additional Spirulina (2-3 Tbs/lb food).

We believe that by clients working with veterinarians and following the instructions for feeding Harrison's, companion birds will not develop malnutrition. And, in fact, all evidence we see shows that they are healthier and happier.



Practice Tips

Why Tyrode's Solution Works

K. Stormy Hudelson, DVM, Dipl. ABVP Avian Tucson, Arizona

Regarding the item about Tyrode's solution in *Avian Examiner #4*, the proba-

ble reason it works is because polyuria and polydipsia cause medullary wash-out. The avian medulla contains primarily Na⁺. Therefore, the Tyrode's solution reestablishes the medulla's gradient.

Treatment of Hemochromatosis

Hans Cornelissen, DVM Nijmegen, The Netherlands (From Proc Europ Assoc Avian Vet, Israel, 1995)

Deferoxamine was used at 100 mg/kg q24h subcutaneously in a Channel-billed Toucan diagnosed with iron storage disease to reduce the iron content of the liver and to improve clinical signs. The drug is available as the human product Desferal (Ciba-Geigy - 500 mg); the reconstituted drug can be stored for up to one week in the refrigerator.

Five liver biopsies (1 cm each) over a four-month period confirmed that the liver iron concentration in the toucan had gone from 450 to 28. Care was taken to biopsy a fresh area of the liver each time to prevent alteration of values due to the presence of scar tissue. (Although the bird's liver appeared to recover, the bird died of a cardiac condition.)

Channel-billed Toucans appear to be the most susceptible species to iron storage disease, closely followed in incidence by Toco Toucans and Red-vented Aracaris. The susceptibility may be primarily genetically related.

Although clinical signs are absent in early disease, hemochromatosis can be confirmed by histopathology or quantita-

tive measurement of iron in a liver biopsy sample.

One theory of the disease is that affected birds are deficient in a mucosal blocking action that may somehow relate to vitamin C consumption. Early treatment of the disease includes feeding foods low in iron and vitamin C (no citrus). Softbill foods in Europe have as much as 600 ppm iron.

Ed note: It is a theory of an environmental consultant that rain forest soil is void of ferrous iron and contains only an insoluble ferric iron. Therefore free-ranging birds living in this environment would need an efficient system to obtain iron from their natural diet. If amounts greater than normal are provided to such birds in captivity, an overabundance of the mineral is absorbed. Harrison's Bird Foods are the only commercial low-iron formula that is free of supplemental vitamin C.

Repair of Quaker Skull with Hypo-Cal

Greg J. Harrison, DVM Dipl. ABVP Avian Lake Worth, Florida

As a result of impact trauma, an eight-year-old female Quaker Parakeet had a 2 cm degloved crown region of the head in which a referring veterinarian had placed sutures.

Two weeks post-operative when the sutures were removed, a large scab was lifted away from the scalp, exposing a large ulcer. Following a seven-day q12h application of a topical penetrating cream (Penetran), and three-day therapy with a hydroactive dressing (DuoDerm), it was obvious that a piece of actual skull (same size and shape as ulcer) had become necrotic. The bone piece was easily

removed, leaving a portion of the brain exposed.

Because I have had limited success with acrylics serving anything more than a temporary bandage, I chose to treat the area like a dental cavity. I applied a 2-3 mm thick layer of calcium hydroxide with barium sulfate paste (Hypo-Cal, Ellman Mfg.) and dried it under forced air. The skin of the scalp was then undermined and sutured over the area with 6-0 nylon. The bird was placed on enrofloxacin IM for 3 days.

On awakening from the isoflurane, the bird exhibited a petit mal tremor. These seizure continued periodically for three days but because they were only a few seconds long, no anticonvulsant was administered.

The bird was examined six weeks post-surgery as the skin sutures had fallen out on their own. The skull cap had completely re-ossified with no evidence of previous injury. Because no more seizures had been observed, the bird was returned to her mate and has since gone back to nest.

It is interesting to speculate how this product might be used to aid positioning of intramedullary pins in repair of fractures (allowing the use of a smaller size pin), or to stimulate bone growth for other parts of the skeleton. It is also interesting to note that the expiration date on the calcium hydroxide paste was March 1991.

Use of Penetran for Beak Malocclusion

*Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida*

Topical application of Penetran is effective for avian skin rashes, local irritations and ulcerations. It can be mixed with aloe vera liquid for generalized dermatologic conditions. Because it has penetrating properties, I have used it to treat some deeper muscular problems.

In two cases of a serious beak malocclusion with underbite, the only therapy was application of Penetran to the facial muscles including the periophthalmic areas. In a ten-day-old cockatoo, the muscles relaxed and the beak returned to normal positioning overnight; a full week of Penetran application and prolonged periods of manual positioning of the beak were also successful in a four-week-old cockatoo.

Penetran is a commercially available ammonium solution from TransDermal Technologies, Inc. (800-676-7354).

Reception Room Education

The reception room offers the opportunity for educational signs or posters to be presented on a rotating basis. Two signs that we use are: one that tells owners about the dangers of zinc and lead that has an actual wire sample with lead attached, and the other has a tube filled with preserved tapeworms from an African Grey that had been a single pet in the household for five years.

A Closer Look

Avian Polyomavirus

*Branson W. Ritchie, DVM, PhD
Dipl. ABVP Avian*

The first acute, generalized infection associated with a polyomavirus in any species of animal was described in young budgerigars and was called budgerigar fledgling disease (BFD).

Polyomaviruses that infect budgerigars, other psittacine birds and finches appear to be morphologically and antigenically similar. However, the clinical presentation, distribution of lesions and epizootiology of these viruses differ dramatically among susceptible species.

Clinical Features

In budgerigars, the primary clinical signs include sudden death in birds less than 15 days of age. Ataxia and tremors of the head and neck may affect 10% of neonates. In older budgerigars there may be abdominal distention, hemorrhage under the skin and reduced formation of down and contour feathers.

In breeding birds, decreased egg hatchability, early embryonic death and high hatchling mortality may be caused by avian polyomavirus.

Subclinical infections are most common in nonbudgerigar psittacine birds, although peracute death may occur without clinical signs in young birds. Other primary clinical features in parrots include acute death 12-48 hours after depression, delayed crop emptying, regurgitation, diar-

rhea, hemorrhage under the skin, bleeding from injection sites or feather follicles and hematuria in Eclectus Parrots. Feather abnormalities are rare.

Diagnosis

Viral-specific DNA probes will detect polyomavirus shedders. Diagnosis in the living bird may result from DNA probe detection of virus in excrement, microscopic evaluation of organ biopsies, or demonstration of a 4-fold increase in antibody titer in paired serum samples. Some infected birds have increased activities of LDH, AST and AP.

Postmortem diagnosis may be made from demonstration of virus particles by electron microscopy, isolation of the virus in cell culture, specialized staining of suspect lesions using viral-specific antibodies or the detection of viral nucleic acid using polyomavirus-specific DNA probes.

Differential Diagnosis

Differential diagnoses for feather lesions include PBFDF virus, adenovirus, endocrine abnormalities, bacterial infections, fungal infections, traumatic injuries and drug reactions (cephalosporins and penicillins). For systemic lesions the clinician may consider chlamydiosis, liver disease, clotting disorders, bacterial septicemia, psittacine herpesvirus, reovirus and toxins.

Transmission

In budgerigars, polyomavirus is suspected to be transmitted through exposure to contaminated aerosols and direct exposure to contaminated feces, crop excretions, feather dust, urates and respiratory

secretions. In nonbudgerigar psittacines, virus is present in the excrement. Vertical transmission is documented in budgerigars, but has not been documented in nonbudgerigar psittacines.

Prevention

An inactivated vaccine has been licensed by the University of Georgia to Biomune and is currently in the USDA registration process. Vaccination is the best way to prevent infections. Other procedures will help reduce a bird's exposure to the virus including sound hygienic practices, appropriate quarantine of newly acquired birds, maintained closed aviaries, preventing visitors from entering avian nurseries, shipping only in biosecure shipping containers, not shipping unweaned neonates, and attempting to identify and isolate subclinical shedders using viral-specific DNA probes.

Control

Polyomavirus is environmentally stable but can be inactivated by Clorox bleach, stabilized chlorine dioxide, phenol and ethanol.

DNA probe test for polyomavirus - Infectious Disease Lab, University of Georgia: 706-42-5812

Polyomavirus vaccine - Biomune: 913-894-0230

Biosecure shipping containers - Horizon Micro-Environments: 800-443-2498

Adapted from Ritchie BW: Avian Viruses: Function and Control, 1995. Used with permission of Wingers Publishing, Lake Worth, FL. To order call 800-946-4782.

Q&A

Polyomavirus Vaccine

Some of the most common questions asked by avian practitioners about the inactivated polyomavirus vaccine are answered by Dr. Ritchie:

What species should be vaccinated?

All nonbudgerigar psittacines. We have not performed any research to document the efficacy of the vaccine in budgerigars.

What age should the vaccine be given?

For neonates, the initial dose can be given at 20 days and the booster at 34 days. Adults can be vaccinated twice 2-3 weeks apart.

How is the vaccine administered?

Subcutaneously at the caudal end of the breast muscle (just below the sternum) with the needle directed toward the cloaca.

What is the dose?

0.5 ml in birds > 200 g BW and 0.25 ml for birds < 200 g BW.

What is the frequency of administration?

Second dose 2 weeks following the first.

Is it safe to vaccinate previously infected adults?

Yes.

Do birds need to be tested for polyomavirus prior to vaccination?

No.

What kind of side effects can be expected?

Some birds develop yellowish discoloration or thickened skin at the site of the injection.

How can practitioners obtain an autogenous vaccine?

Currently one can submit a bird suspected of dying from polyomavirus to the University of Georgia. If it is positive, Biomune produces an autogenous polyomavirus vaccine. This vaccine is licensed to the submitting veterinarian for specified use.

What is the cost of the autogenous vaccine to the practitioner?

\$11/ml

Educating the Avicultural Client: What to Expect with Polyomavirus Vaccination

*Branson W. Ritchie, DVM, PhD
Dipl. ABVP Avian*

Education of the aviculture community will help resolve some issues that might arise about the polyomavirus vaccine.

Veterinarians entering aviaries where breeding birds have not been touched for a long period of time may identify subclinical problems of which the aviculturist had not been aware.

During our research trials, we found 2% of the well managed flocks and 4% of the less well managed flocks had birds with pre-existing problems. These conditions included aspergillosis, mycobacteriosis, liver disease, renal disease, heart disease, fatty tumors, reproductive disease or proventricular dilatation disease. The veteri-

narian or the vaccine should not be blamed for subsequent clinical detection or expression of these pre-existing problems.

Clients may prefer to view the stress of being in the aviary as the opportunity for the veterinarian to evaluate the collection by physically handling and examining all of the birds during the vaccination process rather than just "giving the vaccine."

Three levels of reaction were identified during our close inspection of vaccinated birds during field trials:

1. Some yellow discoloration under the skin at the injection site (common).
2. Thickening of the skin at the injection site (less common).
3. A knot that formed at the injection site (infrequent).

These reaction generally resolved without treatment 3-6 weeks post-vaccination. Aviculturists would normally not even be aware of these temporary responses, but we were specifically evaluating vaccinates for reactions.

Neonates that are infected with polyomavirus prior to vaccination may die from the disease. The vaccine prevents infections; it does not resolve them. Additionally, neonates are vaccinated at 20 days of age and then boosted at 34 days of age.

In the overall population, one cannot count on protection from infection until an immune response has had time to occur (7-14 days after the booster). Therefore, birds maintained in crowded conditions with poor hygiene could remain at risk of infection until

the bird's immune system responds to the vaccine. This same potential exists in any bird or mammals vaccinated with any inactivated vaccine.

Using Harrison's

Harrison's for Racing Pigeons

*Dr. Jan Hooimeijer, Avian Veterinarian
Meppel, The Netherlands*

Harrison's Bird Food is a good product for racing pigeons.

Last winter in an interview in a national pigeon magazine, one of the most successful players of the 1994 racing season told about his use of Harrison's "baby powder" (hand-feeding formula) and that he wished he had used it before.

I am using it as extra food during the racing period, during molting and especially during breeding. To get flock birds to consume the additive we mix it with live culture yogurt and stir in the seed/grain mixture. The yogurt is used as a source of animal protein, minerals and especially lactobacilli. This combination works great.

The dosage is 10 g Harrison's Juvenile Formula mixed with the yogurt per 10-12 pigeons. During egg production it is given every day (as soon as the birds are given a nest and until the eggs are laid).

The product is restarted 3-4 days before pipping and continued during production of crop milk and up until the

youngsters are 2-3 weeks of age. It is used 2-3 times a season and during the molting period.

It's also doing a good job in older valuable breeding birds that never fly loose (as they don't have the opportunity to find extras in the wild).

Another indication is in the treatment of valuable pigeons that are sick. I use it as complete tube-feeding diet (30-40 ml three times a day).

Pigeons with liver disease from adenovirus, severe coccidiosis, ascarids or capillaria infestations respond well to tube-feeding the Juvenile Formula as the entire diet. In general, if I have an outbreak of these kinds of diseases, I cull all but the strongest birds in order to maintain hardy genetic lines.

Ed note: In the 1995 Proc Assoc Avian Vet, I report on the use of Harrison's Juvenile Formula as supportive treatment for an outbreak of hexamitiasis in pigeons.

Harrison's for Crickets

*Teresa Lightfoot, DVM
Dipl. ABVP Avian
Largo, Florida
(From American Online 4-10-95)*

A few months ago, I was out of cricket food so I used Harrison's High Potency Fine Grind. The crickets started breeding like crazy (I was just trying to keep them alive, not hormonal). So I've been messing around with different formulas. The pinheads do great on the (Adult Lifetime) Mash and adult crickets do well on the (High Potency) Fine or Coarse Grind.

Eating these crickets, the Leopard geckos are breeding

better, Collard lizards look great, and the African frog ate all the crickets (usually only eats 1 or 2) and then unfortunately, ate his roommate, the newt. Never had so many babies. It'll be interesting to see how the next generation of lizards reproduce. I love sexual success stories . . .

Ed note: I also noticed the Harrison-fed crickets lived twice as long as those purchased from a store (which I was never able to breed).

Improved Feathers on Harrison's

*Deborah Arbogast
Annandale, Virginia*

Last January I began working with Dr. Rose Ann Fiskett (Fairfax, Virginia) who tried very hard to convince me to convert my seed-eating birds to Harrison's pellets. I only gave it a half-hearted attempt because I was not totally convinced about feeding pellets (because of conflicting advice from other bird owners and breeders), so I was also allowing them to eat as many seeds and other bird treats as they wanted.

Not long ago my Red-bellied parrot began feather picking and Dr. Fiskett put her on a "mind-altering" medication, which helped her feathers grow back into a good degree, but not like they were before. I decided it was time to get serious about Dr. Fiskett's advice, so I pulled all the other "stuff" my parrots were eating and fed them Harrison's only. I will have to say that, much to my amazement, my feather-picker's feathers are growing in much fuller and her droppings are better than normal. If seeing

is believing, I am definitely a believer! I have seen right before my eyes the wonderful effects your pellets have had on my birds.

I'll have to admit, I think they taste good too! I must confess to dipping into the pellet bag a few times a day myself.

HBD News

HBD Receives OCIA Approval

HBD received the official announcement from the Organic Crop Improvement Association (OCIA) that all aspects of the production of Harrison's Bird Foods have received full approval, and HBD is authorized to use the OCIA logo on all its labels and correspondence.

The OCIA is a professional association of organic farmers and processors. Their brochure states: "An organic food system is an organized, professional, efficient and ecologically based whole food network, encompassing all segments of the food chain from the farmer right to the consumer . . . To be consistent with the audit trail requirements, any manufacturer, wholesaler or trader that handles OCIA certified products has to be a full part of OCIA's control and certification process . . . and has to be able to provide a valid OCIA certificate of organic authenticity. It is only through this integral system that organic quality can be

assured, and misuse of the trademark be avoided.”

HBD manufactures the first certified organic pet food.

Let Your Practice Soar

Bird Day Party

One way to attract the attention of your community to the avian aspect of your clinic is to hold a public “Bird Day Party” for local bird enthusiasts.

The Bird Hospital of Lake Worth, Florida has hosted this celebration in its front yard/parking area. Vendors set up tables promoting their bird art, crafts, clothes, cages, birds, toys, accessories. Local avian veterinarians are on hand to answer questions, and a local Mexican restaurant offers burritos and cold drinks for sale.



As I See It

Behavior Modification Services

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

Preventive medicine for companion birds, as with dogs and cats, begins with the human/animal bond. The degree to which avian clients consult with veterinarians on a regular basis and follow professional recommendations

for feeding practices and yearly examinations often depends upon the strength of this bond.

Helping a family select the appropriate companion bird, based on species characteristics, is the first step. Another valuable aspect of total avian care is availability of a behavior modification program.

Behavior problems are leading to increasing numbers of pet birds being donated to various outlets, such as “breeding programs” or being released to the wild, neither of which is a wise option (zoos no longer take unwanted birds). It has become obvious from observing birds undergoing a positive diet change that a transformation occurs in general attitude (which reflects a renewed well-being), but other behavior disorders are often learned, and continuous training sessions may be needed.

In domestically bred birds, one of the major problems is that the bird becomes the dominant partner in the relationship with the owner. Unless there is some instruction on how to shape its behavior from an early age (like puppy obedience classes), a bird soon learns that screaming, biting, refusing food, throwing food, feather picking, or any number of other unacceptable behavior patterns get the attention of family members.

Although it is better to start at a young age, there are trainers who can assist clients with adult birds to modify behavior that is not conducive to the owner’s serenity.

One example of modifying the behavior of a fearful biter begins with getting the bird to allow you to cover its head with a small towel (each time with positive reinforcement). Soon you should be able to actually pick the bird up with the towel wrapped around it.

This makes a more enjoyable veterinary patient — you can do wings, nails or sample collection without having a traumatic experience. We can actually approach a trained bird with a towel in the reception area and take the bird from the client there. There’s no stress — the bird likes it and we love it. This technique works well for cockatoos, African Greys and macaws.

Veterinarians, bird trainers, behaviorists and bird clubs have begun to offer group support for prevention and correction of bird behavior problems. (Has anyone tried the healing touch technique or the Tellington T-touch on misbehaving birds?) Educating clients on the possibility of modifying their pet’s undesirable behavior will transform the way people see birds: they will be viewed as pleasant, well mannered companions for modern families.

Practice Tips

Polyomavirus Vaccine Approved

The long awaited avian polyomavirus vaccine has been approved by the USDA for general use in the veterinary community (see *Avian*

Examiner #5 for useful tips). Dr. Bran Ritchie and other members of the Psittacine Disease Research Team at the University of Georgia developed the vaccine and have written a client education brochure that will be distributed to veterinarians with their vaccine purchase.

The vaccine is available through Biomune Company, 8906 Rosehill Road, Lenexa, KS 66215, 800-846-0230.

New Life for 73-year-old Macaw

(from VIN 10-12-95)
Brian Speer, DVM
Oakley, California

Mac is a documented 73-year-old Scarlet Macaw with, among other things, degenerative joint disease in most leg and wing joints, bilateral partially mature cataracts, and a dignified but crabby attitude — appropriate for his age. He walks like an old man, and in general, is reluctant to move too much at all.

After we were comfortable with the general health status, we opted to try him on injectable Adequan for his DJD. His activity increased by 10-fold literally overnight. The quality of life is much better (for him) in that now he can chase owners around the house in new and creative ways. This has been maintained for three weeks following a single (feline) dose. Has anyone else had similar experiences with Adequan in birds?

HCG for Feather Picking

(from VIN 10-09-95)
Teresa Lightfoot, DVM
Dipl. ABVP Avian
Largo, Florida

Human chorionic gonadotropin (HCG) at 500-1000 IU/kg (equals about 0.2 ml per African Grey of the 10,000 IU/10 ml HCG) has worked in 6 of 7 known female greys to reduce picking. This has not worked in male greys (4 to date).

The theory is that HCG has LH activity primarily in birds (Sturkie's). LH primarily stimulates progesterone in female birds, hence an endogenous progesterone release, in lieu of the whopping Depo-Provera exogenous attack we had before. This needs repeating every 4-6 weeks in many cases. You still need to do baseline evaluation to make sure the picking is not the result of other disease or disease processes.

Ed note: The use of dexamethasone (2 mg/ml given in equal volume as HCG) seems to improve the response to HCG as well as prevent a tolerance to HCG from developing.

Value of Physical Exam

(from VIN 10-02-95)
Sam Vaughn, DVM
Dipl. ABVP Avian
Louisville, Kentucky

The single best diagnostic tool is still the physical exam. A hen with infertile eggs was seen by two other vets over the last six months. Neither found bilateral fractures of the wings with osteomyelitis in the right wing, even with three blood panels assessing liver enzymes.

Could this be the seeding source of bacteremia that is killing the embryos?

Clinical Use of Fecal Cytology

Branson W. Ritchie, DVM, PhD
Dipl. ABVP Avian
University of Georgia
Heather Wilson, DVM
Jupiter, Florida

Fecal cytology (most frequently Gram's stain) can be used to evaluate the population of microscopically detectable organisms that are present at the time the sample is collected. Frequently, organisms are detected by cytology that cannot be recovered by culture. It should be noted that routine culture only detects easy-to-isolate aerobic bacteria and fungi. In contrast, cytology provides an impression of the overall population of bacteria and fungi present in the sample.

As an example, an organism with structural characteristics suggestive of *Clostridium* sp. was detected by cytology of the feces in a neonate that had been treated with numerous antibiotics for diarrhea and a slow emptying crop. The bird responded to treatment for *Clostridium*.

Routine culture, in the absence of fecal cytology, had been performed repeatedly on this bird and had resulted in the unnecessary treatment of non-clostridial bacterial detected by culture.

In another case, a goose was presented with chronic diarrhea. Fecal cytology indicated a complete absence of bacteria. In questioning the client, it was determined that the goose was being fed poultry food containing antibiotics.

The goose was converted to a game bird diet (without antibiotics) and the diarrhea was resolved.

For additional information on the microscopic examination of feces, see Ritchie, Harrison & Harrison (eds): *Avian Medicine: Principles and Application*, pp 174-175.

Suspected Polyomavirus in Finches

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

A man with a mixed passerine aviary began losing birds. European finches were crowded with Lady Gouldians, Cordon Bleus and canaries. The diet consisted of mixed seeds, gravel, and vitamins in the water.

Early postmortem histopathology and cultures showed various bacterial problems and candida proventriculitis. Robert Schmidt said the later was common in birds with viral disease (especially polyomavirus in Lady Gouldians), but the lesions were limited to mineralization of the heart and kidney (typical of nutrient over-supplementation) and vacuolar liver degeneration.

Although the birds were segregated into species and the dominant birds had their wings clipped, aggression injuries occurred, especially in the Cordon Bleus. Excess birds and aggressors were moved to separate housing.

The diet was changed to Harrison's Mash. A dozen birds had various stages of bumblefoot and poor quality feathers with elongation of the beak and nails. All but two

birds cleared up all problems that were thought to be malnutrition-related — these two required intensive bandaging and topical therapy for bumblefoot.

But birds continued to die, one every 2 or 3 weeks. After 9 frustrating months, a histopathology report stated that viral inclusions typical of polyomavirus had been identified.

The birds were put on echinacea and goldenseal (sig: 4 drops per cup drinking water) for 2 weeks. After no new deaths were seen in 8 weeks, a psittacine polyomavirus vaccine was administered.

According to Bran Ritchie, viruses of both orders share a capsid and should mount a similar defense response, even though they do not likely share infections. Thus parrot vaccine "should" prevent finch polyomavirus infection. A 0.1 ml dose was administered twice at a two-week interval. No reactions to the vaccine have been noted and no deaths have occurred in over 13 weeks.

Adverse Reaction to Red

Chris Migliore
Lake Worth, Florida

I have several cockatoos, all of whom are mellow and affectionate. Much to my surprise, the Umbrella recently became fearful and aggressive whenever I would approach her. I even made an appointment to take her to the veterinarian because the behavior was so bizarre.

When I arrived at the clinic, the bird immediately went to the technician and started cuddling. After much deliberation,

we considered the possibility that the red fingernail polish I applied for the holidays was the cause of this behavioral change. Sure enough, as soon as the red polish came off, the bird's behavior returned to normal.

Organic All the Way!

If people go to the effort of feeding an organic food like Harrison's Bird Foods, they should be encouraged to offer only organic fruits and vegetables if supplements are given.

Chart Available

The Bird Hospital has developed a differential chart for feeding an organic diet. For a copy please call HBD at 800-346-0269.

Longer Pre-surgical Fast?

*Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida*

A Hyacinth, presented for surgical sexing following an 18-hour fast, regurgitated seeds during the isoflurane procedure. Perhaps a 24-hour fast should be recommended prior to anesthesia in large species.

A Closer Look

Chia

Chia (*Salvia tiliafolia*) is a traditional wild food crop of the Chumas Indians in Southern California as well as for the Tarahumara Indians in Mexico. Chia plants are

vibrant blue, flowering bushes that grow to 6 feet tall.

Chia is a tasty and nutritious food and makes a refreshing drink. The seeds can be roasted and ground, or mixed with corn and cooked in water to make a gruel called *alole* that is flavored with honey, chilies, or pimento. Chia seeds infused with water and flavored with lime juice make a mucilaginous drink that is still called "chia fresca" in modern-day Mexico. It is said that one tablespoon can sustain a person for 24 hours. This was used for long-distance running, which the Tarahumarans do routinely.

In Aztec medicine chia was used to stimulate saliva and to relieve pain in knees, injured feet and sore skin.

Chia is an excellent source of soluble and insoluble fiber that can absorb sterols. When mixed with amaranth or oats, the amino acid profile balances out, offering twice as much protein as other grains. The fibers aid in intestinal healing and absorption of nutrients.

Although chia is still grown and sold commercially in Mexico, its use declined until the 1980s, when interest was revived in the plant's seed and oil. Oil of chia is a centuries-old ingredient that has been rediscovered for today's cosmetic and nutritional applications.

The fatty acid components of oil of chia are highly unsaturated, containing approximately 17% linoleic and 57% linolenic fatty acids. Only linseed oil, one of the world's foremost industrial oils, contains a higher percentage of linolenic acid. Both linoleic

and linolenic acids are considered essential fatty acids — "building blocks" essential to the health and growth of humans and animals.

In comparison with seeds of other plant species pressed for their polyunsaturated oils, chia seed contains a high level of natural antioxidants. In fact, chia oil appears to be one of the most potent antioxidant known. These antioxidants remain in the oil after the cold-press extraction and are responsible for the characteristics that should increase shelf life and decrease rancidity in any products which it is used.

Chia oil is an excellent emollient, which cleanses and conditions the skin. Cosmetic scientists wish to offer more to delay the aging of the human skin. To do this a skin preparation must transmit active ingredients to the deeper, growing tissue layers. Oil of chia is able to perform this function. Chia oil is also used in paints and lacquer unsurpassed for their lasting brilliance.

Organic chia is an ingredient in all but Adult Lifetime Coarse and High Potency Coarse HBD formulations.

Using Harrison's

Response to Harrison's Cost

*Paul Welch, DVM
Tulsa, Oklahoma*

Some of my customers complain that the diet is too expensive to use, but

when I talk with them, I find that they have babies from birds that had never laid before, and are even doubling clutching now that they are on Harrison's.

Give Them a Choice

*Fern Van Sant, DVM
Los Gatos, California*

If clients hesitate to change I tell them, "As a bird owner you have two choices: Feed your birds Harrison's Bird Foods or pay me to treat their illnesses."

Compare Costs

HBD, in response to cost concerns, has calculated a daily/yearly price comparison for feeding that you can pass on to your clients. What is the price for good health?

Average cost of feeding exclusively Harrison's Bird Foods

Cockatiel

5¢/day = \$18.25/year*

Macaw

44¢/day = \$160/year*

**Recalculated estimates based on field studies from June, 1998.*

Average cost of feeding seeds & supplements

Large bird

56¢/day = \$200/year

(This does not include grocery shopping, preparation time, clean-up or veterinary visits, of course.)

Sell the First Bag of Harrison's — Save the Samples for the Clinic

*Teresa Lightfoot, DVM
Dipl. ABVP Avian
Largo, Florida*

Being world renowned as one of the worst marketers, I am notorious for

saving clients money that they haven't asked to be saved. Giving the owners a half bottle of shampoo to try, sending them home with a used tube of Panalog free (since they may not need it at all) — these are trademarks of mine.

There may be some justification (though very little) in the above situations, but when introducing a client to Harrison's, this technique backfires for the client and the bird as well. When I sent home a sample bag of Harrison's and told the owners to try it, I had felt like I was doing a good thing. However, when the client returned a few weeks or months later, and I asked them how the bird did with the sample, these were the usual replies:

- 1) "What sample?!"
- 2) "Oh, he ate it fine, but it only lasted a day. Why, was I supposed to stay on it?"
- 3) "I don't remember."

When you sell the owners the first bag, they know that you intend for the bird to be on that diet, and that you believe in its value. The owners have enough product to go through the conversion process, whether the bird takes to the diet readily or not. If the bird does not convert readily, they will call and ask for suggestions.

We now save the samples to use for the birds that are in the hospital for the day. If the bird eats the diet in the hospital, we take the sample bag into the exam room when the owner picks up, and show the owner that the bird eats it readily.

Show your commitment to the bird's health and nutrition

by sending home a bag of the recommended Harrison's, and encouraging the owner to call if they have questions. Set up a recheck appointment to reassess the bird's health, Gram's stain if applicable, and to pick up more food! We need to stop shooting ourselves, our clients and their birds in the foot by underestimating their desire to do the best for their pet.

Reduce Feather Picking in a Queen of Bavaria Conure

*(From VIN 11-12-94)
Michelle Curtis-Velasco, DVM
Dipl ABVP Avian
Strange Park, Florida*

Queen of Bavarians are often feather pickers. My parents owned one that picked himself bald every winter for 20+ years. We always attributed it to sexual behavior and/or lack of sunlight at that time of the year.

I finally switched him to Harrison's High Potency Fine when they left him with me for a summer, and the last two winters have shown dramatically less picking. He also has several leather-type feather picker toys. We are not sure if he has just gotten so old that he forgot to pick or if the toys and food have truly done the trick.

By the way, his previous diets consisted of everything from parrot mix to table food at different times, and all of his mates feather picked as well. (We recently started adding primrose oil as suggested by Dr. Harrison to keep the skin supple.)

New Life for African Grey Hen

*Dinah Allshouse
Southfield, Michigan*

I have been using Harrison's food for a little over 6 months. I use a 50 pound bag every 8 weeks, and feed 10 Congo African Greys, 2 Moluccan Cockatoos, 2 Umbrellas, 2 Blue-headed Pionus and 2 African Ring-necks.

I have noticed their droppings are firmer (except for the Moluccan). All of the new feathers are different and brighter (you can see the difference) and the birds are more active.

The biggest change is with a 15-year-old African Grey hen, who was diagnosed with "tumor-like growths" on her lungs caused from poor nutrition. The avian vet who took x-rays said she had maybe 6 months to live without the surgery (which had only a 30% survival rate). I chose 5 years ago to bypass the surgery and just make her as comfortable as possible. While she lived well past the 6 months, she was wheezing and coughing most of the time.

In the last 4 months, I have not heard this bird wheezing or coughing and she is perching, climbing around the cage and entering the nest box. I credit the changes in this bird to the Harrison's Bird Food.

Psyllium Replaced by Chia

Psyllium has been removed from both Fine Grind formulations — Adult Lifetime and High Potency.

This is in response to feedback from clients with cockatiels, budgies, lovebirds and finches. It appears that these highly inbred birds may have some genetic kidney deficit. The incidence of polyuria and polydipsia that occurred with some cockatiels appeared to be reduced when the birds were changed to the Mash formulations. Psyllium is not one of the Mash ingredients.

Two possible reasons psyllium may have instigated the PU/PD are: 1) some psyllium is sterilized with ethylene oxide at the source (might this be a factor?); 2) the product (which is hulled prior to use) may have contained residues of the seed. These residues have strong alkaloid properties and may cause renal disorders when consumed by humans or animals with sensitive kidneys.

The fiber characteristics of psyllium are provided by chia (see "A Closer Look" in this issue). Organic chia is also more readily available on the market that is organic psyllium.

HBD News

The Problems with Environment Estrogens*

Xenoestrogens, which are introduced into the body from the environment, either mimic the action of estrogen produced in cells or alter the hormone's activity. The possibility that some xenoestrogens promote breast cancer remains speculative,

but evidence in its favor is accruing steadily.

Within the past 12 months, analyses issued by the German, British and Danish governments have combined with earlier studies to suggest that xenoestrogens and other endocrine-disrupting materials are also harming men and wildlife. Indeed it appears that such compounds may contribute to abnormal development in animals and to a range of reproductive disorders that have reportedly become increasingly common in men worldwide — notably testicular cancer, undescended testes, urinary tract defects and lowered sperm counts. Pesticides sprayed on crops and softeners in plastics are major sources of foreign estrogens, or xenoestrogens, in the environment.

**Davis DL, Bradlow HL: Can environmental estrogens cause breast cancer? Scientific American, October 1995, pp 165-172.*

Let Your Practice Soar

Evaluating the Nutritional Status, Part I

Although most avian veterinarians will acknowledge that malnutrition is the cause of 75% of the illness they see, they are not always aware of the clinical signs associated with it.

For example, they recognize oral abscesses or rickets, but not necessarily subtle signs that, when corrected, would allow the bird to establish a

normal disease-resistant foundation.

The physical examination is the single most important tool for evaluating the bird's nutritional status. The clinician should expand and maximize his ability to detect the early signs of illness. One method of determining "normal" is to examine a wild bird and note the lustrous feathers, the scaly pattern on the feet and smooth beak. Birds on high-fat seed diets will not look like this.

The HBD Avian Physical Examination Form is a useful tool for evaluating each specific system of the body, and is designed to assist you in refining observational skills. Copies are available from the HBD office.

In the malnourished bird, the skin becomes flaky, dry and pruritic because it is unable to metabolize the normal oils for lubrication. Membranes, especially those involved in movement of the wing, leg and tail, become fragile and can easily tear or ulcerate. The uropygial gland becomes swollen with debris. The skin of surgical patients may fail to hold sutures and is slow to heal. Even normal preening appears to be painful in affected birds.

Feathers often have insufficient blood supply, are thin in depth as well as width, often are unable to open because of retained keratin sheaths, and over-sensitivity may encourage the bird to over-preen, possibly leading to feather picking and self-mutilation. Affected birds molt less frequently than normal so their feathers wear out and become tattered

to reveal underlying color. The beak shows excessive length and the accumulation of layered, horny keratinous material.

Weight-bearing skin, such as the plantar surface of the foot (or occasionally the hock in birds with weak ligaments) shows a loss of normal patterns (ie, balding) that can progress to calluses, ulceration and bumblefoot.

With regard to behavior, most birds respond to deprived nutrients with aggressive appetites — chewing up and invariably consuming their environment — wood, plants, toys, grit — somehow trying to seek the protein, vitamins, minerals and trace minerals that are missing in their diet. They can become irritable, inactive and nippy. The client may no longer tolerate their pet. Birds on balanced diets, however, often become more playful, active and appreciated as members of the family.



As I See It

Notes from a Bird Practice

*Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida*

We have seen clinical results using a heparin/ aloe vera product (1000 IU heparin/oz, aloe vera 150 mg/oz) as a topical treatment for skin lesions, such as self-mutilation in Grey-cheeked Parakeets. We have the prod-

uct made up by a compounding pharmacist (Mortar & Pestle - see Compounding Pharmacy), but you can use heparin as it is supplied for blood collection.

There is also a cold sore medication with heparin that is available from health food stores. I have found if you don't use the 8 oz heparin/ aloe product right away, you may want to add a little apple cider vinegar (4-5 ml) to prevent the growth of mold.

■ A budgie was housed in a large, totally enclosed Lucite plastic cage (with drilled air holes) that was purchased because of its beauty and the promise of less house mess. The bird became depressed and was constantly sneezing; when it was returned to previous housing, all signs cleared up within two weeks.

■ A client experienced headaches and lethargy upon waking in the mornings. She was advised to remove the foam pad from her bed; when she did, her symptoms stopped.

Her budgie, which sleeps near her bed at night, also recovered from chronic PU/PD and sneezing at the same time, presumably in response to the removal of the foam pad.

■ On separate occasions, two African Greys developed polyuria after they were treated topically with Panalog ointment for a sore on the skin and a sore on the ear, respectively. It took three weeks for the birds to return to normal.

■ A narrow ring of paint can be added to a Dremel grinding stone by holding the rotating stone up against a painted wooden surface (obviously, a discarded item). It is useful because the paint creates a relatively smooth surface on the stone that heats up more quickly with friction. If a bird's nails begin to bleed during a normal grinding, the "paint" portion can be manipulated over the tip for immediate hemostasis.

■ We no longer pull out a broken and bleeding feather, because it will just regrow into the same unprotected position if the wing feathers are clipped. We suggest taking fine white flour and patting it onto the wing to absorb the blood and actually creating a kind of "dough ball." If it breaks open and starts to bleed again, more flour can be applied. Once the bleeding is stopped, cut the feather at the ideal clipped level.

■ We may want to consider the possibility of chlamydia transmission from finches to parrots. A Blue and Gold Macaw, which was presented with eye problems that included photophobia, iris bombay and perforations of the iris, was positive by ELISA antibody for chlamydia. The only new birds obtained by the clients were Bengalese finches, which subsequently turned out to also be positive for chlamydia.

■ When a client left her bird in her daughter's care, the mother had said the bird wouldn't eat food if it had been packaged in plastic. When the daughter ran out of

food, she purchased seed that looked like the bird's favorite seed but it was supplied in a plastic bag. Sure enough, the bird wouldn't eat it. When the same seed was purchased in bulk from an open bin and packaged in a paper bag, the bird ate it.

Practice Tips

Digestive Plant Enzymes

David McCluggage, DVM
Longmont, Colorado

Use a digestive plant enzyme product (N-Zymes P-10) to support digestion in birds.

N-Zymes P-10 is available through Bill Myers, The Integrated Health Service, 303-442-7170.

Surgical Retractor System

Mike Murray, DVM
Monterey, California

According to the Jorvet company, their Lone Star Veterinary Retractor System consists of two components: an autoclavable plastic ring that is easily adapted to the patient's anatomy, and accessory elastic stays that allow flexibility in tension, precise incision retraction and surgical angle.

In using it with birds, I have found the ring to be adjustable in size, to some extent, facilitating use in a variety of patient sizes. Its inherent design allows retraction of the surgical site in a variety of directions, not just "side to side" as is typical of most retraction devices. The ring may be set up outside the sur-

gical field, making it less cumbersome. And in most species, placement of the apparatus off the patient is possible, thereby decreasing the weight on the animal.

For more information, contact Jorvet at 800-525-5614.

Tips from WSAVA

Dr. Chris Kingsley
Sinoville, South Africa
(From World Small Animal Veterinary Assoc. Conference, Durban, South Africa)

■ The use of live virus chicken pox vaccine in Monal pheasants caused a long, serious outbreak of the disease in these birds.

■ Albact (zinc bacitracin) is useful in preventing necrotic enteritis in lorries as it is not systemically absorbed. It is effective in quail in preventing *Cl. perfringens* infections, to which they are very susceptible.

■ Ducklings are likely to become infected with *Aspergillus* sp. when moist organic material such as grass clippings are used as bedding. Treatment may include enilconazole (Clindafarm smoke generators, Janssen) administered as an inhaled vapor.

■ Citric and formic acids may be used to treat yeast and gram-negative infections in birds. The acidification of the anterior GIT mimics the effects of naturally ingested termites and other insects.

■ Limited amounts of sucrose should be used in lory diets.

■ A recent outbreak of *Hemoproteus* in pigeons and parakeets grossly resembled sarcocystis.

Compounding Pharmacy for Special Drugs

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

An injectable product containing vitamins A,E,D₃ (like Injacom) is only one of a number of "special" formulations that is available to licensed veterinarians from the veterinary compounding pharmacy, Mortar and Pestle.

For example, an IM injectable doxycycline suspension (like Vibravenös) is available in concentrations from 75-200 mg/ml for treatment of chlamydiosis. The use of this compounded formula was reported by Michael Doolen in 1993.

Although they can compound *anything* to your specifications, some of their avian products include: enrofloxacin oral suspension (from 11.3-34 mg/ml), itraconazole oral suspension and capsules, and amphotericin B oral suspension.

For further information contact Mortar and Pestle Pharmacy, 3701 Beaver Avenue, Des Moines, IA 50310, 800-279-7054.

Using Harrison's

Mash for Conversion

Paige Garnett, DVM
Avada, CO

I have had quite a bit of luck utilizing the Mash in cockatiels and budgies. In fact, after my last long-winded "whine" to you about my dif-

As I See It

The Geriatric Bird

Have you ever noticed that when one thing changes, it affects everything else?

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

For example, with the feeding program HBD offers, you should be able to double the life expectancy of companion birds (at least of birds with strong genetic disposition) — say from 5-10 years to 10-20 years.

By making this one change, you could not only end up doubling the size of the population itself — perhaps from 50 million animals right now to 100 million if you could keep them all alive — but you are actually creating a whole new market — geriatric birds.

Although a few birds in your practice have probably lived beyond the “average” companion bird expectancy, we have a lot to learn about the needs of older birds. No one really knows what their problems are or how to solve them. For example:

1. Perhaps as birds age, they have decreased digestive efficiency, and they may need the addition of an enzyme such as Prozyme.
2. They may have reduced levels of GI autochthonous flora and require immune stimulation in the face of some stressor. The periodic use of echinacea may work.

3. As they age, they may be kept more confined to the cage because their droppings are looser, and their kidneys may need some special care. Increase carbohydrate (sweet potato) and add electrolytes (Tyrode’s solution).
4. Their skin may be dry and need increased attention to dietary fatty acids. This dryness might also be reflected as being stuck in a molt.

If you are able to get your clients’ birds on a wellness program so that you see them on a regular basis, we will all begin to discover how we can support the mature physiology. We can learn together as we report our clinical findings to each other. It would help if we would all use the same physical exam form so we don’t miss something.

But the bottom line is that by using a nutritionally sound feeding program such as HBD, you are able to provide increased service to your clients and to enjoy increased overall income from your bird practice.

Practice Tips

Don’t Give Lactate to Birds

K. Storm Hudelson, DVM,
Dipl. ABVP Avian
Tucson, Arizona

The choice of fluid for rehydration therapy should be as carefully considered in birds as it should be in mammals. Lactated Ringer’s solution (LRS) is perhaps the



Eclectus with severe xanthomatosis on the wing, before Harrison’s.



Eclectus, six months after switching to Harrison’s.

faculties in converting birds, I have had nothing but success.

Use Only Purified Water for Formulas

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

We recently heard of a group of hand-feeding baby birds that died, allegedly from toxicosis from nitrate and trihalomethane in the city water. This reinforces the need to use the purest products as possible, which in the case of Harrison’s Juvenile Formula, means mixing the formula with bottled purified water.

Xanthomatosis Improvement

Teresa Lightfoot, DVM
Dipl. ABVP Avian
Largo, Florida

A 9-year-old male Eclectus was a three-year chronic feather picker with severe xanthomatosis on the wing. These photos were taken six months apart — prior to and six months into a conversion

to Harrison’s Bird Foods. Note the significant improvement in the xanthomatosis (with no other treatment).

Magnificent Senegal Chicks

Cheryl J. Fox
Randolph, New Jersey

I recently sold two Senegal chicks. The parents had eaten Harrison’s High Potency Formula and had fed the babies for four full weeks until I finished with hand-feeding.

The results are quite remarkable. Although the parents, which are wild-caught birds, are not particularly magnificent specimens, their babies are! Compared to the other hand-fed Senegal babies in the pet store, these babies are considerably larger and their feathers are much richer in color and texture.

I’m just starting to build up a business as a breeder and these first results are enough to convince me to put all my breeder stock on Harrison’s — the results appear to be well worth it!



most popular fluid in veterinary medicine; however, many clinicians have no rationale for using LRS in preference to the myriad of other fluids available. I believe that LRS has no place in the treatment of birds, reptiles or any non-domestic animal.

Animals under stress or those struggling against handling already have an abundance of lactate in their system. Adding more lactate can, and often does, induce cardiac arrhythmias. Arrhythmias may be hard to appreciate in a bird with a heart rate of 300 BPM, but the danger of arrhythmias is not nullified if they go unnoticed.

Other fluids that may be a closer match to normal serum may be better for birds.

With a good fluid therapy text (even if it is written about mammals) and a little knowledge of avian renal physiology, the clinician should be able to select the best fluid to address the particular problem in the particular patient under treatment.

Water, per os or by gavage, is the best choice for those birds able to absorb it. In those birds unable to take fluid orally IV fluid administration may be necessary. Following the reptile fluid proto-

col set forth in the *Exotic Companion Medicine Handbook for Veterinarians* (Wingers Publishing, 1996) would be a good beginning.

I often start with D5W and Normosol 1:1 to rehydrate a bird. To maintain blood pressure I often go with straight Normosol.

Factors to Consider in Choosing a Fluid

- When birds dehydrate, they concentrate their salts because they don't sweat. Consequently, special attention should be paid to the potassium, sodium and chloride levels in the bird's serum and fluids should be chosen to avoid exacerbating any concentration that has occurred because of dehydration.
- Birds that have sustained serious trauma may have extremely high potassium levels because tissue destruction releases potassium.
- Most sick birds — in fact many of the psittacines that present for treatment or workup — have compromised liver function. Proper liver function is very important in breaking down lactate. LRS is contraindicated in mammals with liver disease.
- The osmolality of a fluid should be considered. A hypertonic fluid will not work to rehydrate an animal and may increase the level of dehydration.

Ed note: An exception is a bird's dehydrating due to dialysis from kidney failure. These birds often respond to electrolyte replacement.

Alternative Therapies for Liver Problems

*(Adapted from VIN 2-6-96)
David McCluggage, DVM
Longmont, Colorado*

Liver problems (sclerosis, vacuolar hepatopathy, hepatic lipidosis) are viewed from a different perspective with holistic medicine. I consider the animal's personality (that may sound weird but different emotional states are treated differently), what other "organs" from a Chinese medical standpoint are involved in the process, the diet, past illnesses and other factors. There is no set approach for therapy, but some general principles may apply:

1. Acupuncture is often very effective for liver disease.
2. If there has not been an invasion of a Pestilential Factor (the Chinese medical way of saying "you caught a bad bug" such as polyoma), I would look at the bird's emotional background. It is said that the liver is often damaged by strong, negative emotions. Think about what the average wild bird (even if it was hatched in captivity, it is not domesticated) must think/feel of life in captivity vs. what it would be like if it still lived free. Homeopaths, Bach Flower formulas and herbs can help out with the emotions, but altering the environment is the best thing to do if possible.
3. Of course, diet may be the culprit with many of these as well, as I think we kill most birds with poor diets.

How could we ever hope to come close to their natural diet?*

4. Aflatoxins play a role in liver disease, so I look into possible sources of mycotoxins (eg, seeds and peanuts) and try to limit access to them.**
5. I have tried choline supplementation of sick birds with little success, but this may be used best as a preventive.

Liver Regeneration

There are several ways to help the liver regenerate itself:

Diet (we all know this, but often do not employ it with birds. I always cut the protein, and just as importantly improve the quality of protein.)

Psyllium raises the level of HDLs, lowers cholesterol and can regenerate the liver.***

Turmeric increases the production of bile and reduces inflammation of the liver.

Milk thistle is an herb that helps regenerate liver tissue.

Protomorphogen therapy (complex subject but leads one to consider glandular therapy. I like a product called Livaplex by Standard Process, 800-321-9807).

Dandelion enhances liver function and is a natural diuretic.

Artichoke reduces jaundice and increases bile production.

Lecithin is believed to reduce development of cirrhosis.

As a minimum, I use Livaplex, Fiber Formula (for psyllium) and milk thistle on liver patients, and add homeopathy and acupuncture as indicated. I do what I can to

increase water intake including offering fruit juices and low protein hand-feeding formulas. Of course, I treat for significant Pestilential Factors, run diagnostic tests and other appropriate steps.

Ed notes:

**The original diet for The Macaw Project at Tambopata Research Center in Peru was developed by naturalists, but unfortunately the babies being hand-fed this diet were not strong enough to wean. Now that they are using Harrison's Juvenile Formula, the macaws are weaning, and are even returning from the rain forest to eat Harrison's.*

*** Some formulated diets, such as Harrison's, are certified mycotoxin-free.*

**** Harrison's Juvenile and Coarse Foods contain psyllium.*

Blood-tinged Lacrimation in African Greys

*(Adapted from VIN 2-6-96)
David McCluggage, DVM
Longmont, Colorado*

Because I see a lot of African Grey Parrots, I frequently see the phenomenon of blood-tinged tears. On the whole, it does not seem to be a problem. Yet, it appears that the percentage of greys with blood-tinged lacrimation that also react with extreme stress during restraint seems abnormally high. Of course, restraint of all Greys includes protection of their eyes and soft periorbital skin and avoiding jugular occlusion which may result in increased blood pressure. The same birds tend to develop blood-tinged lacrimation repeatedly, while dozens of others do not.

I would advise most avian practitioners, especially those with less experience, to monitor these birds more closely

during restraint. It's always better to put the bird down and see how it is doing than to guess wrong and have it die in their hands. I believe the level of stress during restraint may be higher for these birds for some reason, and if they have a more a more serious problem (eg, heart disease, poor livers, chronic splenomegaly), they warrant added precautions.

Ed note: This condition seems to be vitamin K₁-responsive, and putting affected birds on Harrison's has prevented recurrence.

Nutritional Therapy for African Greys

Clinical Signs of Malnourished African Greys

Integument

- The color of the grey feathers is very pale and light; you may see whitish spots on the back. Stress (hunger) lines are seen, especially in the tail feathers.
- The breast and belly lack the purple-blue color that can be very shiny in African Greys.
- The tail color is more orange than red.
- Other discoloration (pink or even orange) may occur in the plumage.
- The beak is too long and is flaking off; there may even be development of a "ridge."
- The skin is dry and dry crusty plugs may be seen in the nares.
- The molt is abnormal: it is not symmetrical and the new feathers are of poor quality, especially wing feathers.

Respiratory System*

- The nares or eyes may be wet.
- The bird may be sneezing, gasping or short of breath.
- The voice may change.

"Standard Treatment" for Malnourished African Greys

- 0.3 ml IM Biodyl (Rhône Mérieux) - used for convalescence, white muscle disease.
- 0.8 ml IM Tricrescovit (Rhône Mérieux) - contains a multivitamin combination with liver extract.
- 0.2 ml IM Bykahepar (Schering-Plough Animal Health) - contains clanobutinnatrium used to activate the digestion, the secretion of gall and activity of pepsin, trypsin and amylase.
- 0.15 ml IM vitamins A,D₃,E - containing 80,000 IU vit A, 40,000 IU vit D₃ and 20 mg vit E per ml.
- Tube feed Harrison's Juvenile Formula and switch to Harrison's nuggets.

Depending on the history, clinical signs and findings, I may give IV calcium (Sandoz). The Bykahepar is repeated after a day in birds that are hospitalized. The other injections are repeated after 3-4 weeks. Birds in very poor condition receive IV fluids, glucose and amino acids (Duphalife, Solvay-Duphar B.V.) and are tube-fed Harrison's Juvenile Formula.

**Ed note: In the U.S., it is common for malnourished African Greys to develop nasal liths and rhinal obstructions followed by sinusitis.*

A Closer Look

Ethoxyquin

It has been said that corpses don't decay anymore because they are so full of preservatives. This may be extreme, but humans are assaulted daily by a variety of chemicals for the purpose of extending product shelf life. Ethoxyquin, PABA, propylene glycol are some examples of these preservatives.

Ethoxyquin is listed in the 1968 Merck Index as an antioxidant for manufacturing rubber. It was also used as a herbicide.

According to Dr. Sunde¹: "Ethoxyquin has been used in animal diets since 1959 when it was first reported as an effective antioxidant for poultry diets. While it offers long-term protection against oxidation and rancidity, ethoxyquin has some drawbacks it inhibits glucose uptake from the intestine and alters the liver."

In the article Sunde goes on to say, "...the maximum level of ethoxyquin permitted in food for animals is 150 ppm, in food for humans it is 100 ppm." Pim² adds, "To date, in the human food chain, ethoxyquin can only be used in paprika and chili powder and as a (mold) spot preventive on two fruits. This suggests to me that somebody may not want it in the human food chain."

Most of the bird foods produced in the United States contain one or more antioxidants. Ethoxyquin must be listed on the label if it is

added by the manufacturer, but the actual total amount of ethoxyquin in pet foods may not be known, because the previous addition of ethoxyquin to an ingredient (as is commonly done with fish meal and most seeds) does not have to be reported. So the educated producer, but most likely not the public, is aware that several sources of ethoxyquin can be involved in an animal food product.

The final word to the pet industry through their trade publications was, "Until more research is done, manufacturers have little choice but to use available antioxidants such as BHT, BHA and ethoxyquin unless they are assured the feed will be consumed in less than a month."

Ed note: To protect the health of companion birds, HBD products contain no ethoxyquin or other preservatives. This is why we recommend that Harrison's Bird Foods be ordered fresh every 60 days by the veterinarian and be stored in the refrigerator or freezer by the client.

References

1. Sunde ML: Weighing the evidence: Should the use of antioxidants in avian diets be continued? *Pet Age*, 1/95.
2. Pim L: Ethoxyquin anxiety. *Petfood Industry* Nov/Dec, 1995, p 22.

Using Harrison's

Stubborn Moluccan

Cheryl Fox
Randolph, New Jersey

For five years, Cameo, an imported Moluccan Cockatoo, had refused all food items except sunflower seeds, peanut butter, canned

pumpkin meat and bananas, even though she was offered various pellets and fresh fruits/vegetables and lived with other parrots who were willing to eat a more varied diet.

Because of Cameo's extremely long beak, several veterinarians told me to get her on a formulated diet, so I bought Harrison's Coarse Grind (which she ignored on the way home from the vet's).

That evening, I decided to give some Harrison's to all my parrots: four Senegals, two conures, an African Grey and Cameo. Next morning, all the Harrison's was gone from the feed dishes! From that time on none of the birds gets seed, except as a very infrequent treat.

Finally, five months after Cameo had been eating nothing but Harrison's, I put a few sunflower seeds in her dish. The next morning, much to my astonishment, all her Harrison's was gone, but she had only eaten one or two sunflower seeds. She is now not even afraid to try some fresh veggies. My guess is that she just feels better overall and is more adventuresome as a result.

Pet Birds' Plea: Enough Seeds, Already

From "The Wall Street Journal"
5-16-96
By James P. Miller, staff reporter

The author interviewed Dr. Randal Brue of Kay-tee Products. The article stated: "Birds don't much care about the color or flavor of their food, Dr. Brue has decided, after running palata-

bility tests on about 50 flavors ... But their owners care. Bird owners routinely taste-test the treats they give their birds, Dr. Brue says, and their preferences can muddy the data in field tests. For a bird-food designer, it's a factor that has to be taken into account. That's why some foods he creates are shaped like shamrocks."

Ed note: So the real reason to sell seeds or food with various colors and shapes to birds is to increase sales without taking into consideration what is best for the bird, right?

Special Harrison's Bird Food Ingredients

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

Psyllium

Psyllium is used to increase absorption of electrolytes and minerals and to form a matrix to enhance the production of autochthonous (normal) flora. Because it is bulk fiber, it is used to remove viruses, bacteria, metal, etc from the GI tract. The presence of psyllium decreases the GI transit time, thereby reducing the number of feedings, and at the same time improves the digestion of ingredients.

Psyllium is an ingredient in Harrison's Adult Lifetime Coarse, High Potency Coarse and Juvenile formulas. The gel and the bacterial fermentation also reduce ammonia and thus the work load of the liver. The gel is also a healing bandage for sore intestines.

Kelp

Harrison's kelp is a natural and organic source of

chelated minerals, especially iodine, with more than 12 vitamins and 21 amino acids. It is harvested in the cold, dark and nutrient-rich waters of the north Atlantic, dried at low heat to preserve the nutrients and ground fresh.

No Corn

The Adult Lifetime Maintenance Mash contains no corn. This special mix was initially developed for exotic finches but has turned out to be an excellent formula for conversion of cockatiels and budgies. Also it appears some bird species are sensitive to corn.

HBD Feeding Guide

Including "3 Steps to Easy Feeding" Brochure Insert

A lively, four-color pocket brochure with insert is available to help support your recommendations to clients on why and how to feed HBD formulas. The Feeding Guide will help increase sales and simplify feeding instructions.

Call 800-745-7329 about how to receive a sample.

Includes:

- Easy Feeding Chart
- Suggested daily amounts per formula
- Tips for easy conversion
- Benefits of feeding HBD formulas
- Specific product recommendations for various situations

Home Remedies

Greg J. Harrison, DVM, Lake Worth, Florida

A Differential Feeding Chart (available from HBD) illustrating the preferred choices of Harrison's Bird Foods for various clinical situations has been developed by The Bird Hospital of Lake Worth, Florida. The following instructions are an update to the remedies listed in the chart.

Remedy	Source	Dose	Indication
Apple cider vinegar (non-pasteurized, non-filtered, organic - Omega Nutrition)	Health food store or HBD (800-346-0269)	One tsp per pint water	Controls most gram-negative and yeast problems without medications, turns papillomas white
Echinacea or goldenseal (alcohol-free) alone or together in lactulose	Nature's Answer (has human dilutions; 1-800-439-2324), Health food store or HBD	Mix 5 drops each of human dilution to 1/2 oz lactulose: 1 drop per 100 g BW PO q12h	For immune stimulation and antiviral, antibacterial use; short-term use, in the case of goldenseal (5 days).
Dandelion root or milk thistle in lactulose	Nature's Answer (1-800-439-2324), Health food store or HBD	Mix 5 drops in 1/2 oz lactulose: 1 drop per 100 g BW PO q12h	For detoxification and stimulation of liver; improves circulation, restores gastric balance after vomiting.
Oil (flax, sesame, evening primrose or borage - Omega Nutrition)	Health food store	1/2 tsp per 1000 g BW (3 drops/100 g) over food	For birds that may show fatty acid deficiency such as failure to hold or gain weight, dull feathers, flaky skin (and have been on HBD's High Potency >1 year).
Chia seed (organic)	HBD	1 tsp per 100 g BW	
Complex carbohydrate (glucose, fructose, citric acid)	Ultra Fuel - health food store	Use gruel as tube-feeding formula: start with 90% of diet and gradually wean to 0%	To reduce fat in diet; excellent for intensive care of birds with liver failure, reduces work load of liver.
Enzymatic supplement	Prozyme - veterinary distributors, Hi-Vege-Lip - HBD	One pinch per day over food	For birds that are thin, wasting, young, sick, passing whole seeds, have slow-emptying crops and with suspected pancreatitis. Geriatric birds
Lactulose	Cephulac - Merrell Dow + generics (Schein)	0.3 ml/kg PO or over food	For birds with liver disease, low gram-positive counts or gram-negative problems; excellent as vehicle for medications.
Probiotic (cloned lactobacillus)	Probacin powder - Pioneer	One pinch a day over food	For birds with low gram-positive counts, GI upset, gram-negative problems, and as post-antibiotic therapy.
Ammonia solution	Penetran - Transdermal Tech. (1-800-282-5511) or drug store	Topical application	For burns, cuts, swelling, edema, insect bites, sprains or arthritis.
Aloe/Penetran	George's Aloe Vera - health food store, HBD; Penetran - drug stores, HBD	Mix 0.5 oz aloe to 1 tsp (5 ml) Penetran; add to 1 pint of water	Use daily as topical undiluted or diluted as a feather spray for picking, itching, sores.
Heparin	Pharmaceutical companies	1000 IU/ 1 oz aloe or add 0.1 ml heparin and 6.5 ml Normasol as nebulization	Topical respiratory

Reprinted courtesy of The Bird Hospital © 1996



As I See It

Consider Holistic

David McCluggage, DVM
Longmont, Colorado

I would encourage avian practitioners to be open-minded about alternative therapies. As veterinarians, it is our responsibility to think of the welfare of our patients first, and select therapies that are directed toward healing the patient, not just palliating or suppressing the symptoms.

For example, feather picking is not a disease, it is just a symptom of a disease. It is our duty to strive to find the true underlying cause.

Complementary Choices

I use acupuncture, homeopathy, herbs, nutraceuticals and diet modification to help ease my patients' problems in adapting to captive life.

Homeopathy is the second most common form of medicine, surpassing western allopathic medicine. No form of therapy would survive and be that popular if it never worked.

I cannot tell you how homeopathy works, but I would note that the same can be said for well over 80% of all the drugs we use on a daily basis. Homeopathic remedy selection must be made on an individual animal basis, not a shotgun approach.

Allopathic Models

We veterinarians can understand the immune system model where the antibody has the right fit to the foreign

antigen (the key and the lock theory), but it might surprise you to learn that no one has ever seen or documented such a cell wall structure.

We also are familiar with the two-dimensional picture of the liver with the hepatocyte, bile duct and central vein, but when placed into a three dimensional structure, it becomes clear that everything dumps into the center with no outlet, and the model of how the liver works collapses. In other words, many of our theories of how things work are really nice ideas, but have no basis in reality.

Limits on Western Medicine

Most theories about western medicine change every few years. If they were so true and wonderful why do we keep revising them? I have been around avian medicine long enough to see that much of what we recommend is really a fad that comes and goes.

And why does *Current Veterinary Therapy* tell us we are practicing incorrectly every few years, revising the therapeutic protocols for even our most common diseases? At least with homeopathy there is a basic theory and postulates and beliefs that have been so accurate that they have endured for 250 years.

Holistic Care Work a Look

I am not opposed to western medicine and use it frequently, but I stay open-minded about its limitations. Acupuncture and Chinese herbal medicine, at last count, had well over one million sci-

entific studies documenting their effectiveness.

When will we have enough studies to accept their validity? Even the AVMA has recently stated that acupuncture is "an integral part of veterinary medicine," and has even accepted other forms of holistic care as worthwhile areas for therapy and study.

Even if you do not wish to practice holistic medicine and homeopathy, please remain open to its potential and the real limitations of western medicine.

(Adapted from VIN 10-10-96)

Practice Tips

Hyaluronidase for SC Fluid Absorption

Teresa Lightfoot, DVM
Dipl. ABVP Avian
Largo, Florida

(Adapted from VIN 10-26-98)

There seems to be renewed interest in the use of hyaluronidase (Wydase, Wyeth-Ayerst Laboratories) to enhance the absorption of subcutaneous fluids in birds. Nearly 20 years ago, we extrapolated a dog dose to birds and have been using it with no adverse reaction or absorption problems.

The drug insert states, "Hyaluronidase . . . modifies the permeability of connective tissue through the hydrolysis of hyaluronic acid. Hyaluronidase . . . temporarily decreases the viscosity of the cellular cement and promotes diffusion of injected fluids or of localized transudates or

exudates, thus facilitating their absorption."

Hyaluronidase comes as 1500 units/10 ml (150 units per ml). We add 1.0 ml/liter of fluid. (I haven't tried 5% dextrose; we do use 2.5% dextrose with NaCl once or twice per bird with no problems.) Birds and reptiles absorb the fluids within 10-15 minutes of administration, and there is no pocketing of fluids when given over the back. Although IO and IV certainly have their uses, the stress/benefit ratio can be on the side of well absorbed SC fluids in many cases.

Ed note: I now use Teresa's recommendations and have significantly reduced the need for IV fluids, completely eliminated the IO route, and saved more small birds.

Monitoring Food Consumption

Linda Meade
Riverview, Florida

Each enclosure for our breeding birds has three bowls: the pair shares a water bowl but each bird has its own food bowl. Usually each bird eats only out of its own bowl on one side of the cage or the other, so I can quickly determine the appetite level of an individual bird. This also can clue me as to when a hen has gone to nest, because her bowl will still have most of its Harrison's.

Managing Mate Aggression

John Meade
Riverview, Florida

To prevent mate attacks in a pair of cockatoos, we wing-clip the male and allow the hen full flight. She may

then fly to the nest box for protection. We place metal sheets around the nest box entrance so the male can't crawl in it from the side and place the perches low enough to prevent him from jumping into the nest opening.

Loss of Elasticity in Vent Area

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

Wing-clipped cockatoos and cockatiels frequently fall to the ground. When they do, the pygostyle is bent dorsally and the skin caudal to the vent may split. The pygostyle movement is normal as a bird attempts to "land," but the splitting skin is a sign of loss of elasticity—most likely related to malnutrition.

Treatment: Pull wing feathers so that the bird can replace them and fly better. Clip tail short. Change to Harrison's Bird Foods.

More on Heparin

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

Already referred to in the *Avian Examiner* #7, heparin appears to be somewhat of a "miracle" drug. Besides offering hope for self-mutilating Quakers, topical application of heparin accelerates healing of chronic ulcers and foot necrosis lesions that used to take months to resolve. A 0.1-0.2 ml application of the heparin alone or mixed with aloe vera can be applied directly to the wound or used under a Bio-Dres dressing.

As a "gee whiz" case, we even gave heparin IV to a paralyzed, emaciated swan (200 U/8 lb swan). This was a last ditch effort and we usually don't save downer swans, but this one survived.

How Heparin Works in Healing

Submitted by Jerry LaBonde, DVM
Englewood, Colorado
(From Harenberg J, et al: *Preferential binding of heparin to granulocytes of various species. AJVR 57(7):1016-1020.*)

"Heparins are linear, negatively-charged polysaccharides with a variety of biologic functions. The anticoagulant actions are mediated by binding to and activating antithrombin III, whereas the nonanticoagulant actions are mediated by binding to plasma proteins, growth factors, and cell surface proteins. These nonanticoagulant actions are considered to be responsible for the anti-inflammatory, anti-metastatic, and anti-atherosclerotic potencies.

The clinical relevance of this study suggests binding of heparin and low molecular mass heparin (LMMH) to granulocytes, lymphocytes, and monocytes may have a substantial role in atherosclerosis, inflammation, malignancy, and immunologic diseases."

Results with Hetastarch

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

Hetastarch (6% NaCl - Abbot) is used as a synthetic solids replacer in birds with low packed cell

volumes (PCVs) and low total solids (TS). We administer it when the PCV is below 20 and the TS is below 3. We use hetastarch in the same way as fluids (dose, frequency) and continue until the PCV and TS exceed the values listed above. The product is relatively expensive (\$60 for a 500 ml bag), so to economize, we draw off small amounts and store them in sterile bottles to use as needed.

One source of hetastarch is D.V. Medical Supply, 800-438-2568.

Indoor/Outdoor Aviaries

Don Zantop, DVM
Dipl. ABVP Avian
Fallston, Maryland

Many psittacines can be maintained in an indoor/outdoor aviary year round as long as the building is heated toward the top where the feeding stations are located. It doesn't matter if it's 20°F at the floor level. As long as the birds are healthy and are fed right they do fine.

My African Greys lived in an unheated garage for four years and I know the temperature was as low as 20°F in there. Some mornings there was ice in the water bowl. When I would chip the ice away, the greys would go right down in the water and bathe.

More Clinical Signs of Malnourished African Greys

Jan Hooimeijer, DVM
Meppel, The Netherlands

Clinical Signs Integument

- Discolored brownish feathers, especially under wing

coverts (feathers return to grey first molt following treatment)

- Uropygial gland obstruction (feather picking at the base of the tail)
- Focal hyperkeratosis under the feet
- Bilateral dermatitis in the axillary region, groin region or both

Respiratory System

- Abnormal, irregular abdominal movement during breathing
- Alternating between wet and then dry/crusty nares and eyelids (irritated mucous membranes, "slant eye" appearance)

Important parts of the treatment are increased humidity and increased environmental temperature. The owner should house the bird outside for "direct" sunlight as much as possible and provide spraying with warm water in a warm, indoor environment.

Using Harrison's

Responsive African Grey

Jan Hooimeijer, DVM
Meppel, The Netherlands

An African Grey named Wimpie (a common Dutch boy's name) was presented in serious condition on the cage bottom. It had been living with the same family for twenty years and eating only seeds and peanuts.

It was not difficult to identify all the "typical" signs of malnutrition, but the bird stayed at my clinic for some

“real” diagnostics. No other etiologies were identified.

The bird was housed in a heated enclosure with elevated humidity. Within 24 hours the bird was active again and noisy. Wimpie accepted the Harrison’s High Potency Coarse formula within 24 hours so I reduced the tube feeding to once a day.

After ten days when the bird went home, he was already starting to look more glossy and beautiful.

The owner called me after two months. There were no complaints because Wimpie was eating the formula great, was flying around the house and had become bright and attractive (the tail had changed from orange to red, and the belly had become the purplish color it should be).

Be he was wondering what was going on because Wimpie had “changed its sex” and had laid three eggs within a week!

Initial therapy for typical case of malnutrition

- IV fluids (with amino acids, electrolytes and glucose)
- Vitamins (with extra vitamin A, D₃ and E and B₁₂)
- Liver extract (Clanobutinum) to activate the gall excretion
- Tube feeding with Harrison’s Juvenile (+ lactulose and lactobacilli)

Harrison’s for Pigeons

Jan Hooimeijer, DVM
Meppel, The Netherlands

Two pet racing pigeons have eaten nothing but Harrison’s their entire lives (we even fed Harrison’s exclusively to their wild-

caught parents prior to egg laying and during the crop milk stage). No vitamins, minerals or other additives were given. The birds are perfect specimens and are maintained indoors as clinic birds to show the positive results of an HBD diet to my pigeon clients.

Ed note: We saw Jan’s pigeons consuming the Harrison’s Coarse Grind product gulp after gulp!



Morro and Child

Jerry Clark
Louisville, Kentucky

This is the famous Green-winged Macaw, Morro, who laid her first egg at the age of 38 after being converted to Harrison’s. She has since produced nine babies. With her is one of her offspring, who is being retained for the breeding program.

Conversion in the Clinic

Ernest Slovon, DVM
Owings Mills, Maryland

When I first recommend Harrison’s, I tell clients that if they can’t convert their bird at home I have a deal for them: we will con-

vert them in the hospital for a nominal fee. However, if we can’t do it there is no fee charged.

They are obligated to cover two weeks, which seems to be about how long it takes. We have converted dozens of birds and no one has been able to collect on this “deal.”

Usually they have already tried the a.m./p.m. feeding routine. We routinely use our tried and tested method of mixing pellets with water to make a mash and then mixing that with their usual diet (seed) and begin the weaning process. Weights are taken daily and rations modified accordingly.

We have had to switch methods a few times on certain birds: we give small birds Harrison’s Fine and Mash to avoid repetition. This is a great practice-builder and gets many more birds on formulated diets. Most birds convert routinely, it’s the owners that give up too soon at home!

Amazon Liver (Cirrhosis) Back to Normal

Kitty Remington, DVM
Bainbridge, Georgia

My three-year-old Amazon fell off her perch and her abdomen was extremely swollen. Endoscopic examination revealed a grossly enlarged liver, and we obtained a biopsy sample. The pathologist found cirrhosis of the liver with limited functioning liver cells.

I decided not to try any heroics or drugs to treat the liver. When I let her try Har-

risson’s Bird Foods, she really liked it and I decided to switch her over to Harrison’s.

It has been four years since then and not only did her liver go back to normal, but she is still alive today, and can fly and is talking again.

Hand-feeding Parrot Chicks Juvenile Formula

Dr. Friedrich Janeczek
Gräfelfing, Germany

My veterinary practice concentrates on avicultural medicine and is exclusively for parrot breeders and keepers. One of my goals here is to create circumstances where the quality of hand-raised baby parrots meets or exceeds that of parent-raised babies.

Most hand-feeding aviculturists want large growing babies. Some of them get babies with a good body weight, but these birds are primarily obese. Some of the home-made formulas produce low quality feathers with stress marks. And the parrot chicks show a tendency toward gram-negative bacterial problems, resulting in regular crop-emptying problems and diarrhea.

If the breeder shows me this type of baby, one of my first recommendations is to change his hand-feeding diet to Harrison’s Juvenile Formula. This can be done in any stage of development of the chick, as the Juvenile Formula is suitable for use in parrots from day one. Of course, for one- to three-day-old babies, the formula has to be significantly diluted so its consistency is nearly that of

water. Later, the formula should be thicker. The ideal temperature of Harrison's Juvenile Formula is 41°C (106°F).

Adding Lactobacillus

We always add lactobacillus and digestive enzymes to Harrison's Juvenile Formula. The first meal of a parrot chick is one dosage of parrot-specific lactobacillus, which was developed by Dr. Helga Gerlach. There are many lactobacilli on the market, but first, they are not parrot-specific, and second, none of them has been researched like this product to verify that it does have an effect on gram-negative bacteria and does colonize in the parrot chick.

After the bird has received the parrot-specific lactobacillus, it will get digestive enzymes with every meal (amylase, protease, lipase and nonparrot-specific lactobacilli). They are all included in the powdered product "Fermatolact" (sachet with 25 g powder costs about US \$3.40 in Germany). The daily addition of nonparrot-specific lactobacilli supports the growth of the parrot-specific lactobacilli given before. The digestive enzymes make the formula slightly liquid. The combination of Harrison's Juvenile Hand-feeding Formula, parrot-specific lactobacillus and the Fermatolact ensure the best possible growth and development of the parrot chick.

Feeding Tubes

I use a special silicone feeding tube that becomes every soft when warmed by the for-

mula and a custom-made large bore syringe, which fits into this special feeding tube. The silicone feeding tubes are 18 cm long and available in seven different diameters, suitable for use in chicks of a body weight of 30 g up to 2000 g. These special silicone feeding tubes have a round tip, and the food comes out through two openings on the sides of it. This design and the soft consistency of the silicone crop tube help to prevent damage to the mucous membranes in the mouth and the crop. The feeding of the babies in this way is fast, efficient and clean — no food rests in the mouth as happens using other hand-feeding techniques.

Few people realize how important it is not to just hand-feed babies and walk away. I recommend to keep the babies in group (the complete clutch in one baby brooder). They can develop the same socialization in these groups as happens in the parents' nest box. For this reason, we do not recommend keeping each baby separate in a container, even if this method allows a better control of the bird.

The silicone crop tubes cost US \$0.95 up to US \$1.95 plus shipping and handling, depending on the quantity ordered. Interested veterinarians may order them from our practice by fax: 011-49-89-854-4600.

Quick Conversion

*Carmen Lindheimer, DVM
Kernersville, North Carolina*

Because an African Grey Parrot had to be hospitalized with a vent problem, we decided to offer Har-

ri-son's during its stay. The owner was very apprehensive because "he just won't eat anything else."

It took about one hour to make the conversion.

First Time Mother

*Linda Meade
Riverview, Florida*

I have a 43-year-old Yellow-naped Amazon who laid eggs last year for the very first time. This year she double-clutched with three eggs each time. We had her eight years before she finally laid eggs, just eight months after she was on Harrison's Bird Foods.

A Closer Look

Sustainable Agriculture

Since the end of World War II, agriculture has changed dramatically due to new technologies, mechanization, increased chemical use, specialization and government policies that favored maximizing production. Although these changes have had many positive effects and reduced many risks in farming, there have also been significant costs, including topsoil depletion, groundwater contamination and decline of family farms.

A growing movement has emerged during the past two decades to question the role of the agricultural establishment in promoting practices that contribute to these problems. Today this movement for sustainable agriculture is garnering increasing support and

acceptance within mainstream agriculture.

Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance.

Making the transition to sustainable agriculture is a process. For farmers, the transition to sustainable agriculture normally requires a series of small, realistic steps. But reaching toward the goal of sustainable agriculture is the responsibility of all participants in the system, including farmers, laborers, policy makers, researchers, retailers, and consumers. Each group has its own part to play, its own unique contribution to make to strengthen the sustainable agriculture community.

Farming and Natural Resources

- **WATER** is the principal resource that has helped agriculture and society to prosper, and it has been a major limiting factor when mismanaged.
- **WATER QUALITY** issue involved salinization and contamination of ground and surface water by pesticides, nitrates and selenium.
- **WILDLIFE** should be supported by plant diversity in and around both riparian and agricultural areas to enhance natural ecosystems and aid in agricultural pest management.
- **ENERGY SOURCES** in sustainable agricultural systems should move from nonrenewable (such as petroleum) to renewable sources or labor to

the extent that is economically feasible.

■ **AIR QUALITY** improvement options include incorporating crop residue into the soil, using appropriate levels of tillage, and plating wind breaks, cover crops or strips of native perennial grasses to reduce dust.

■ **SOIL MANAGEMENT** objectives must result in “healthy” soil that will produce health crop plants with optimum vigor and less susceptibility to pests. In sustainable systems, the soil is viewed as a fragile and living medium that must be protected and nurtured to ensure its long-term productivity and stability. Methods to protect and enhance the productivity of the soil include using cover crops, compost and/or manures, reducing tillage, avoiding traffic on wet soils, and maintaining soil cover with plants and/or mulches.

■ **CONSUMERS** can play a critical role in creating a sustainable food system. Through their purchases, they send strong messages to producers, retailers and others in the system about what they think is important. Food cost and nutritional quality have always influenced consumer choices. The challenge now is to find strategies that broaden consumer perspectives, so that environmental quality, resource use, and social equity issues are also considered in shopping decisions.

Adapted and use with permission of UC Sustainable Agriculture Research and Education Program, University of California, Davis, CA 95616.

HBD FAQ

Frequently Asked Questions

How can I become a distributor?

Any licensed practicing veterinarian can place an order as a distributor.

Is there a minimum order?

No. You may purchase as little as a one pound bag.

How many bags are in a case?

Six.

What is the normal shipping time?

Five to seven business days.

Are there marketing tools available?

Yes. HBD supplies client brochures and newsletters, explaining the benefits of feeding Harrison's, in addition to samples and a display poster.

Where is the best place to store Harrison's?

Refrigerator, freezer or in a cool, dry place away from direct sunlight.

Can you ship directly to my client?

HBD can provide drop shipment service directly to your client. The invoice would be sent to the veterinarian, and the client would receive only a packing list (no prices).

Can my client order directly through HBD?

Yes. The client will be charged the retail price plus shipping charges.

What is the shelf life of Harrison's?

At least six months. Check the “Best if used by” date on the package.

What about giving vitamins to the birds?

No vitamins or mineral supplements are needed with Harrison's because the required amount of nutrients are already present in the food. There may be certain medical conditions, eg, aging birds, in which specific vitamins, spirillum or egg protein are indicated.

I have a bird that has been diagnosed with . . . what should I feed it?

HBD has a Differential Feeding Chart available to choose the correct diet for various clinical situations. Call 800-346-0269.

Does HBD carry any medicated food?

No. However, medications for food are available through a compounding pharmacist such as Mortar and Pestle (800-279-7054) and we can give you instructions on how to prepare it. The last batch of compounded food was \$30 per pound.

What other products does HBD offer?

Echinacea, Golden Seal (both with non-alcohol bases), Aloe/Penetran, Tyrode's solution. This is a service so practitioners do not have to purchase large amounts required by manufacturers.

Who can I talk to about feeding advice?

Technical questions about HBD products can be answered by calling 800-745-7329. Medical questions relating to Harrison's are

referred to Dr. Greg Harrison (no charge).

Are avian case consultations available?

Dr. Harrison is available to discuss avian cases that are unrelated to HBD products (a modest fee per case is charged). Please call 561-964-2121 for further information. Food-related cases are free.



As I See It

Question Lab Results If Symptoms Don't Agree (Birds Don't Lie)

*Jan Hooimeijer, DVM
Meppel, Netherlands*

I have learned that the physical examination of a bird gives a tremendous amount of information. I think practitioners should use it properly and take the results very seriously. If we do not know the characteristics of a healthy bird, how can we decide the significance of variations or establish normals for laboratory results? Usually, healthy birds are obviously different from sick or recovering birds.

Feathers are small miracles. They are not just dead material — they change in color and can become dull or shiny. Molting data is one of the important gifts of information from the physical exam. Small species normally molt a maximum of once a year; larger species, every two years at a minimum.

By comparing the physical signs of the skin, mucous membranes, eyes, ears, nares, nails, beak, feces and urine, it is possible to determine if a bird is doing well. Getting to know normals in the kind of bird being examined is the best guide to preventive care and to avoid being surprised by a bird that is “suddenly” ill.

We know that birds fool us with their behavior. They are acting the famous play, “I never felt better than today.” Everybody can be fooled by that, but not if you look at the physical signs. During the “intermission,” a sick bird will show that it is not really having the best time of its life. It’s a matter of observation and recognition.

Many owners and some veterinarians are like ostriches — they don’t want to see, hear or learn things they don’t understand. Being blind to the obvious is a very human characteristic. This characteristic is killing birds. We can call it ignorance, stupidity, denial or whatever, but it is very present in our profession and is a threat to the bird and its owner.

Of course, there are acute situations where birds actually *were* fine yesterday. We see this with toxicoses, acute bacterial infections and acute viral infections. But even then it is very important to notice the physical differences the bird shows during follow-up treatment.

Many birds are presented in end-stage disease and there are no tests for such a condition. Far too many birds die at an incredibly young age.

All the new sophisticated tools and tests now available in avian medicine should not become a crutch, for there is no short-cut to evaluating the status of a bird. Many veterinarians just rely on the lab results. They don’t look at the bird, and they treat only lab findings. Like in human medicine, too much medication can be a problem in itself — it may even kill birds!

Ed note: Contact HBD for a master physical exam form.

Practice Tips

Acupuncture for Feather Picking

*David McCluggage, DVM
Longmont, Colorado*

Acupuncture (as well as homeopathy, herbs, nutraceuticals, diet modification) has some value in helping my avian patients adapt to a captive life.

I have performed at least 750 acupuncture treatments on over a 100 feather picking birds and have improved perhaps 70% of the patients. I have several that were bald for 10+ years that have responded and are now fully feathered out. The earlier I get the case, the easier it is to help. I find that I need to use a variable number and location of acupuncture points determined by the individual needs of my patients — there are no “cookbook” approaches that work consistently.

But not all birds can be helped, just as not all birds can adapt to captivity. The owner is really the only one who can make a difference in

the long run. My wife, Linda, and I spend a lot of time educating our clients about nutrition, behavior, husbandry, and even how to understand what their birds are trying to tell them. But we can’t duplicate the forest environment.

Acupuncture can “take the edge off” the bird’s daily anxieties, but the owner has to take over from there.

Factors in Feather Picking?

*Michelle Curtis-Velasco, DVM,
Dipl. ABVP Avian
Orange Park, Florida*

I believe we need to be looking harder for answers to feather-picking birds’ problems in their diets, housing and flock interactions (remember, as caretakers, we are their flock). I suspect that we should also be paying more attention to the effects of pesticide residue on grain products, as well as artificial coloring, salt and sugars in many commercial products.

Use of UltraClear Plus®

*Gwen Flinchum, DVM
Lake Worth, Florida*

I had been treating two cockatiels with chronic liver disease for two weeks with lactulose, tube feedings with Ultrafuel (Twin Labs), and subcutaneous fluids. One bird deteriorated until the owner requested euthanasia. Since I had recently heard David McCluggage’s NAVC presentation on alternative therapies, I offered to keep the bird in the hospital and try a product called UltraClear Plus® for “hepatic detoxification nutritional support.”

Three hours after tube-feeding UltraClear®, the biliverdinuria disappeared and the urine became clear. The bird was treated with supportive therapy (which included use of UltraClear®), and within 10 days was well enough to be discharged. After three weeks the owner reports that the bird continues to be doing well.

According to the manufacturer, UltraClear Plus® (a powdered product designed to be consumed as a beverage) contains nutrients that specifically support the body’s biochemical detoxification process by balancing the cytochrome pathways. Detoxification occurs primarily in certain types of liver cells and to a lesser degree in the gastrointestinal mucosa cells and elsewhere. If cytochrome pathways 1 and 2 are not balanced, the liver is not functioning properly and detoxification will not occur. Toxicity is increasingly recognized as a contributing factor in many dysfunctional and/or disease states.

*UltraClear Plus is available from
Metagenics APN, 4403 Vineland Road
#B-10, Orlando, FL 32811;
800-647-6100, 407-423-8877,
Fax 407-423-0089.*

Tracheal Endoscopy in a Canary

*Greg J. Harrison, DVM,
Dipl. ABVP Avian
Lake Worth, Florida*

Over the past 18 months, I have been periodically treating a canary for a respiratory problem. The bird appeared malnourished during the first visit, so a diet change was recommended to

Harrison's Lifetime Fine Grind. Air sac mites were seen by direct visualization under the operating microscope, and the bird was treated with ivermectin.

During the most recent visit when the canary was again presented with dyspnea, our 1.2 mm semi-flexible endoscope was used to first enter the left lateral paralumbar region where hepatomegaly was observed. The endoscope was then used to examine the trachea down to the level of the syrinx. What appeared to be a parasitic granuloma was seen protruding into the tracheal lumen. The granuloma was dislodged with the endoscope and, as a precaution, one small drop of ivermectin was released from a 27 gauge needle into the larynx opening. According to the owner, the bird is no longer showing clinical signs.

Changes in Gram's Stain Results

Rhonda Sayle, AHT
Lake Worth, Florida

We advise owners to bring in a fecal sample from home (wrapped in plastic wrap on ice) for a Gram's stain evaluation, because we want to evaluate bacteria from the lower gut under normal circumstances. We believe a fecal sample passed in the clinic may be unreliable because the bird is nervous and passing droppings more frequently.

One day we compared the results of the iced sample with one collected from the cage bottom after the bird had traveled to the clinic. The iced sample from home was

obviously more acceptable as "normal."

Comparison of Fecal Gram's Stain Results from Same Bird on Same Day

	Iced sample	Clinic sample
Bacteria/oil immersion field	110	120
G+ rods	70%	60%
G+ cocci	30%	40%
Yeast	0	7/oil (no budding)
G-	0	0

On the other hand, over a two-hour period (with interruptions) I made twenty slides for a student project from a fecal sample left at room temperature. Those at the beginning of the process were considered morphologically and quantitatively normal. As the time went on, increased numbers of gram-negative bacteria appeared on the slide, which would obviously affect the results on the report.

However, to detect live *Giardia* the freshest sample taken at the clinic is the best.

Chickens as Pets

Greg J. Harrison, DVM,
Dipl. ABVP Avian
Lake Worth, Florida

Individual chickens make great family pets. Because their owners bond to them to the same degree as parrot people, they need to be treated with the same attentive care when they are presented to the clinic. Hens are usually the choice for urban families because they don't crow and don't become aggressive.

PDD in Cockatiels

Michelle Curtis-Velasco, DVM
Dipl. ABVP Avian
Orange Park, Florida

Normally believed to be a disease of larger psittacine species, we are now seeing proventricular dilatation disease (histologically confirmed) in cockatiels in our area. Clinical signs are the same (weight loss, seeds passing in droppings, regurgitation). Differential diagnosis would include bacterial enteritis, megabacteriosis, giardiasis and other proventricular or ventricular disease.

Lameness Response in a Cockatiel

Gwen Flinchum, DVM
Lake Worth, Florida

A cockatiel with a history of chronic egg laying and liver disease was hospitalized, and subsequently began to show signs of lameness. Her right foot was tender and showed signs of swelling and purplish discoloration. This was treated with topical DMSO and Penetran with no improvement.

Eventually her left foot also began to show discoloration, and she became sternally recumbent. The bird was given an IM injection of 0.05 ml HCG, 0.05 ml dexamethasone and 0.01 ml Lutalyse, and within four hours was bearing weight on both feet. She steadily improved over the next few days. Proposed mechanism: cholesterol clots obstructing blood flow to the lower extremities due to hyperestrogenism?



Beak Damage in Macaw

Dana Clark, DVM
Bountiful, Utah

A Blue and Gold Macaw had its beak severely damaged by its parents at ten days of age. Now that the bird is an adult, the beak has never fully regenerated.

Ed note: This is the most distal injury I have seen where the beak will not regrow.

Zinc and Feather-picking Parrots

Fern VanSant, DVM
Los Gatos, CA

(Adapted from *Proceedings of the International Aviculturists Society*, 1/97)

Recent advances in our ability to measure serum zinc in avian patients has made it possible to investigate the effects of zinc on pet parrots. Some link is being established between relatively low levels of zinc ingestion and feather-picking. Common sources of zinc accessible to parrots are: galvanized wire (especially wire galvanized before welding), quick-links, metal chains, toy hangers, dishes and other metal accessories.

Dr. Peter Jowett at the Louisiana Veterinary Medical Diagnostic Lab* runs serum zinc determinations on samples as small as 50 microliters of serum or plasma. We collect the sample in a BD 1/2 cc TB or insulin syringe with a 28 ga needle and store it in a

heparinized Microtainer brand or Terumo Capiject vial for submission (do not use EDTA). To test cage powder coating, a dime-sized sample should be carefully collected with a stainless steel blade and shipped to the lab in a plastic bag or plastic wrap.

Current normals are thought to range from 0.9-2.5 ppm. Affected birds have had serum zinc ranging from 2.5-19.0 ppm. Determination of toxicosis must be based on clinical presentation. Not all affected birds have metallic foreign bodies.

Affected birds are treated with a solution of DMSA (dimercaptosuccinic acid) 25 mg/ml at the published dose of 30 mg/kg to chelate zinc. Removal of the offending zinc source is essential for successful treatment with DMSA.

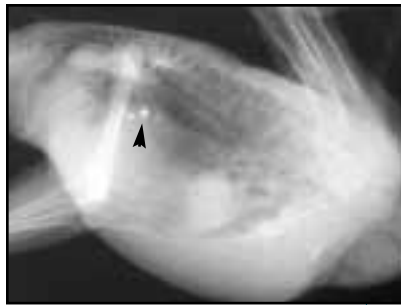
Resolution of zinc toxicosis has resulted in dramatic improvement of feather picking in many instances. We recommend bird clients use only stainless steel hardware and toy hangers, which are available from marine hardware stores.

**Louisiana State University, School of Veterinary Medicine, 1909 S. Stadium Road, Baton Rouge, Louisiana 70803 Tel: 504-346-3193*

More on Zinc

*Greg J. Harrison, DVM,
Dipl. ABVP Avian
Lake Worth, Florida*

The LSU lab charges \$50 for the serum zinc test. Dr. Peter Jowett has approved our small red-top vacuum tubes containing 0.3 ml whole blood. We ship the sample to the lab by UPS Next Day Ser-



vice, and results are faxed the following morning.

DMSA is relatively expensive (\$50 for 50 ml as compounded by Mortar and Pestle Pharmacy 800-279-7054), has a six-month shelf life, and smells like rotten eggs. Dr. Fern VanSant suggests storing it upside down as it precipitates out. DMSA must be given for about five days following removal of the zinc source.

Old iron items that are starting to deteriorate have a reddish rust whereas deteriorating galvanized zinc has a white powdery rust. This white powder is pure zinc, is very toxic, and will not show on radiograph.

If particles of metal are lodged in the ventriculus (as seen on radiographs, see arrows), they are best removed using Harrison's Juvenile Formula with added psyllium. To tube-feed an Umbrella Cockatoo twice a day: mix 1/4 tsp psyllium, 1 tsp Juvenile Formula and 10 ml warm water; draw into a syringe and administer mixture immediately (to prevent gelatinization). Birds may clear the metal from the ventriculus in three to seven days; psyllium may need to be increased in some cases.

Child-safe epoxy may be spray-painted on surfaces of



exposed metal suspected or proven to be toxic, and repainted as often as flaking, chipping or peeling occur. Zinc caging can be replaced with stainless steel or Zoo Mesh.®

Evidence of Hypoparathyroidism in Hypocalcemic African Grey Parrots

*Manfred Hochleithner, DVM
Claudia Hochleithner, DVM
Greg J. Harrison, DVM*

- The authors propose that the hypocalcemia syndrome in African Grey Parrots occurs due to a dysfunction in parathyroid hormone.
- The results of this study support the theory that a seed diet contributes to hypocalcemic syndrome in African Grey Parrots.

Clinical Considerations of Suspected Hypoparathyroidism in African Grey Parrots

Anesthesia: Calcium (5 mg/kg IM) should be administered 10-15 minutes prior to anesthesia in African Grey Parrots consuming a calcium-deficient diet. Calcium for intravenous injection should be available when anesthetized.

Emergency situations: Glucocorticosteroids are frequently used as an initial treatment for "shock." Corticosteroids

are known to induce hypocalcemia and therefore should be used with caution in African Grey Parrots.

First aid for seizuring

African Grey Parrots: An intramuscular injection of calcium (5 mg/kg) is warranted for a seizuring African Grey Parrot, particularly if the affected bird has a history of consuming a calcium-deficient diet.

Necropsy: Parathyroid glands should be collected for histopathologic examination in any bird with calcium abnormalities and in all African Grey Parrots submitted for necropsy.

Prevention: Harrison's Bird Foods

Reprints of the full paper, a Peer-reviewed Avian Report, are available through HBD.

A Closer Look

The Magic of Apple Cider Vinegar

Apple cider vinegar is a time-honored prescription for those who want to retain vitality and good health well into old age. Claims for the curative and restorative powers of apple cider vinegar are legendary.

It has been said to lengthen life and improve hearing, vision, and mental powers. It has been prescribed as an aid in preventing disease, controlling weight, easing the discomfort of coughs, colds and breathing difficulties, and settling a disturbed digestive system. Devotees claim it will help heartburn, clear up

throat irritations, stop hiccups, deal with diarrhea and ease asthma. It is said to banish arthritis, forestall osteoporosis, prevent cancer, kill infection, condition the skin, preserve memory and protect the mind from aging. It even has been found to be useful in cleaning, cooking and food preservation.

How to pick a vinegar

For a high quality product, check that the apples were organically grown on soil in an area with a high mineral content (such as the northern area of the U.S.).

The vinegar should be made of table grade apples, not merely windfalls, peels or cores. The best vinegar is aged in wood barrels, not plastic or metal ones. Check for sediment at the bottom of the vinegar bottle. If there is none, the very best parts (pectin and apple residue) have probably been filtered out

The following are some old folk remedies as well as some new medical ideas on ways to use apple cider vinegar (in humans).

- To moderate an over-robust appetite and help melt away fat, drink a glass of warm water, with a teaspoon of apple cider vinegar stirred in, before each meal.
- To make legumes more digestible and less gas-producing, splash a little vinegar in the pot when cooking dried beans.
- Cool the burning of a sunburn by bathing in a tub of lukewarm water to which a cup of apple cider vinegar has been added. (Vinegar has a

pH which is nearly the same as healthy skin.)

- Corns and calluses will fall away, overnight, if you treat them with a vinegar compress. Simply tape one-half slice of stale bread which has been soaked with apple cider vinegar to the offending lump. By morning the skin will look smooth and new.
- Clean away mineral buildup on metal. Just add ¼ cup to a quart of water for cleaning.
- Vinegar is the remedy of choice for treating stings and bites: bee, wasp, jellyfish and Portuguese man-of-war venom can be inactivated with vinegar.
- Western Michigan University reports vinegar can be used to increase the accuracy of conventional tests for cervical cancer. Adding the vinegar-based test to the standard Pap test allows medical personnel to “detect women at risk for cervical cancer who would not have been detected by the Pap test alone.”

Ed note: For avian veterinarians, apple cider vinegar applied to suspected cloacal papillomatosis turns white if positive. One teaspoon per pint drinking water controls most gram-negative and yeast problems without medication. Four to five milliliters of apple cider vinegar added to an ounce of a heparin/aloe product prevents the growth of mold.

Non-filtered, non-pasteurized, organic apple cider vinegar produced by Omega Nutrition is available from HBD (800-346-0269) in small quantities for those who do not choose to purchase full cases or from health food stores.

Permission granted from Tresco, Inc. to quote a portion of The Vinegar Book by Emily Thacker. The book is available for \$12.95 (plus \$2.00 S&H) from Tresco, Inc., Dept. F943, 718-12th Street N.W., Box 24500, Canton, OH 44701 (800-772-7285 ext. F943).

Using Harrison's

Harrison's for Many Species

Gwen Flinchum, DVM
Lake Worth, Florida

I am frequently asked if Harrison's can be fed to birds other than just psittacines and passerines. The answer is a definitive yes, and following are some examples:

A three-year-old Chilean flamingo had become stressed after being moved to a new location. He was inappetent, lethargic and had scant feces with green urine. He was started on tube feedings with Harrison's Juvenile Hand-feeding Formula and after two days he became more active, his feces were of a more normal consistency and his urine had cleared.

The flamingo went on to do well and the owner now routinely feeds three parts Harrison's High Potency Fine Grind to one part commercial flamingo chow.

A hornbill had been fed a diet of monkey chow, fruits and raw chicken. He was thin (keel bone palpable), his feet were scaly and he was missing tail feathers. He was started on Harrison's Bird Foods by sprinkling High Potency Mash over moistened monkey chow and fruit. Once he became accustomed to eating that, he was offered moistened High Potency Mash rolled up into small balls.

He now eats this almost exclusively, supplemented with occasional giant mealworms “gut-loaded”

with Harrison's High Potency Mash. After four months of being on Harrison's, the hornbill's feet became sleeker and less scaly, his keel bone was no longer palpable, and he grew in a new set of tail feathers.

I have also successfully used Harrison's Juvenile Hand-feeding Formula in supportive therapy of ducks, geese, swans, peafowl and toucans.

Harrison's – African Grey Diarrhea

Kitty Remington, DVM
Bainbridge, Georgia

A client had a Congo African Grey with severe diarrhea. I suggested they use Harrison's Bird Foods, but they were not convinced. They had tried several other diets to no avail.

Finally, they took their bird to the University of Florida for testing. The University put the bird on Harrison's and the diarrhea cleared up immediately, even before any diagnostic tests were performed.

Limit Treats

John Meade
Riverview, Florida

There are many advantages to limiting “goodies” (peanuts, fruits, seeds) added to Harrison's for breeding birds. For one thing, the male is often the dominant bird and will quickly eat these items and leave only the Harrison's for the female.

Often what happens is that after a few years the male will die and the female who was left with only the Harrison's

looks sleek and healthy — he was getting all the high fat “goodies” and he died prematurely.

African Grey Allergies

Kitty Remington, DVM
Bainbridge, Georgia

One of my client’s African Greys had conjunctivitis. When I ran out of his regular bird food, I gave him some Harrison’s until I could get more. His eyes got better right away.

Assuming this was just a coincidence, I put him back on his regular food and once again his eyes became badly swollen. The ophthalmologist diagnosed him with “allergies” and now, back on Harrison’s, his eyes are fine.

Harrison’s for Chameleon Breeding Program

Kaci Beckett, DVM
Palm Bay, Florida

I have used Harrison’s Bird Foods for years with my birds, but recently I have found a new use. We had searched for a food for gut-loading crickets that we fed to veiled chameleons in our breeding program. We needed something that would make a healthy diet without overdoing the vitamin A.

We tried various types of dog food, vegetables, turtle food and bird pellets, but we had trouble with poor clutch numbers, edema, females’ surviving post-egg laying, poor hatch rates and poor-doer hatchlings.

As soon as we tried Harrison’s Bird Foods as a

cricket food source, we had excellent results: our average clutch size doubled to 55; the hatch rate increased to 95%; our last female survived 6 clutches; we have healthier young with no edema; the colors in the young and the adults are bright and more vivid. I had a fellow chameleon breeder try the diet with similar results.

Ed note: see also Avian Examiner #5 for use of Harrison’s for gut-loading crickets.



Practice Tips

Sources of *Cl. perfringens*?

For the last month several clients have been culturing *Clostridium perfringens* from different hand-rearing formulas, so they switched to Harrison’s and did not find it. Why not?

Clostridium perfringens is a G+ spore-forming rod that is difficult to culture. According to various authors,¹⁻³ *Cl. perfringens* is found in the normal flora of dogs, cats and man; it is common on hands, and in feces, dust and contaminated food and litter. Bugs, wild birds, rodents and meat by-products can all be contamination sources. Diets high in fish meal or wheat may predispose to and/or exacerbate outbreaks.

Harrison’s Juvenile Formula contains no fish meal or wheat. The grains are

harvested, checked for mycotoxins and kept cold until processing, after which they are extruded at a high cooking temperature and stored at 40°F until ship-ment. This helps prevent bacterial contamination.

1. Ficken MD: In Diseases of Poultry 9th ed. Ames, Iowa State University Press, 1991.
2. Gerlach H: Bacteria. In Ritchie BW, Harrison GJ, Harrison LR (eds): Avian Medicine: Principles and Application. Lake Worth, Florida, Wingers Publishing, 1994.
3. Carpenter TW, Gentz EJ: In Altman, et al (eds): Avian Medicine and Surgery, WB Saunders Co, 1997.

Hypoallergenic Gloves

Greg J. Harrison, DVM,
Dipl. ABVP Avian
Lake Worth, Florida

N-Dex Exam Gloves (made of nitrile) contain no latex and are hypoallergenic. They will not induce a respiratory reaction to the latex itself, which is common, or to corn starch or talc normally used to powder inside other gloves. Considered to be stronger than vinyl, they comply with OSHA’s standard for occupational exposure to blood-borne pathogens.

They are available from Lab Safety Supply, Inc., 800-356-0783.

Convulsing Cockatiels, Canary

Gwen Flinchum, DVM
Lake Worth, Florida

At least two cockatiels (that chewed curtains and walls) and one canary presented with a history of acute seizures. One canary and one cockatiel had possible exposure to organophos-

phates and were treated with atropine (2 doses four hours apart at 0.2 mg/kg). I also diluted 50% dextrose half/half with Normasol or lactated Ringer’s solution and gave 1.5 ml subcutaneously (with hyaluronidase) every 2 hours until cessation of seizures — the rationale being that seizing animals use a lot of glucose so the brain can be deprived.

All of these cases recovered within 24-36 hours, eg, stopped seizing, and were subsequently treated with standard hepatopathy therapy until well enough to send home. I don’t know what is in the walls — plastic? Something in the paint?

Cisapride Use in Birds

Donald Zantop, DVM,
Dipl. ABVP Avian
Fallston, Maryland

Cisapride (Propulsid®) is effective in quickly emptying the proventriculus and crop in birds with toxic ileus. I previously used metoclopramide (Reglan®) in these cases and couldn’t really see results. Propulsid® helps birds with neurologic cloacal problems void, and it’s very obvious that it’s doing the job.

The dosages I use range from 0.5 mg/kg to 3 mg/kg, repeated 3-4 times per day in a chick with a toxic bacterial enteritis. The dose for cats with megacolon goes to 6 mg per cat. I’ve not seen any signs of toxicity so I may be willing to go that high.

Resolving Loose Droppings in Young Macaws

Gwen Flinchum, DVM
Lake Worth, Florida

A veterinarian on VIN recently presented a case of a young macaw with loose smelly droppings that responded to Flagyl, but as soon as the bird was taken off Flagyl the droppings became loose again. We see a lot of these kinds of cases and probably 98% of them are resolvable.

We have a step-wise approach:

1. **Diet** - What is the bird eating? Seeds, table foods, lots of fruits? If so, change to Harrison's.

2. **Fecal direct** - Giardia? If so, treat with antiprotozoal.

3. **Fecal culture** - Many of these birds culture out *E. coli*, which is usually responsive to Baytril or Neomycin.

4. **Fecal test for *Cryptosporidium*** (University of Miami) - Some cases have been positive and respond to treatment with Humatin.

In a couple of cases we were unable to find anything abnormal on all tests. These birds improved by sprinkling psyllium onto the food or by increasing roughage, such as sweet potato or fresh broccoli in the diet.

Immune Stimulators in Birds

Dr. Helga Gerlach
Munich, Germany

Three substances used in birds have proven characteristics of immune stimu-

lation: spirulina (blue-green algae), echinacea (herbal extract), and the para-immune inducer, Baypamun.

Baypamun is a modified live sheep virus that was originally studied under the name PIND ORF and is available in Germany through Bayer.

We administer Baypamun at 1 ml/kg body mass; if the bird is very ill, we may give up to three injections in two days. The earlier it is given, the better. We did a study in Munich involving 200 Senegal Parrots (*Poicephalus senegalus*), some of which were experimentally infected with ten times or five times the LD₅₀ with herpesvirus.

One group was given Baypamun *before* the virus injection, another group *concurrently* with the virus, and the third group 24 hours *after* the herpesvirus injection. Approximately 60% of the group treated with Baypamun before the virus injection with five times the LD₅₀, and 30% of the birds treated before receiving ten times the LD₅₀ survived; those receiving Baypamun simultaneously or afterwards with viral dosages of ten times the LD₅₀ survived only by around 8%. One hundred percent of the control group died.

If you are late in the disease, you may not have any results, but at least you won't hurt the bird, which is very important. So I think it is worthwhile using it if you have valuable birds.

Another component that supports the bird in the face of disease is vitamin C, although it is not really an

immune stimulator. I use 50 mg/kg as a rule of thumb.

A Closer Look

DMSO

Donald Zantop, DVM,
Dipl. ABVP Avian

DMSO, dimethyl sulfoxide, is a penetrating solvent that enhances absorption of therapeutic agents from the skin. In human medicine it has been proposed as an effective analgesic and anti-inflammatory agent in treating arthritis and bursitis.

DMSO:

- is a bipolar nondissociable solvent.
- has exothermic hydration.
- is an effective scavenger of hydroxyl radicals.
- can inhibit or stimulate various enzymes.
- is a powerful inhibitor of cholinesterase and of alcohol dehydrogenase.
- translocates many substances across membrane barriers.
- reduces effective and toxic doses of digoxin.
- enhances anesthetic and toxic effects of barbiturates.
- is antithrombotic or antithrombogenic.
- is reported to have analgesic effect for some types of pain. The primary mechanism of analgesia may be slowed conduction in nerve fibers, especially nonmyelinated, C-type, somatosensory (pain) fibers.
- degranulates mast cells. (The potential for massive and

morbid histamine release after administration of DMSO to animals with undetected mast cell tumor should be considered.)

- has anti-inflammatory effects and can protect against ischemic insult and ionizing radiation. These effects are mediated largely via scavenging of hydroxyl radicals. Free radicals are released from leukocytes in inflammatory processes, and from cells injured by ischemia or ionizing radiation.

Within 20 minutes of administration, topically or parenterally, DMSO can be found in all organs of the body. Most is excreted unchanged in the urine. Some is metabolized to DMSO₂ and some to DMS.

Membrane stabilization may also contribute significantly to protection against other insults.

Paradoxically, however, DMSO causes hemolysis. The hemolytic effect in vivo is exacerbated when intravenous administration is rapid and the DMSO concentration is >40%.

DMSO with Birds

In avian medicine, I use DMSO in the following ways:

- As an adjunct therapy for pneumonia, where it reduces swelling in lungs.
- To block pain and reduce inflammation in cases of moist dermatitis (eg, cockatiels with axillary and patagial infections).
- In cases of feather picking and self mutilation where the birds seem to be in pain or are very pruritic. In my experience, it seems to work

better in Amazons than in cockatoos unless the cockatoos have an obvious bacterial dermatitis.

- For any injuries that have significant tissue damage, swelling or vascular stasis.
- To replace steroid use in birds.
- For crushing injuries or postsurgical care.
- For post-silver nitrate cauterization of papillomatosis. The steps that I use are: Apply silver nitrate to the cloaca, flush with saline, apply DMSO and then apply barium. These birds don't have the straining and pain post-procedure that they did before I started using DMSO. If I'm using DMSO orally, I mix a 50% solution and give about 1 cc/kg.

The only caution is that they really "stink" for about 3 days. In my clinic, if I don't have them in one of the wards with a vent fan, the whole place begins to smell like garlic. So you have to warn the owners about that.

Using Harrison's

Feeding Protocol for Breeders

John and Linda Meade
Riverview, Florida

During the non-breeding season, our Amazons, African greys, cockatoos, and macaws are kept "mean and lean" with a diet of primarily Harrison's and very minimal additions. We may offer them just one piece of produce in the morning: one day it might

be squash, the next day carrots, and another day, sweet potatoes. We usually limit fruit to once a week such as a piece of fresh pineapple, mango, nectarine, orange or apple.

Our breeding birds like the Harrison's foods, but no matter what you add, they will eat that first and leave the Harrison's for last. If you want to get them totally on Harrison's or any good pellet, you must severely limit other "goodies."

In January or February, we start adding corn, seeds, nuts or whatever will start to turn them on for the breeding season. Cockatoos will do good on straight Harrison's, but macaws and greys like to have some extra seeds or peanuts—they seem to need a little extra fat. During this time greys will eat twice as much as any other bird of similar weight—eg, twice as much as an Amazon. When they have babies, all species get a variety of additional foods.

Ed note: Their aviculture results have shown a dramatic increase in production numbers, a decrease in neonatal problems and an overall increase in profits since they started using Harrison's Bird Foods. Linda Meade hand-raises close to four babies per pair from hundreds of pairs and still smiles.

Side Effects of a Diet Change

Jan Hooimeijer, DVM
Meppel, The Netherlands

When birds have been maintained on a substandard diets their bodies compensate, so that when a nutritious feeding program is implemented, some temporary side effects may be first evident.

Clients should be advised to expect that around six weeks after converting to Harrison's, they will notice increased sneezing, scratching, molting, flaking of beak and decreased food consumption. These will resolve shortly and the improved health of the bird will continue. Food quantities stay low until molting, cold weather or egg-laying.

Harrison's Resolves Polyuria

Nancy McQuade, DVM
Winnipeg, Canada

A two-year-old captive bred Military Macaw was presented with chronic polyuria and polydipsia since it was a chick. The bird was normal on physical examination. A CBC and chemistry profile, Gram's stain, and whole body radiographs were normal.

The bird had been on three different types of pellets: Roudybush, Kaytee and Tropic. The very day that the owner started to feed the Harrison's Coarse Grind, the PU/PD resolved! I'm not one that usually writes "testimonials" but this one was worth a letter.

Harrison's for Storks

The European White Stork Recovery Project in Meppel, Holland, for which Jan Hooimeijer offers veterinary advice, reported increased fertility, increased hatch, and increased fledging after Harrison's was offered as a food source along with the day-old chickens that had been their sole dietary item.

Stork chicks previously weaned at 800 g with failure to molt now wean at 1200 g, molt on schedule and are more attractively feathered than the parent birds.

Feather Plucking and Organic Diets

Samuel B. Vaughn, DVM,
Dipl ABVP-Avian
From: *Feather Picking: A Mystery of Avian Medicine*; *Bird Talk*, August 1997

Some birds taken off diets with dyes and placed on organic diets have a significant decrease in plucking behavior.

"I firmly believe that an organic pelleted diet has helped more feather pluckers than any other treatment.

"I thought that my Amazon would not eat pellets...but she is now on pellets and has the most beautiful plumage ever. She has been on Harrison's Bird Foods (an organic diet) for five years now."

David McCluggage, DVM
From: *Stop Feather Picking: Natural Pet*, August 1997

Birds are no exception to the rule that a variety of fresh foods form the cornerstone of good nutrition," concurs Dr. McCluggage, who prescribes an organic diet for feather pickers...

No More "Psycho" African Grey

Beaverton, Oregon

I have had a year-old African Grey since January. Within a few weeks of bringing her home, she bit off the feathers on one wing. I was feeding her fresh fruits and veggies, pellets and seeds.

A few months later she bit off her entire tail. The veteri-

narian said she had a bacterial infection, but as soon as that cleared up another strain of bacteria took over. The third time this happened, she was in the hospital for 10 days. Watching her self mutilate was awful. She no longer would sing or talk, or flap her wings at all.

The vet gave her hormone shots, then prednisone, blood tests, x-rays and stomach drops to no avail. Everything kept showing a distressed GI track. After all of this, the vet mentioned Harrison's food. I immediately said, "Let's try!!" She said it was expensive. Like \$500 in vet bills wasn't?? I put her on the High Potency Coarse Grind. Within 1-2 days, I saw a difference — no more biting, and she seemed more comfortable. It has been almost 3 weeks now and we are talking a MIRACLE!! She sings, talks, plays, flaps and there is a 1,000% difference.

She is now the bird that I had hoped for all along. It was an incredible nightmare to go through what we did with her. It may sound like no-big-deal to others, but I was sick about the whole thing! How many other Greys have been labeled "hopeless pickers" or "pluckers" or just plain "psycho" when the problem is they feel really lousy!

You read advertisements and "testimonials" and say "yeea, big hype." I guess when it becomes personal, you tend to listen more carefully. So, I not only will feed her Harrison's for her entire life, but I will be as vocal as I can, for other owners may be going

through the heartache and confusion I was. Thank you so much for knowing your stuff!

*Forever grateful,
Jan Harris (and, of course, my Lucy)*

"Wazo" Promotes Your Avian Care

Wazo, the robust cartoon bird, who accompanies your orders is designed to promote specific recommendations and general avian veterinary medicine to your clients. Short messages relevant to a positive avian client/ veterinarian relationship are given a friendly format with the help of Wazo.

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Practice Tips

Sexing Young Cockatiels

According to cockatiel breeder, Linda Greeson, the following method is 100% accurate in identifying the sex of a young cockatiel chick (except for pied variations).

Check the large spots on the underside of the wings.

Females have spots on each feather that extend from the wings all the way to the body; these spots remain after they have reached adulthood.

Males have a pattern of spots that stops about halfway to the body; their molted feathers are replaced with solid-colored feathers. This method

even works with lutinos, with yellow spots.

Sexing Crickets

*Heidi Bissell
Gainesville, Florida*

If you are housing crickets to feed to insectivorous pets and want to lower the noise level, keep just the females.

The following methods can be used to sex crickets (assuming they are old enough): males "sing" and have intricately-patterned wings; females have a long "stick" protruding from their rear end (ovipositor for depositing eggs into the soil), they don't sing, and their wings are patterned like normal insect wings. If you choose to keep the males, you can pluck one of their wings off to eliminate the sounds.

Harrison's for Young Columbiformes

*Teresa Lightfoot, DVM,
Dipl. ABV -Avian
Largo, Florida*

We use Harrison's Juvenile Formula for hand-feeding very young Columbiformes (both pigeons and doves). Since we are the staff veterinarians for the Sun-coast Seabird Sanctuary, which has dozens of baby doves at any given time throughout the baby season, we recommended it to them for their baby Columbiformes. It appears that the nutritional content of Harrison's (lower carbohydrate, more digestible protein) is critical for the very young birds during the first three to four weeks of life. Harrison's works well

throughout the duration of hand-feeding, although after this age, the Columbiformes appear to be able to tolerate other formulas as well.

Getting Cynomolgus Monkeys to Take Their Medicine†

Cathy Johnson-Delaney, DVM
(From the Laboratory Primate Newsletter, Vol 36, Number 3, July 1997)

If the animal needs a “bland” food (Ensure® may cause diarrhea in some), I have had success using Harrison’s Juvenile Formula (powder) made to pass through feeding needles with medications mixed in.

This formula has no preservatives, is all grain/vegetable-based, does not seem to cause diarrhea, and is very digestible. It has vitamin D₃, but no appreciable vitamin C, which can be added. It works as a gavage formula for callitrichids and infant or juvenile macaques that need a very easy-to-digest yet good protein, good carbo, low fat food. I’ve used it as an adjunct to the diet or as

emergency therapy, rather than as a total diet.

Ed note: Psyllium and other mucopolysaccharides in whole grains and spirulina act as a soothing bandage to the intestine.

Harrison’s Food for Rabbits?†

Lisa Tell, DVM
Davis, California

My rabbit is “crazy about” Harrison’s Bird Food. He watches from the far corner of the yard until he sees us getting ready to feed the birds, then he jumps up and comes running over to get some of the food. He actually begs for us to hand-feed him some. I think you should consider selling Harrison’s as rabbit food.

Rabbit Raised on Harrison’s†

Mary Wolynski, CVT
Lake Worth, Florida

My son’s rabbit began eating Harrison’s Lifetime Fine Grind at a very young age, and because Harrison’s appeared to be relished and was easy to feed, it became the total diet. The rabbit was not caged but its

feces were smaller than expected and easier to clean up.

At three years of age, when his chewing damage prompted us to consider a farm environment, we gave him away. He was in excellent physical condition with solid muscles, and he had a good disposition (which people told me was unusual for an intact male).

There’s Spirulina and Then There’s Spirulina...

Greg J. Harrison, DVM
Dipl. ABVP Avian
Lake Worth, Florida

In Harrison’s Bird Foods, HBD International uses only spirulina that is certified free of heavy metals and mycotoxins. Early investigations into securing a source for this product revealed that much of the spirulina available on the market (especially cheaper supplies) is contaminated with both of these toxins. Even some sources of blue-green algae (Chlorella) have been found contaminated with both heavy metals and mycotoxins, and

these are sold for human consumption!

Because of the strict certification process for Harrison’s foods, all ingredients must be periodically tested and monitored to maintain this high quality standard.

Harrison’s to Gavage Chinchillas†

Cathy Johnson-Delaney, DVM
Seattle, Washington
(From e-mail response to inquiry)

Chinchillas are hindgut fermenters—I think of them as sort of a cross between a rabbit and a guinea pig with attributes of both ... For gavage, I often use a slurry of Harrison’s Juvenile Formula (it works very well in sick herbivores—mammal and reptile).

† Harrison’s Bird Foods were not developed for species other than birds, and we do not recommend our food for animals other than parrots, finches, canaries and Rhamphastids. There are many instances, however, where people share unsolicited reports of positive response to feeding Harrison’s in animals other than birds.

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There are several alternative health products mentioned in the *Avian Examiner* that Dr. Harrison uses at The Bird Hospital, such as echinacea, goldenseal, dandelion, aloe/penetran, penetran, tyrode's solution and organic apple cider vinegar. HBD International, Inc. makes these available to distributors at cost.

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