

Demystifying Avian Medicine Overview

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Introduction

Birds were heralded as the pet of the '90s
Current pet bird population has been estimated to be 50-60 million
In one study only 7.6% of bird owning households sought veterinary care
Compared with 78% of dog owners and 60% of cat owners
Great need for veterinary services for pet birds

Reasons for Popularity of Birds

Lifestyle Changes
Low Maintenance Pet
Increased Availability
Better Success Hand Raising Birds, More Breeders
Hand Raising
-Birds Are Calmer, Bonded to People, Affectionate
-Less Likely to Carry Disease
Nature of Birds
Coloration, Songs, Talking Ability, Social Animals

Reasons for Lack of Vet Care

Birds conceal illness as part of natural defense
By the time veterinary care is sought it is often too late to be effective
Financial
-Clients would rather replace a sick bird than invest in veterinary care
Lack of veterinary practitioners
Lack of Client Education
Do not understand health care needs of birds
Unaware of veterinary services/capabilities
Do not recognize importance of yearly exams
We must make clients aware of our services, demonstrate our sophistication in avian medicine and teach clients about proper health care for their pet birds

Beginning in Avian Medicine

Avian medicine has undergone an information explosion
One may be overwhelmed by the volume of information
Various resources are available

Basic References

Association of Avian Veterinarians (AAV)

-Members regularly receive journals and newsletters that include current research and topics related to avian medicine
-Yearly conference provides opportunity to hear the latest research findings, as well as basic to advanced topics and wet labs
-AAV membership meets the needs of the beginning and advanced avian practitioners
-Anyone considering seeing birds should become a member

Avian Medicine Textbooks

-Diseases of Cage and Birds - Roskopf and Woerpel
-Avian Medicine: Principles and Application - Ritchie, Harrison and Harrison
-Avian Medicine and Surgery - Altman, Clubb, Dorrestein, Quesenberry
-Manual of Avian Practice - Rupley
-Essentials of Avian Medicine: A Guide for Practitioners - Sakas

Avian Laboratory References

-Avian Hematology and Cytology - Campbell
-Laboratory Medicine: Avian and Exotic Pets - Fudge

Formularies

-Exotic Animal Formulary - AAHA Press
-Exotic Animal Formulary - Carpenter

Avian Medicine Periodicals

-Seminars in Avian and Exotic Pet Medicine-WB Saunders
-Veterinary Clinics of North America/Exotic Animal Practice

Lay Publications

-Parrots of the World - Forshaw and Cooper
Lavishly illustrated book containing pictures of every imaginable type of parrot
Displays range in nature and basic physical characteristics

A must have book if you will be seeing parrots

Bird Talk (and various other bird magazines)

You need to know what your clients are reading

Contains a great deal of useful information

General Avian Books

There are many books written for the general public which contain useful information for the veterinarian as well

Books that are especially helpful are books about parrot behavior

A great deal of your time will be spent on behavior issues in your avian practice

Web Sites

There are some good ones, but exercise caution

Managing and Marketing the Avian Practice

Avian practitioners feel mired down with the amount of time they spend exchanging information with clients and performing routine procedures

Vet techs and support personnel should be trained and utilized to take over these responsibilities

They can discuss the finer points of husbandry, biology and purchasing options with the owner

Nutritional counseling is a must

Staff should be trained to:

-Restrain birds properly

-Perform basic grooming, trimming of beaks, nails and wings in an expert manner

-Demonstrate administration of oral and injectable antibiotics to client after exam

-Set birds up in the hospital unit

-Provide heat, perches, medication, nutrition (via gavage)

-Take avian blood samples and radiographs

Printed handouts pertaining to bird care are helpful and should be provided to each client

-AAV provides client materials

-Write your own!

Selection of a Pet Bird

Clients will look to the veterinarian as an expert that can help them with the selection of the proper bird for their circumstances

There should be a familiarity with the characteristics/attributes of all the common species

Correctly identify birds clients have misidentified, understanding species specific medical conditions, counsel clients about behavioral issues

All too often birds are given away due to a poor relationship

Even worse birds die due to inadequate or improper care

Tremendous increase in the number of bird behaviorists and bird rescue organizations

Past experience or the lack of it plays a key role in the selection of the type of bird

Guidelines to Consider When Selecting a Bird

Time commitment

Expense

Housing restrictions (apartment/condo)

Noise potential for the bird

Space constraints

Dangers posed by other household pets

Precautions due to children (birds do bite!)

Allergic reactions (hypersensitivity pneumonitis)

Amount of work caring for bird (cleaning/feeding)

Talking ability (no guarantee bird WILL talk)

Longevity of bird (special arrangements in will)

Personality and attributes of bird (positives and negatives)

Age of bird to be purchased (mature vs. neonate, weaned vs. unweaned)

Purchasing the Pet Bird

Purchase from quality breeder pet store

If it is too good to be true it probably is!

Obtain a written guarantee

Prepare a list of questions

Special considerations with baby birds

Weaned? Hand feed at home?

Sale contingent upon examination by veterinarian

Quarantine bird for AT LEAST 30 days

Characteristics of Common Pet Birds

Household Hazards

Many common household furnishings can be very dangerous for pet birds

-Windows and mirrors

- Open doors and windows
- Open containers of water
- Ceiling fans
- Loud noises
- Other pets (dogs, cats, ferrets, other birds)

Toxicoses

- Agricultural and gardening chemicals
- Rodenticides
- Mothballs
- Denture cleansing solution
- Disinfectants for cage cleaning
- Salt (in large amounts)
- Cigarette butts
- Medications

Lead Poisoning

- Dangers of lead poisoning are well known
- Birds have tendency to chew on objects
- Sources include:

Lead paint, cuckoo clock weights, fishing sinkers, shotgun shot/bullets, solder, putty, linoleum, mirror backings, costume jewelry, zippers, unglazed ceramics, foreign made ceramics, wine bottle foil, leaded glass

Characteristic droppings - hemoglobinuria

Treatment

- Supportive care, such as fluids, gavage feedings, depend upon severity of condition.
- Calcium EDTA, DMSA have been used successfully as treatment.
- It combines (chelates) with the lead so that it is inactivated and not absorbed.
- Large amounts of lead in the gizzard may require surgical removal.

Houseplants

- Birds like to nibble at vegetation so houseplants can be a problem
- Documented cases of actual plant toxicoses in pet birds are rare
- Rapid transit time through the GI tract
- Birds tend to shred the vegetation rather than ingest it
- “Dumb cane” can be a problem
- If potentially toxic plants are in the household, clients should prevent access

Toxic Fumes

- Due to their small size and efficient respiratory tract birds are very sensitive to airborne toxins
- Aerosol sprays (propellant)
- Burning or overheated cooking oil/butter
- Polymer fumes in spray starch
- Fumes from self-cleaning oven
- Paint fumes
- Smoke from burning food
- Non-stick plastic sprays (to coat utensils)
- Cigarette smoke
- Carbon monoxide (car exhaust, water heater, furnace)
- Natural gas
- PTFE (Teflon, Silverstone, Supra, other non-stick surfaces)
- Any material that emits fumes
- If fumes are noted remove bird to area free from fumes and having good ventilation

The Avian Physical Exam

- Do not underestimate the importance of thorough history taking and a complete physical examination
- Too often practitioners are eager to perform batteries of diagnostic tests but do not closely observe and physically examine the bird
- Early signs of disease are subtle and birds try to hide illness
- Part of their natural defense mechanism
- By the time the bird owner notices that the bird is sick, they usually have advanced disease conditions
- Quite often makes successful treatment difficult
- A good history, careful observation of the bird while in the cage and a “hands on” physical examination enables the development of a more selective diagnostic plan

Receptionist's Role

- Groundwork for good diagnostics begins with the initial call to the hospital
- Ask client to transport bird in regular, uncleaned cage with 24 hours of droppings on cage paper
- If cage is too large to transport then place bird in carrier and just bring cage papers
- Client should bring medical records, including past and current medications as well as other pertinent information

History

Before examining the bird in detail, it is important to obtain as much information as possible from the owner

The AAV has a very good client information and history form that can be used

Take a careful and systematic approach

You will develop your own set of questions over time

How long has client owned the bird?

Where did they obtain it? Pet store? Breeder?

What did they notice to be wrong with bird?

When did the problem start? How long has it lasted?

Is there a history of previous illnesses? Was there treatment? Was it effective?

Are there any other birds at home? Have any been ill or died?

Has the bird been in contact with any other birds? Bird fanciers?

Has there been any changes in the bird's environment?

Has the client noticed any behavioral changes?

What type of food is the bird fed?

Where is the food stored?

What type of nutritional supplements are given, if any?

Has the type of food been recently changed? Different source?

Have the droppings changed in number, shape, color or appearance?

Where is the cage located?

Is the bird always watched? Is it allowed freedom outside the cage?

Although these questions can be asked by the veterinarian in the exam room, it is more efficient to have the clients fill out a history form while waiting in the reception area

The form can be quickly perused prior to meeting with the owner allowing focus on the particular problem or concerns

Examination of Bird in Cage

One of the most common mistakes is handling the bird too quickly

Due to the excitement of being in a new environment the bird is on alert and subtle signs of disease are lost

Allow the bird to calm down and then observe the bird in the cage from a distance

The bird in the veterinary office environment should be alert, attentive and bright-eyed

The client wonders if the bird is actually sick

When the bird calms down carefully watch for ruffling, wings drooping, changes in posture, breathing abnormalities, eyes closing in a sleepy fashion or any other changes from the norm

Examination of Cage & Contents

A careful examination of the cage and contents is essential for proper diagnosis

The vast majority of problems seen in avian practice are related to poor husbandry

Evaluation of housing and nutritional status are very important

A large portion of the time spent in the avian consultation will be spent educating clients about proper husbandry and disease recognition

Cage/Cage Contents**Food/Water Cups**

Evaluate the level of sanitation

A filthy food and water cup may be responsible for GI disturbances

Food and water cups should be cleaned daily to minimize bacterial contamination

Cups should be covered or placed in a location to be protected from fecal contamination

Cups should be of the proper size and construction for the variety of bird

Cage

Is the cage of adequate size for the variety of bird?

Too small of a cage will lead to damaged, dirty or tattered feathers

Constructed of material suitable for the variety of bird housed

Sturdy construction for large birds

Proper bar spacing for small birds

Check for sharp edges or projections that may pose a hazard

Is there extensive rust on the cage?

If the cage is home-made or repainted are the materials non-toxic?

Many older cages have been painted with lead-based paint (can get lead testing kit)

Solder contains lead

Galvanized metal that is not properly treated may cause zinc toxicosis

Perches

Perches should be made of an easily cleaned material

Variety of perch diameters is preferred

Non-rigid perches should be present as well

Sandpaper cover should be removed off perches

Only one “rough type” perch should be used

Red Mites

Clients are always worried that their “itchy” birds have mites-classically the red mite

If present they will be seen on the cage fittings, in cracks and crevices, and in slots on the end of the perches

The mites emerge at night to feed off the bird

An engorged mite will be red in color, mites on the perches may appear whitish or black

Cage Toys

Cage toys should be suitable for the variety of bird

Larger birds can easily dismantle toys designed for small birds

Glass mirrors are hazardous for large birds

Certain toys may contain lead weights (e.g. penguin toy), check for cracks

Check for sharp edges or hooks on toys

Bell clappers have frequently caused problems to both large and small birds

They chew on the clapper or hook which attaches it and can become impaled on hook.

Bells can be a problem for larger birds, as they try to pull bell off and get it lodged on their beak (frequently occurs with lovebirds)

Home-made toys must be evaluated for suitability and potential for toxicosis

Nutrition

Evaluate the diet and level of nutrition of the bird

What is the primary source of nutrition?

Seeds, pellets, home-made, mixture?

Are supplements given?

If fresh fruits or vegetables are given it should be emphasized that they should be washed to eliminate any herbicide/insecticide residue

The vast majority of birds suffer from malnutrition due to an unbalanced diet

Proper nutrition must be stressed to the client!

Hypovitaminosis A and hypocalcemia are two of the most common deficiencies seen

Vitamin A

Check for vitamin supplementation, are vitamin A rich foods supplied?

Vitamin A maintains the mucous membranes and epithelial surfaces

Vitamin A deficiencies can lead to secondary infections, development of mucus, plaques, abscessation, etc. in the mouth

A seed diet must be supplemented with vitamin A sources

Pelleted diets are complete and do not need supplementation

Vitamin A sources include:

Red/orange vegetables such as carrots, squash, papaya, red peppers, sweet potatoes

Dark green leafy vegetables such as broccoli leaves, spinach

Calcium

The high fat content in seed binds to calcium, lowering availability

Pelleted diets have adequate calcium and do not need to be supplemented

Hypocalcemia may manifest itself as weakness, seizures or pathologic fractures

Actively egg-laying birds need significant calcium supplementation

Calcium Sources

Proper supplements should have a balance of calcium, phosphorus and vitamin D3

Small birds-cuttlebones, mineral blocks, crushed oyster shell, mineral grit, osteoform

Large birds usually do not receive an adequate supply of minerals as most forms are easily destroyed (e.g. cuttlebone) or just not given

Supplements are available for the food and water, mineral blocks designed for larger birds can be used

Grit

Use of grit is controversial

Only should be used sparingly as it is not continually required for replenishment of the gizzard

Sick birds, especially with GI disturbances, tend to overeat grit

Often the owner believes the bird is eating when it is actually only eating grit

Evidence of Eating

One of the most important determinations that must be made is whether or not the bird is actually eating

Even though a bird may appear to be digging into the food bowl it may not be actually eating

Is seed being hulled or scooped out of the bowl onto the floor?

Check for seed hulls in the bowl

Sometimes a bird may hull seeds and not eat them

Hulled uneaten seeds may be seen on the floor of the cage

It is common for newly weaned parrots who have just been taken off formula to hull seeds and not ingest them

Owner believes that the bird is eating when actually it is not

Many times the young birds are “playing” with the seed and not actually eating

The bulk, form and consistency of droppings should be evaluated

Regurgitation vs. Vomiting

If there are hulled seeds on the bottom of the cage it must be determined if the bird is regurgitating or vomiting

Regurgitation is a normal part of courtship behavior

Regurgitated seeds may be seen on or near mirrors or toys

Very common with budgies and lovebirds

There can be quite large piles of hulled seeds with some birds

There will be no seeds adhered to the head of the bird that is regurgitating

Vomiting is abnormal and a sign of illness

Vomited seeds are seen as sticky clusters throughout the cage, often adhering to the cage bars

Further evidence is that the head feathers of the bird may be pasted with vomitus and sometimes mixed with seed

Evaluation of the Droppings

Droppings are one of the most important indicators of avian health

Ideally cage papers from an uncleaned cage, collected over a 24 hour period, should be brought in by the client so that the number and character of the droppings can be evaluated

The normal dropping consists of three basic parts:

-A formed fecal portion (usually green in seed eating birds)

-An off-white urate crystal portion

-A liquid urine portion

Seed imparts no color to the feces so the green bile color predominates

The fecal portion of the dropping changes color with the type of food consumed

Pelleted diets produce brown droppings

Strawberries produce red droppings, for example

Consistency of dropping varies with type of diet and bird variety

Succulent foods (fruit and vegetables) will cause more watery droppings

Pelleted diets may lead to increased water intake, hence more watery droppings in addition to the brownish color

Droppings that have suddenly changed consistency and color could indicate disease

Check the amount of fecal portion

If not eating there may be scant feces or a dropping that is predominantly urine

Reduction in feces also may indicate interference with the normal passage of feces, such as vomiting

Birds do "urinate," passing only liquid urine and urate crystals with no feces occasionally

If these type of droppings predominate, a problem exists

Watery droppings: are they due to polyuria or a GI disturbance?

A somewhat formed fecal portion and excessive urine may indicate renal disease or a metabolic problem such as diabetes

Dietary changes, excitement and anxiety can also lead to more watery droppings

A more liquid consistency to the feces suggests an intestinal tract disturbance

Excessive mucus in the feces may show as a grayish coating

Pancreatic insufficiency produces characteristic "popcorn" droppings that are bulky and off-white to gray in color

Large or bulky droppings can indicate a malabsorptive condition or interference with the passage of feces (tumor or blockage of the cloaca)

Large dropping may not always be abnormal

Some birds hold their droppings overnight and have a large, watery "morning" dropping

Fewer and larger droppings are seen in females going through a reproductive cycle

The enlarged oviduct presses upon the cloaca interfering with the passage of feces with resultant build up

Undigested seed or grit in the droppings are abnormal and could indicate a gizzard malfunction or motility problems

Undigested seed material in the droppings is a characteristic symptom of Proventricular Dilatation Disease (PDD)

In finches, gastrointestinal hypermotility, bowel inflammation, lead poisoning and lack of grit may lead to undigested seed in droppings

Blood in the feces is usually from the cloaca or oviduct

Severe cloacal inflammation, ulceration, or tumors may be responsible

Blood may be seen when there is difficulty in the passage of eggs

Evaluation of the Droppings

Blood in the urine/urates may be indicative of a kidney disturbance

Hemoglobinuria is classically seen with heavy metal toxicosis (lead or zinc)

Reddish urine may be seen with ingestion of red colored foods

Cloacal Papillomas

Seen in New World birds, commonly macaws, Amazons parrots, hawk-headed parrots

It is viral in origin

Produces straining while defecating and blood in the droppings

May notice the presence of "granulation" tissue (appears like a strawberry) around the vent and in the cloaca

Yellow or neon green urates (biliverdinuria) may indicate hepatitis

Neon green urates may be indicative of Chlamydiosis

Dark green urine and urates may indicate liver failure

Green urine may be due to dietary intake or bile staining of urine

If discolored urine or urates are seen on newspaper, check the other side to be certain that it is not the colored ink "bleeding" through

Examination of Bird in Cage

One of the most common mistakes made by the practitioner during the examination is handling the bird too quickly

Due to excitement the subtle signs of disease are lost

View the bird from a distance until it calms down

Glance over at the bird while you are taking the history so you can observe it and evaluate clinical signs

The bird in a new environment will be alert, attentive and bright-eyed

Often the client is surprised that the bird that seemed so sick now appears to be normal

Usually this is when the bird is in the early stages of disease and is still able to mask its illness effectively

The Healthy Bird

Should have an erect posture on the perch

Weight evenly distributed on both feet

Wing tips crossed over the back

Tail held at same angle as back (straight line)

Feathers sleek and held close to the body

The Sick Bird

Poor posture on perch

Perching unsteadily, wobbly

One or both wings drooped

A single drooped wing may indicate injury to muscle/bone, nerve paralysis, neoplasm

Both wings drooped indicate generalized weakness

Sits with ruffled feathers

Head tucked behind wing

Appears lethargic/drops off to sleep in exam room

Ruffled birds are chilling and need heat

Birds huddling on the bottom of the cage and extremely ruffled are critically ill

These birds should be handled with extreme caution as any undue stress could cause death

Feathers

Feathers should be clean and well-preened

Dirty, tattered feathers may indicate a lack of preening due to illness, mechanical trauma due to poor housing or emotional upset

Staining of the feathers above the nares indicates nasal discharge (rhinitis)

Pasting of the head feathers is seen with vomiting

Droppings stuck to the vent may indicate a GI disturbance or an abdominal mass

Feet/Legs

Restlessness/shifting of weight or favoring of leg may indicate pain or dysfunction (from disease or injury)

Pressure sores from improper perches may lead to ulcers/bumblefoot

Nesting material may be wrapped around toes leading to necrosis (especially seen with canaries and finches)

Leg Bands

Leg bands can cause severe problems in some birds

Check for free movement of band on leg

Check for signs of irritation on leg due to band

Canary leg bands have little clearance with great potential for damage to foot/leg

If the leg band is not essential for identification, it should be removed (record information)

Unusual crustiness or flakiness on legs may indicate a nutritional deficiency (vitamin A- causing hyperkeratosis) or parasitic condition (*Cnemidoptes*-scaly leg mites)

In budgies, unilateral paralysis or paresis may be due to renal enlargement from renal adenocarcinoma)

Respiration

Evaluate breathing and respiratory rate

When a bird breathes there should be little effort and no obvious sounds

Tail bobbing is a sign of impaired respiration, due to respiratory disease or abdominal enlargement

A dyspneic bird (mouth open and gasping) is in critical condition and should be handled with extreme caution, if at all

A dyspneic bird may not always have a respiratory condition

Possibility is that there may be a space-occupying lesion in the abdomen that prevents full expansion of the posterior air sacs

A bird in extreme respiratory distress may be cyanotic, indicated by bluish color of the feet and/or legs

Do not be fooled by the normal bluish color of the legs of some birds

Normal bluish coloration of the legs/feet of a sexually mature male budgie

Breathing hard at rest or heavy breathing after a short period of exercise or exertion can indicate a problem

Any respiratory noises heard while breathing are abnormal

Wheezing, clicking, frequent sneezing

Nasal discharge may appear as fluid in the nostrils or staining of the feathers above the nares

Goiter/Thyroid Dysplasia

Incessant high pitched squeaking in budgies may be thyroid dysplasia
 Respiratory wheeze on inspiration and expiration
 Due to thyroid enlargement caused by iodine deficiency
 Enlarged thyroid gland impinges on trachea and syrinx (voice box) causing dyspnea
 Condition responds nicely to iodine supplementation

Neurological Conditions

Torticollis, opisthotonos, ataxia, arching, seizures can be seen in pet birds

May be due to a variety of causes:

Vitamin deficiency

Hypocalcemia (common cause)

Head trauma

Cerebral vascular disturbances

Tumors

Toxicoses (lead, zinc)

Infection (paramyxovirus in pigeons)

Exotic Newcastle Disease

-If you suspect a bird has been smuggled and it is showing neurologic signs, Exotic Newcastle Disease must be considered

-Contact the USDA immediately

-Keep the bird in extreme isolation, away from other birds

-A variant is paramyxovirus, seen in pigeons, which also causes neurological signs

Capture and Restraint of Birds

Birds must be handled for proper evaluation of health status

Clients judge your skills as an avian veterinarian on your method of capture restraint and examination

The inability to handle a bird properly or causing physical trauma during the exam could lead to client dissatisfaction

Recognize When NOT to Handle a Sick Bird

A bird in severe respiratory distress should not be handled

Warn the owner that the bird may not be able to withstand capture and restraint so minimal handling is necessary

However, if handled improperly, even a healthy bird could be so stressed that it could die during restraint

Free Movement of the Sternum is Essential for Respiration

Birds possess no diaphragm and the lungs do not expand and contract

They breathe through expansion/contraction of air sacs facilitated by intercostal muscles

Undue pressure on the thorax/sternum would restrict breathing

When holding, cup hand around bird, never close fingers around chest

Must allow for free movement of sternum

Restraint

During handling monitor bird for signs of stress, discomfort or breathing difficulty

Due to struggling a bird could contort or twist in such a way as to constrict air passages

If in a towel, efforts to escape could lead to hyperthermia

Be alert if bird breathes heavily during handling

If in discomfort, release bird until breathing returns to normal

Amount of restraint varies with each bird

Hand raised baby birds that are being hand fed require minimal restraint

If recently hand fed do not apply pressure to crop, due to risk of aspiration of food

Always evaluate crop fullness before handling

If crop is full put a small amount of pressure on right side of neck (location of esophagus) to prevent backflow

Wild-caught or untamed parrots may require one or two assistants for handling

Overzealous restraint could lead to fracture or dislocations

“White-faced” birds such as macaws or African greys may develop bruises on sides of face during handling

Avoid applying pressure to those areas

The bruises are harmless and will resolve but the clients will believe that it was due to mishandling

Preparation for Capture

Do not allow the client to handle or restrain bird during exam as you are liable if injury occurs

Caution them not to kiss or pet the bird during exam

Make sure the exam room doors are closed

Remove any perches or toys in cage that may interfere with capture

Darkening room may facilitate capture

Evaluate opening for removal of bird (and towel)

If too small may require removal of top or bottom of carrier

Towels vs. Gloves**Towels**

Hands are hidden behind towel and protected
 Can drape towel over bird so wings are protected
 Bird does not see hands so does not become “hand shy”
 One person can conduct exam in all but the large parrots

Gloves

Grabbing a bird with gloves appears rough
 Bird may associate gloved hand with bare hand leading to “hand shyness”
 Gloves are difficult to clean if several birds are seen daily
 Two people are required to handle bird
 Gloves will not protect wings
 Gloves are essential part of falconry but not for restraint
 Used to protect falconers hand as it functions as a perch

Capture and Restraint of Small Birds

Budgies, finches, canaries are captured bare-handed (or with a paper towel if preferred)
 Reach for the head and cup your hand around their body
 No pressure on chest, free movement of sternum is essential

Capture and Restraint of Large Birds

Lovebirds, conures and larger require a towel
 Amazons, cockatoos, etc. require the help of an assistant

Tame Bird

Can drape towel over them while they are on table or owner
 Reach for head and wrap in towel
 Rest bird on inside of forearm or on table
 Hold head using one of the four techniques

Capture and Restraint of Large Birds

Wild or untamed large bird
 Be patient
 Grab head from behind, when facing away from you or climbing
 Bird lying on back could be scooped up using both hands protected by towel
 Your technique will improve over time.....out of necessity

Methods of Holding Bird's Head

Crook index finger behind back of head, gently place thumb underneath lower mandible
 (My preferred method)
 Gently circle neck with thumb and index finger in the manner of a tubular restraint collar
 Thumb and index finger on either side of temporomandibular joint
 Extend head between middle and index finger
 “Helmet grip”

Physical Examination

Many different methods of performing the examination
 I prefer to start with the head and work downward

Head

Evaluate feathers on head
 Check for normal development/good quality feathers
 Poor development or bare patches could indicate metabolic or systemic disease
 Traumatic feather loss
 Plucked by other birds-black stumps present
 Rubbing of head on cage/cage objects
 Abnormal crest feathers in cockatoos
 Sign of psittacine beak and feather disease syndrome

Cere

Normally dry and slightly flaky
 No unusual swellings should be noted
 Cere color is used to determine sex in budgies
 Varies with color mutations and age
 Brown hypertrophy of cere
 May occlude nares
 Due to hormonal stimulation in females
 Estrogen-secreting gonadal tumors in males

Nares

Should be similar in size, shape and symmetry in cere
 Nostrils are normally open with no discharge
 Staining of feathers above nostrils due to nasal discharge and rhinitis

May see actual discharge

Discharges should be evaluated microscopically

Enlarged nares due to chronic rhinitis/injury

Chronic nasal discharge can lead to grooves in beak

Beak

Smooth, clean with some degree of flakiness

Fatty liver disease in budgies causes beak changes

Overgrown, deteriorating beak with hemorrhages

These birds should be handled with extreme caution as their systems are extremely compromised

Crustiness on beak may be due to external parasites (mites in budgies)

Malocclusion (usually twisting of upper beak)

Hereditiy, trauma, malnutrition, systemic disease

Control through frequent beak trimming

Mouth

Take care when opening mouths of cockatoos and macaws

Margins of beak thin, may clamp down on device and damage beak

Epithelium is smooth, dry and odor free

Greyish cast and pungent odor may be found in mouth with bacterial infections

Mouth

Off-white lesions may be seen in mouth

Squamous cell metaplasia due to vitamin A deficiency

Bacterial infection

Candidiasis

Common in young hand fed birds

Trichomoniasis

Avian Pox

Choanal Slit

Margins sharp, clean, bordered by numerous pointed papillae

Lack of papillae, blunted papillae, thickened margins and/or white plaques indicate a vitamin A deficiency

Ample opportunity for secondary bacterial infections

Choanal viral papillomas

Seen in Amazons, macaws, hawk-headed parrots

Appears as a vegetative growth in the choanal slit

May be quite extensive and wide spread in the oral cavity

May be adjacent to the glottis interfering with breathing

Eyes

May see discharges, conjunctivitis, matting of feathers around eyes, periophthalmic swelling

Mycoplasma causes these changes in budgies and cockatiels

Chlamydiosis may be manifested by conjunctivitis in cockatiels

Avian pox may cause lid deformations and corneal ulcerations

Was seen in wild-caught imported blue-fronted Amazons

Cataracts hereditary in canaries

Infectious diseases are the most commonly reported eye problems in pet birds

Traumatic eye lesions are most common in raptors

Eyelid and nictitating membrane neoplasms are relatively uncommon in birds, but have been described

Menace response is equivocal, at best, in birds and its absence is not diagnostic

Pupil cannot be dilated with atropine

Ear

Ear infections are uncommon, but do occur

In my experience otitis externa is most often seen in lovebirds

May occasionally see discharge or swellings, matted feathers around ear in otitis cases

Self mutilation of the ear may occur due to pruritis

Some neonates may have a membrane covering the ear

Neck/Trachea

Palpate for any unusual swellings or abnormalities, such as abscesses or neoplasms

Tracheal transillumination for air sac mites

Canaries and finches

Crop

Palpate contents

Empty, fluid, food, gas, foreign body, mass?

Take care if fluid is present to prevent backflow

Crop wall is relatively thin

Crop wall can be thickened in candidiasis
Especially with young birds (cockatiels)
Crop burn/fistulas in hand fed birds

Chest

Pectoral muscles and keelbone should be evaluated
Sick birds lose muscle mass/weight rapidly
One of the initial signs of disease
Must handle birds as feather ruffling will disguise a thin bird
Palpation of pectoral muscles should not serve as only means of evaluating weight
Every bird should be weighed on gram scale
Weight recorded for future comparisons

Abdomen

Abdomen is quite small, little is detectable on palpation, felt as a slight indentation
Can detect lipomas/lipogranulomas
May detect gizzard-firm mass on left side
Especially prominent when displaced
Enlarged liver may be palpable
Right lobe of enlarged liver protrudes beyond margin of sternum
Neoplasms, eggs, enlarged oviduct palpable

Grossly Enlarged Abdomen

Reproductive tract disorders (esp. cockatiels)
Neoplasms
Obesity
Ascites
Secondary to heart disease, neoplasms, reproductive tract disorders
Birds with grossly enlarged abdomens and compromised breathing should be handled with extreme caution
Stabilize bird before engaging in involved diagnostic procedures
Enlarged abdomens must be palpated carefully
Rough palpation could rupture abdominal air sacs or a cystic mass, leading to sudden death

Vent

Should be clean and unsoiled
Staining is usually due to a GI disturbance
Diarrhea or abdominal mass
Cloacal papillomas, cloacal tumors, egg binding, cloacal prolapse can cause staining
In Amazons and macaws the vent should be everted to check for presence of papillomas
An enlarged, dilated vent in female indicates hormonal stimulation/reproductive cycle

Feet/Legs

Scaly skin similar to reptiles, skin smooth and shining
Check bottom for pressure sores/ulcerations
Due to improper perching/malnutrition
Hyperkeratosis
Vitamin A deficiency
Gout tophi (esp. budgies and cockatiels)
Check legs/joints for structural abnormalities

Leg Bands

Leg bands should be freely moveable
No signs of irritation, redness or thickening on the leg
Chronic irritation can lead to swelling
May interfere with normal blood supply to foot
Most often seen in canaries due to small clearance between leg and band
Clients see bird limping or foot is turning deep red, or in severe cases black
Leg bands that are causing irritation or are not freely moveable should be removed
In fact, if band is not needed for ID remove it
Whenever a band is removed record information in client record
Small bands and most closed bands can be removed with sharp wire cutters
Stainless steel quarantine open (C) bands should be twisted open
Stainless steel bands are very difficult to remove
Special heavy duty band cutters (preferred), bolt cutters, cutting attachment on small drill
Risk is involved with band removal
Only remove bands if you are experienced
Anesthesia can facilitate the procedure
Caution clients not to try to remove band themselves

May fracture leg

Hemorrhage may occur

Underlying bone may be exposed with tight band

If band is tight or necrosis has developed in foot explain risks and possible outcomes before band is removed

Antibiotic therapy and bandaging will be needed after removing band that has caused trauma to leg

Wings

Check range of motion

Check for fractures, dislocations or old healed fractures and dislocations

Check wing web for India ink tattoo

Was used for identifying surgically sexed birds

Males-right wing web, Females-left wing web

Evaluate feathering

Check for abnormal feathers, cysts, stress lines, parasites

Skin

Skin should be paper thin and slightly flaky

Excessive flakiness may indicate a nutritional disorder (vitamin A deficiency)

Check for parasites, dermatitis, self mutilation

Dehydration can be detected by skin fold elasticity, as in other animals

The skin of a dehydrated bird will appear dark and have little elasticity

Appears almost tight on the face and trunk

Auscultation

Best done with a pediatric stethoscope

Heart rate is difficult to evaluate due to rapid beat

Can detect heart murmurs in large birds

Can also detect respiratory abnormalities

Weight

Once a bird become an adult weight should remain relatively constant

Be certain to evaluate the fullness of the crop, excessive food or hand feeding formula in the crop can falsely increase the weight

Weight comparisons from yearly examinations should be evaluated as they can provide valuable information as to the state of health

Sex Determination

Avian reproductive organs are internal and few species have sexually dimorphic coloration

Sex determination is difficult and mistakes are frequently made

Surgical sexing vs. DNA blood sexing

With a few common species of bird a reasonable guess can be made

Eclectus parrots are sexually dimorphic

Male is green

Female is red

Canaries

Sex can sometimes be visually determined

Males – the vent protrudes somewhat

Females – the vent is more flush with the surrounding skin

Difference is subtle but can be detected with experience

Male canaries sing and females do not

Budgies

Male cere is deep blue

Female cere will become brown and crusty when in reproductive condition (brown hypertrophy)

Male with testicular tumor may develop brown hypertrophy (feminizing syndrome)

Immature female ceres may vary from pale blue to brown

Color mutations are more difficult, males have color all around nostril, females have pale rim around nostril

Males tend to be more vocal, more likely to talk

Cockatiels

All immature cockatiels have female coloration

Dull coloration on head, bars on underside of wing feathers, speckled tail feathers

When males mature and undergo first molt (8 months or so), head coloration brightens, underside of wing feathers lose bars, tail is solid grey

Female coloration remains the same at maturity

Males whistle and can talk, females do not

Some breeders sex birds by activity when young

Mutations (lutinos, pearls) are difficult to sex

Cockatoos

Eye color can be, but not always serve as an indicator of sex

Females that become sexually mature develop a red coloration to their irises, which is very distinct from the brown color of the male

Not all females develop this color change

Thus – red irises = female, brown irises = males, immature females, mature females that have not undergone the color change (and will not)

African grey parrots

This one is a bit of a stretch

Males

Broader beak

No red tips on vent feathers

Females

Narrower beak

Red tips on vent feathers

Spectacled Amazon

Males

Red color on coverlets extend all the way to the end of the wing

Females

Green coverlets at end of wing (2-3), remainder red

Sex Determination

Numerous other questionable techniques

Pelvic sexing

Females wide, males narrow

Head shape

Eye shape

Beak width

Pendulum

Age Determination

Owners of hand raised birds will know exact hatch dates

Birds that have been domestically bred will have a closed band with the year of hatching

Rotated 90° and two number designation “98”

USDA quarantine leg bands have no date

Can make a relative guess is young or old, but difficult to provide an accurate age for mature birds

Young birds have a dark iris, which gradually lightens as they mature

When adults the iris is typically light in color

Budgies – distinguishing feature are the black lines on top of the head that extend from the cere (parallel to it) backwards

Young birds – lines extend from the cere back

Maturing bird – feathers develop that cover the lines so they begin to disappear until gone

When bird is mature it is virtually impossible to determine age

Some birds become more color intense as they age but an age still cannot be determined, rather a general idea

Yellow napes – nape develops as they age

Double yellow head – head becomes more yellow with age

Sally – 128 years old

Avian Diagnostics

Physical exams are much less revealing in birds than other animals so clinical pathology plays an important role in health evaluation

A complete avian physical examination should minimally include a CBC, fecal examination and pharyngeal Gram stain

Other diagnostics that could be included are a comprehensive blood chemistry, radiographs and fecal/oral culture/sensitivity

Newly purchased birds should be tested for chlamydiosis, psittacine beak and feather disease and polyomavirus

Diagnostic panels are available

Blood Collection

Multiple sites are available

Seriously ill birds may be unable to undergo stress of handling for blood collection

Birds should be in stable condition before undergoing diagnostic testing

Blood collection is required for hematology, chemistries, immunologic studies, virology, Chlamydia studies and DNA sexing

Blood volume-6-13% of total body weight

Sample volumes of 0.5-1% body weight can be safely taken (10% of total body volume)

This volume is more than adequate for testing

Volume depends upon type of bird and testing desired

Small samples are collected in microhematocrit tubes, heparinized

Larger samples in microtainer serum separators

Blood Volumes That Can Be Withdrawn Safely

Budgie (35g)	0.35ml
Cockatiel (95g)	0.95ml
African grey (375g)	3.0ml
Macaw (1,000g)	5.0ml

Toenail Clip

Fast, easy, readily accessible, minimal restraint needed, most birds can be sampled by one person

Preferred method if only a small amount of blood is needed or sampling very small bird

Problems include:

Can be painful to bird

May be contamination of sample with uric acid residue from dropping material on toes

Hemolysis caused by “milking” toe

Clip conservatively, just enough to get adequate flow

Small birds-human nail clippers, small suture scissors, small wire clippers

Large birds-sharp dog nail clipper

Squeezing the toe may cause cell lysis

Can collect samples directly into microhematocrit or microtainer tubes

Hemostasis

Ferric subsulfate (Monsel’s powder), QuickStop

Silver nitrate sticks

Flour, cornstarch, baking soda, bar soap

Ulnar Vein

Ventral aspect of wing, easily located over the elbow

Lack of subQ tissue predisposes to hematoma formation

Vein easily sampled but usually reserved for IV fluids/antibiotics in critically ill birds

Use insulin syringe (30 or 50 unit) with ultrafine (28 gauge) or 1cc syringe with 25 gauge needle for venipuncture and collection

Medial Metatarsal Vein

Superficial along the metatarsus

Appears to fit in a groove in the bone

Easily visualized and used in larger birds, especially raptors

Can be used in small birds-lovebirds & cockatiels

Scaliness and thickness prevents hematoma formation

Penetrate just below hock and pass distal to proximal carefully, to avoid penetrating joint

Skin Prick

Some practitioners prefer this in small birds

Puncture skin over medial metatarsal with 25 gauge needle

Apply pressure for hemostasis

Can be very stressful to the bird

This method is not recommended

Jugular Vein

The method is recommended for collecting blood samples.

Large samples are obtained easily and quickly

Can provide large volume of blood with low incidence of hematoma formation

Jugular varies in size and location

Right jugular is usually larger than the left

Jugular is visualized in featherless area alongside cervical vertebrae.

Must have proper restraint because improper technique could lead to fatal hemorrhage

Bird is held in left lateral recumbency

Jugular vein is held off and 28 gauge needle is carefully inserted to avoid tearing the delicate vessel

After collection apply pressure for a few moments and be certain clot has formed before bird is released from restraint

Avian Screening CBC

Should be able to easily perform your own screening CBCs in-house

The technique described is simple and adds a facet to your practice that assists you both diagnostically and financially

Hematocrit

Blood is drawn into two small diameter microhematocrit tubes

Volume can be safely drawn from finches and larger

Normal avian PCV is 40-60%

Cockatiel PCV tends to be higher 45-60%

Cockatoo PCV tends to be lower 35-55%

Plasma Protein

Plasma color should be clear

Lipemia

Hemolysis

Icterus

Cockatiels typically have a faint yellow color

Yellow plasma must be carefully evaluated as birds that consume a diet high in carotene may give the appearance of icterus

Normal range 3.5-5.5 mg%

Smaller birds tend to be on the lower end of range

Large numbers of birds are hypoproteinemic due to inadequate diet

Birds with protein levels 2.5 mg% or lower and not on supplemental feedings may not survive

Lipemia will falsely elevate values

Blood Smear Preparation

Collect blood in microhematocrit capillary tubes, heparinized

Collect a volume of approximately 20% in tube, as skill improves you will need less

Prefer the cover slip method for smear prep

More uniform distribution of cells

Less likelihood of cell damage or rupture

Rapid Screening CBC

View on high dry power

View in monolayer region

Count number of WBCs per field

Check 10 fields-take average

Multiply number by 2,000 to determine estimate WBC/microliter

Count of 10-12,000 is normal but can elevate to 20,000 due to excitement/stress

Greater than 20,000 is indication of disease Normal leukocyte distribution is 50% heterophils and 50% lymphocytes

Ratio changes when bird is under stress

Some species respond to stress with lymphocytosis while others do so with heterophilia

WBC Count with Unopette Method

Use Unopette (Becton-Dickinson) and hemocytometer

Number of stained cells (granulocytes) in four corner squares are counted

Average calculated from two sides of hemocytometer

Average multiplied by 80 to determine number of granulocytes/microliter (indicates WBC count)

Differential is then performed

Automated WBC Counts in Birds

At this time there is no automated system that has proven effective in determining avian WBC counts

The nucleated RBCs interfere with most automated methods

If uncomfortable with performing your own hematology, commercial labs do an excellent job with avian samples

Fecal Examination

Another component of the avian physical examination is the microscopic evaluation of the droppings

In our laboratory we perform wet mounts and Gram stains of the droppings

Fecal Wet Mounts

A small amount of fresh dropping is placed on a slide and mixed with one or two drops of saline

A cover slip is added and the slide initially examined under low, then high power

Normal elements include background bacteria, non-budding yeast (*Candida*), undigested food and urate crystals (often mistaken for ova)

Bacteria

The normal avian dropping should not contain an abundance of bacteria

Normal flora is Gram positive and generally cocci

If there is an abundance of bacilli, Gram staining will indicate if these are Gram negative and potentially pathogenic

Motile bacteria are almost always pathogenic

Yeast (*Candida*)

Candida may be normal flora if there is a small non-budding population

Budding yeast and mycelia are indicative of invasive/infective forms

Birds fed bread products will occasionally have non-pathogenic yeast in the droppings

Megabacteriosis (Avian Gastric Yeast)

Originally thought to be a large Gram positive bacilli now found to be yeast organism

Normal inhabitant of proventriculus, can overgrow leading to vomiting and wasting condition

Seen commonly in budgies, occasionally cockatiels

Appear like gigantic bacilli

Staining characteristics of yeast

Parasites

Can be detected on wet mounts

Protozoans can be identified in FRESH fecals

Giardia, *Hexamita* and *Trichomonas* can all be seen on wet mounts

Samples can be preserved in 5% formalin for staining and dark-field phase-contrast microscopy

Occasionally helminth eggs can be found

Typically birds kept in outdoor aviaries, wild birds or raptors

Gram Staining

Normal gut flora of birds is Gram positive

Most commonly isolated pathogens from birds are Gram negative bacteria

Most commonly *E. coli*

The presence of a few Gram negative bacteria does not always indicate disease as a few are normal in psittacine droppings

Some sources consider 10% or less normal

Evaluate the bird and the clinical signs

Gram staining is an important part of the diagnostic process

It assists in the determination of the character of the bacterial population

But it is only a screening tool

Studies have failed to correlate presence or absence of Gram negative bacteria with culture results

Final confirmation can be made through culture and sensitivity

Choanal/Mouth Smears

Same principles apply as described for fecal examinations

Too often the mouth smear, a valuable diagnostic tool, is overlooked

Collect sample with moistened swab

Choana receives flora from the upper respiratory tract and oral cavity

Provides good indication of flora in those areas

Bacterial populations, *Candida* and *Trichomonas* can be screened with a wet mount and further refined with a Gram stain

Trichomonas is best seen on a FRESH wet mount (can be intracellular)

Due to the prevalence of vitamin A deficiencies in pet birds, pharyngitis is quite common

They may present with excessive mucus in the mouth, abscessation, congested sounding breathing and poor eating

Nasal Flushes

Clean external nares, place tip of sterile saline filled syringe against naris and flush

Bird is held in sternal recumbency, tail tilted slightly up

Do not force solution in naris, allow it to flow easily through choana or other naris

Collect sample with sterile swab or syringe

Sampling Other Sites

Impression smears or needle aspirates should be taken at any site that exhibits abnormality

Stain samples to identify cellular response and Gram stain to determine microbial flora

Choana, crop and cloaca can be easily sampled with moistened swabs

Tracheal samples are taken under anesthesia

Surgical techniques (endoscopy) for internal organs

Culture/Sensitivity

Valuable for confirming diagnoses of bacterial diseases

With seriously ill birds you do not want to guess upon your therapeutic regimen

In house microbiology might produce quicker response, however, commercial laboratories do quite well with avian samples

Some pathogens fail to grow on conventional media

Chlamydia

Mycobacteria

Megabacteria

Anaerobes

Some pathogens are present in low numbers or are shed intermittently

Salmonella

Blood Chemistry

Serum is preferred over whole blood or plasma

Some labs prefer plasma

Collection and storage of blood is very important as mishandling, such as hemolysis, could lead to inaccuracies

Laboratory Equipment for Serology

Currently available chemistry systems are extremely useful for performing chemistries on serum and plasma

Vet Test, Abaxis

Initial cost may seem high but system can be used in your small animal practice and used to run chemistries on other exotic animals

Many commercial labs offer excellent avian profiles and diagnostic testing, including hematology and serology

Serum Protein

Normal range from 3.0-5.5

Small birds tend to be on lower end of range

Low protein

Malnutrition, malabsorption, chronic disease, renal disease, liver disease, parasitism, stress

Elevated protein

Dehydration, shock, infection

Hemolysis, lipemia

Calcium

Normal range 8.0-13.0 mg%

Low calcium levels are frequent causes of seizures

Hypocalcemia

Poor calcium supplementation, renal disease, other metabolic conditions

Hypercalcemia

Ovulating birds (values approaching 20 mg%)

Vitamin D3 oversupplementation

Renal mineralization

Neoplasia

Glucose

Normal range 200-500 mg%

Hypoglycemia

Malnutrition, liver disease, fasting, systemic disease

Hyperglycemia

Breeding, stress, egg yolk peritonitis, pancreatitis

Diabetes mellitus (common in cockatiels, budgies)

Values usually over 700 mg%, sometimes 1,000 mg% +

Repeated glucose testing to eliminate possibility of transient cause of hyperglycemia

Cholesterol

Normal range approx. 100-300 mg%

Low cholesterol

Liver, kidney disease

Elevated cholesterol

High-fat diets, obesity, hypothyroidism

Uric Acid

Primary nitrogenous waste product of kidney

Level in serum excellent indicator of renal function

Normal range generally 2.0-10.0 mg%

Up to 15.0 mg% in some species

Reduced uric acid levels

End-stage liver disease

Elevated uric acid levels

Over 15 mg% most often indicates renal disease

Even with advanced disease levels may be high normal

Starvation, dehydration, tissue trauma, aminoglycoside therapy

Aspartate Aminotransferase (AST)

One of the most reliable indicators of liver disease in caged birds (formerly termed SGOT)

Serum values greater than 350 IU/L abnormal

Indicative of liver disease

Liver, heart, muscle damage may also result in elevated values

Not beneficial in diagnosis of chronic or end-stage liver disease

Values low or will decrease due to hepatocyte loss

Bilirubin

Not important test for liver disease in birds as primary bile pigment is biliverdin

Elevations of bilirubin may be seen in severe liver disease

Caution: often yellow plasma in birds may be due to elevated carotene levels

Evaluate diet for presence of carotene rich foods

Lactate Dehydrogenase (LDH)

Normal range 70-400 IU/L

Elevated values

Most common in liver disease

Levels rise and fall more rapidly than AST

May indicate chronicity of condition

May occur with heart or muscle damage

If values are increased and CPK is normal then liver disease is probably indicated

Decreased values

End-stage liver disease

Bile Acids

Found to be the most sensitive indicator of hepatobiliary disease in birds

Concentration indicates liver clearing capacity

Normal range 6.0-144 $\mu\text{mol/L}$

Racing pigeons and most psittacines

Greater than 70 $\mu\text{mol/L}$ fasted and 100 $\mu\text{mol/L}$ postprandially should be considered elevated and indicative of liver disease

Amazons greater than 145 $\mu\text{mol/L}$ elevated

Decreased values in liver cirrhosis

Creatinine Phosphokinase (CPK)

Useful in distinguishing between muscle and liver disease in birds

CPK found primarily in cardiac & skeletal muscle

Normal range 100-300 IU/L

Elevated levels

Occur with damage to skeletal muscle or myocardial disease

Injections, trauma, feather picking

Can be seen with advanced PDD

Amylase

Normal range 100-600 IU/L

Elevated levels

Acute pancreatitis

Can be as high as three times normal

Some cases of enteritis

Even in absence of pancreatic lesions

PDD

Not a consistent finding

Lipase

Levels are poorly established in birds

May see elevations in acute pancreatitis

Electrophoresis

Received much attention recently as a valuable diagnostic tool in avian medicine

Implemented as part of *Aspergillus* panel at University of Miami

Specialized Laboratory Services

Specialized tests are available that can be used for screening new bird purchases or detecting particular diseases

Chlamydiosis testing, virology studies (PBFDS, polyomavirus, PDD), *Aspergillus* titers, DNA blood sexing, and others

Discuss the merits of these tests with the client

Have some sort of documentation that the testing was discussed and if the client declines a test, make a notation in the record

Radiology

Radiographic contrast, due to the extensive air sac system is good

The grit-filled ventriculus is a useful landmark

Normal location is left of mid-line at the level of the acetabulum

Liver enlargements will push ventriculus caudally

Renal, ovarian and abdominal masses tend to push it cranially

Abdominal enlargements will also push it ventrally aiding in determination of origin of mass

Juvenile psittacines have a comparatively large GI tract

Do not mistake this for abdominal dilatation

Consider the condition of the bird to be certain that it can tolerate the stress of the procedure

Proper restraint is essential

To aid restraint some practitioners utilize anesthesia for radiographic procedures

Plexiglas positioning boards also facilitate process

Some practitioners tape small birds directly onto the cassette

Recommended film screen combination is a high-detail rare earth system

The avian radiographic technique chart will have a fixed mAs and time but the kVp adjusted for changes in the patient size

Short exposures are preferred, faster than 1/60 of a second

Barium Series

Because abdominal structures are poorly defined on plain films, barium series are frequently performed

Contrast medium enables distinguishing the course and size of divisions of GI tract

Displacement of the GI tract helps define abdominal masses and enlargements

Can identify obstructions, masses and foreign bodies

Contrast medium is gavaged into crop

Volume same as if supplementally feeding

Contrast medium will usually be in lower GI tract in less than an hour

Transit time varies depending upon condition

Upper GI study

Timing immediate, 5, 10, and 30 minutes

Lower GI

Timing depends upon position of area of interest

Laparoscopy

Becoming increasing popular in avian medicine

Used for many years in surgical sexings
 DNA blood sexing has reduced this application but is still popular with some breeders
 Enables evaluation of gonads and abdominal organs
 Endoscopy applications extend far beyond sexing
 Laparoscopic evaluations and biopsy
 Examination of inside of GI tract and trachea
 Locate and identify obstructions

Ultrasound/CAT Scan

Available on referral basis in some areas
 Due to air sac system in birds, ultrasound is of limited diagnostic value
 May be useful in certain neoplastic or abdominal lesions

Fluoroscopy

Fluoroscopy has proven valuable for investigating GI motility
 May aid in the diagnosis of PDD

Treatment Techniques: Supportive Care for the Sick Bird

In most cases birds are sent home with client with appropriate medications and instructions for their use
 If bird has been ruffled they are instructed to keep the bird warm, either with a heat lamp or home-made incubator
 We recommend a heating pad on side of cage, then enclose in saran wrap with holes for ventilation
 Client is told to monitor the bird for changes and count daily droppings
 Some birds are too ill to send home and need varying degrees of hospital care
 Rarely send home a vomiting bird
 Hospitalize and treat with injectables until vomiting subsides
 Some birds are so ill that only minimal or no handling can be performed
 Only basic supportive care can be provided until stabilized and diagnostics can be completed
 The basic means of supportive care for sick birds:

Heat
 Fluid therapy
 Drug therapy
 Gavage feeding

Heat

Temperature-controlled environment is essential
 Incubators (avian or human), kennels with heat lamps, aquaria with heating pads can be used
 Sick, ruffled birds should be kept at 80-95°
 Critically ill birds may need to be maintained at 100°
 The bird's response to heat must be monitored
 If the bird is ruffled and close to the heat source, increase the heat
 If the bird is away from the heat, open mouth panting, feathers slicked close to body, wings held out, reduce heat
 Dry heat can lead to dehydration so humidity source is needed in the incubators
 Quality commercial incubators have built in means of controlling humidity
 Have means of detecting temperature/humidity
 Humidity can be provided by placing a jar with water with many holes punctured in the cap in the unit

Fluid Therapy

Advances in fluid therapy have led to great improvement in survival rate of sick birds
 For rapid fluid administration an intravenous bolus or intraosseous catheter can be used
 Birds will not tolerate standard catheterization
 Due to the safety of isoflurane some practitioners anesthetize birds during fluid administration
 Discretion must be used when sedating sick birds

Intravenous Boluses

Veins used for IV boluses are ulnar (large birds), medial metatarsal, jugular (small birds)
 Fluids are warmed, bolus injected with 25 to 28 gauge needle
 Fluids include LRS (most situations), 5% dextrose, normal saline
 Fluids given at 10-15 mg/kg per bolus, up to 30 mg/kg per bolus
 If sites are rotated can give three times a day

Intraosseous Catheter

Catheter placed in any bone with rich marrow cavity
 Dorsolateral portion of distal ulna
 Better for long term use in medium to large birds
 Proximal tibia
 Ideal for short term use in medium to large birds
 Distal radius
 Pneumatic bones, such as the humerus and femur cannot be used
 Medium to large birds

18-22 gauge 1.5 to 2.5 inch spinal needle

Small birds

25-30 gauge hypodermic needle

Prepare site, align needle with axis of bone, insert and rotate through bone cortex

Remove stylet and suture in place

Wing should be bandaged in figure 8

A burette or infusion pump should be used to regulate volume of fluid administered

Catheters should be replaced after 72 hours

Fluid administration should be calculated in much the same manner as other animals

A portion of maintenance fluid can be given subcutaneously

Subcutaneous Fluids

The majority of hospitalized birds do not require rapid administration of fluids

Subcutaneous and oral routes can be implemented

Multiple sites can be used for subQ fluids

Wing webs

Intrascapular region

Breast region

Inguinal region

Fluids are delivered via a 22 gauge needle until the skin is taut

Deliver 50 ml/kg/24 hours (.05 ml/gm) in divided doses in multiple sites

Fluid replacement will also be assisted with gavage feeding

SubQ fluids are absorbed more slowly than IV sites, even slower in seriously debilitated birds

Guidelines for Initiating Drug Therapy

A “best guess” therapy has to be started in critically ill birds before diagnostics are done

If the bird is vomiting oral antibiotics should not be given

Use injectables due to rapid and effective absorption

Piperacillin, Claforan or Baytril are good first choice injectable antibiotics

Dexamethasone can be given to “shocky” birds

Vitamin B complex can give boost to debilitated bird

When stable and no vomiting, change to orals

Guidelines for Intravenous Drug Administration

IV drugs are generally used only if an intraosseous or intravenous catheter is already in place

Guidelines for SubQ or IM Drug Administration

Topical alcohol application can aid in the placement of subQ injections

IM injections are easily given into the breast

Injection should be given near the keel, below the crop and above the abdomen

Palpate the landmarks

In small birds such as finches take care not to puncture sternum

Never give IM injections in leg muscle

Guidelines for Oral Drug Administration

Best given directly by mouth or gavage

Adding medication to food is discouraged as it is difficult to monitor how much is taken in

Exception is with birds being hand fed as medication can be placed in a small amount of formula

Some birds may take medication in soft food mix

Medications in water is unreliable

Sometimes may be the only alternative

Alters taste of water, variable intake of water

Guidelines for Topical Drug Administration

Topical medications, especially creams, can be beneficial in avian medicine

Use only on unfeathered areas and apply sparingly, preferably covered with a bandage

Problem is that excessive ointment may become a widespread contaminant as the bird preens

Prior to having client apply ointment, caution them to use tiny amounts

Guidelines for Nebulization

Sometimes indispensable for delivering medication to the respiratory tract of birds

Few controlled studies as to the pharmacokinetics of this route of administration

Should be considered supplement to systemic medications

Nebulizer

Invaluable aid in treating severe respiratory tract or air sac disease

Injected or oral antibiotics do not reach therapeutic levels in the air sacs

Many varieties available, including veterinary and human sources

Do not hesitate to purchase a new one

Can be used to treat respiratory disease in other animals

Nebulizing solutions can be formulated containing antibiotics, bronchodilators or antifungals, depending upon the condition being treated

Force Feeding/Gavage Feeding

Most sick birds have either stopped eating or are not eating enough to maintain themselves so supplemental feeding is essential

A variety of feeding solutions can be used, commercial or home-made

Feeding solutions to provide nutritional support for hospitalized birds is of utmost importance

Commercial

Emercal/Emeraid (Lafeber Co.)

Roudybush (Tempelton, CA)

Oral electrolyte solution (Pedialyte)

Various hand feeding formulas (Exact, Pretty Bird)

Home-made

Nutrical

Baby food/baby cereal

Force Feeding/Gavage Feeding

In a bird that is vomiting, a very dilute high energy solution (Emercal) can be given in small amounts until the bird keeps it down

At that point, the thickness can be gradually increased until conversion to a maintenance solution (Emeraid II)

If the hospitalized bird is in reasonable condition, the maintenance solution can be started immediately

Solutions administered with rubber feeding tube or metal feeding tube with ball end

The tubing used is a matter of personal preference

Rubber tubing could be severed by beak when passed into the esophagus

Overzealous passage of the metal tube could damage the esophagus

<u>Bird</u>	<u>Catheter Size</u>	<u>Amount Fed (ml)</u>
Finch	5	1/4-1/2
Canary	5-8	1/4-1/2
Parakeet	8-10	1-2
Lovebird	10	3-4
Cockatiel	10	3-4
Conure	10-14	6-8
Amazon	10-18	30-35
Cockatoo	18	40-45
Macaw	18	30-60

The number of times a day gavage feeding can be performed depends upon crop emptying

Feeding should only be performed when crop empty

Thinner solutions pass through more rapidly

Hospitalized birds fed 2-3 times daily

Always evaluate crop fullness before feeding

Overfilling crop can lead to aspiration

If crop not emptying, will need to aspirate contents and refill with dilute solution

Estimate the length of feeding tube to be passed by measuring distance into the crop from the mouth

Tube can be marked as an aid

Canaries, mynahs and certain other birds do not possess a crop

Estimate should be to the "region of the crop"

Small birds may not require a speculum to open the mouth and tube passage

Speculum is necessary in large birds

Can use a Nylabone with a hole drilled in the center to ease tube introduction

Laterally displacing the upper beak a centimeter can also expedite tube passage

Care must be taken to avoid damaging beak or having beak sever tube

Extend the neck slightly with head upright so when tube is introduced it is more of a direct, straight passage

Introduce the tube on the left side of the mouth, pass it gently, but firmly over the tongue and it will pass over to the esophagus which runs on the right side of the neck

Tube should be passed slowly and cautiously

Never force the tube as it could puncture the esophagus or crop

It is extremely important to determine that the tube is positioned in the crop

Palpate the crop to be sure the tube is in position before administering feeding

When tube is in position slowly deliver the feeding solution

Crop will begin to fill and can be visualized or palpated

Observe mouth for evidence of solution welling up in mouth, indicating overfilling or poorly positioned tube

If this occurs remove tube, turn bird over with head directed downward so solution can pass out through mouth and prevent aspiration

A bird may retch or vomit occasionally after tube feeding

If this occurs frequently then carefully evaluate your technique to determine the cause

Anesthesia

Due to the stress birds experience from handling and restraint sedation and anesthesia are frequently used in avian medicine

Careful evaluation must be made before the bird is subjected to sedation/anesthesia

Fasting before sedation/anesthesia is not always required

All that is required is an empty crop

Isoflurane is the anesthetic of choice

In certain situations injectable agents are still suitable but should be used cautiously

Pain Management

Poorly understood in avian species

Indications of pain include: behavior, appearance or discomfort, decreased activity or anorexia, abdominal tenseness

Injuries associated with pain include: burns, beak trauma, crushing trauma, trauma to extremities

Agents used: aspirin, flunixin, butorphanol, metacam, buprenorphine

Avian Therapeutics

Drug dosages in birds are poorly established

Dosages are empirically based or based upon clinical experience

Drugs that are effective in certain species may be inappropriate or toxic in others

A good exotic animal formulary is essential

Conclusion

I hope this information will give you confidence to begin seeing pet birds in your practice

If you already do see birds I hope it has provided you with practical insights into avian medicine