

**F**or veterinarians with a strong interest in treating companion birds, the advantages of incorporating avian medicine into the small animal practice are numerous. With only minimal equipment additions and some intense continuing education with the desire to learn, the practitioner can increase patient diversity and practice volume and be introduced to the challenge of avian diagnostics and therapeutics.

Membership in the Association of Avian Veterinarians (AAV) and participation in conferences with carefully planned avian programs are necessary to keep abreast of the rapidly expanding information on the diseases and treatment of companion birds. The *Journal of the Association of Avian Veterinarians* and other journals and textbooks as well as popular bird magazines are essential reading for serious practitioners (Figure 7.1).

Within the extensive network of the AAV, there are many experienced members who are willing to share information and advice. Veterinarians with limited experience in treating birds should be realistic about their expertise and be ready to refer complicated cases that require advanced diagnostic, surgical or therapeutic techniques. A veterinarian may advertise a special interest in birds, but use of the word “specialist” is reserved for only those who are board certified in avian practice.

Attending aviculture seminars, visiting established avian practices and teaching bird handling skills to staff and colleagues are other good ways for beginning avian veterinarians to increase competence. Avian veterinarians in one city improved the care available to local avian patients by providing a training program and procedure manual for emergency clinicians in the area.<sup>17</sup>

CHAPTER

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7

**PRACTICE  
DYNAMICS**

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**Cathy Johnson-Delaney**



**FIG 7.1** Membership in the Association of Avian Veterinarians is suggested for any veterinarian planning to work with birds. Reading the information published in the Journal and the Proceedings of the Annual Conferences is essential to stay abreast of rapidly evolving information (courtesy of Cathy Johnson-Delaney).

## Getting Started

There are many effective ways to attract avian clients, including adding birds to the logo on signs, stationery and business cards, placing avian magazines and client information in reception and exam areas, and decorating the clinic in an avian motif. Display of the AAV membership plaque, certificates presented by bird clubs and other organizations and newspaper clippings or articles help demonstrate a clinic's commitment to companion bird medicine (Figure 7.2).

Client education displays should include publications available from the AAV, diet manufacturers and other practitioners, as well as specific information sheets on such topics as diet, disease, husbandry, grooming and training. Some clinics find that establishing a library is well received by clients. Videotapes for in-clinic viewing can be made available and may include commercial tapes addressing avian management or training, as well as short demonstrations of wing and nail trimming, handling, restraint and treatment techniques. Videotaped "Nature" or "National Geographic" episodes dealing with birds or

conservation are instructive, entertaining and create an opportunity for the avian veterinarian to discuss the importance of habitat preservation and sound avian stewardship.

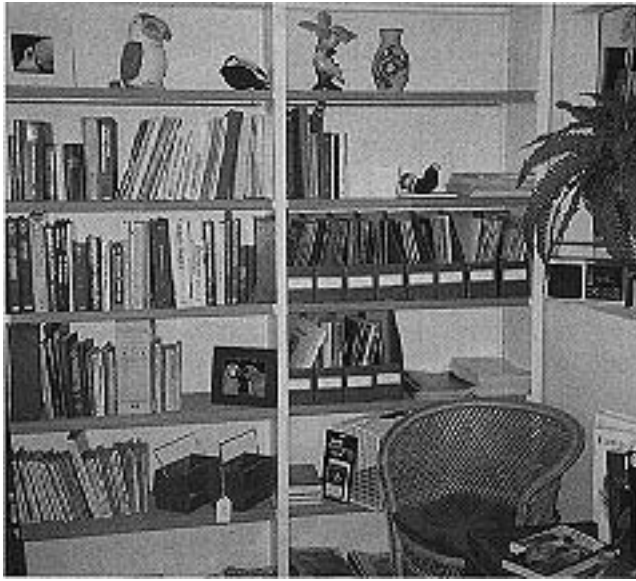
The sale of formulated diets, nutritional supplements and avian care accessories (hemostatic agents, grooming aids, carriers), helps to demonstrate the clinic's dedication to the total well-being of companion birds. Alternatively, local pet retailers may be informed of a veterinarian's recommendations for diets and other avian products, and clients may be referred to those shops whose policies and products meet with established standards (Figure 7.3).

Advertising in the yellow pages or other local business listings and supplying pet supply retailers with business cards and client education materials are also effective practice builders. Training sessions for pet store employees and clients create an opportunity for the veterinary staff to address specific questions and to stress the importance of preventive health programs. Establishing a post-purchase examination program that is paid for by the pet supplier will reinforce the reputation of a dealer for selling healthy birds and provide the veterinarian with an increased client base. Most pet shops and breeders appreciate veterinary surveillance of not only their birds, but also of their facility design (eg, quarantine and traffic flow), diets and use of disinfectants.

Avian veterinarians should establish a program for visiting aviaries or multiple-bird households to perform preventive health screenings and aviary management evaluation (see Chapter 2). Problems associated with diet or husbandry can be more easily determined in the birds' home environment than from descriptions provided during office visits. Fees for aviary management consultations, multiple-bird examinations and large-volume laboratory work should accurately reflect the time involved in collecting and interpreting samples, yet not be cost-prohibitive to the client.

Avian veterinarians also benefit from membership in local avian, exotic animal and wildlife organizations. Participating in the activities of bird clubs (meetings, newsletters, bird fairs) and volunteering to speak at school career days, civic groups and scout meetings are other excellent ways to achieve visibility and credibility with companion bird clients.

Many practitioners provide instructional sessions to acquaint new bird clients with their pets. One successful program is called "parrot kindergarten."<sup>16</sup>



**FIG 7.2** Providing an avian library, decorating in an avian motif and providing client information handouts and displaying professional awards or scientific publications (right) are all effective methods of keeping clients informed and communicating a hospital's interest in avian care (courtesy of Cathy Johnson-Delaney).

Sessions are conducted by a veterinarian, an aviculturist and a bird trainer to provide experienced insight into avian health care, management and psychological stimulation.

It is important for the beginning practitioner to become acquainted with local people who can serve as additional sources of information for individuals who keep birds. These people may include experienced aviculturists who are willing to share knowledge, “foster parents” who will temporarily take unwanted birds, zoo aviary keepers, experienced ornithologists, librarians and the curators of natural history museums.

Finally, it is easiest to build a referral practice by assuring local veterinarians that their clients' birds will be seen, but that their other pets will not. It is a good idea to send the referring veterinarian a “Thank you for the referral” card and a written synopsis of the diagnostic and treatment plan. It is especially important to maintain good communication with the referring veterinarian if a client lives in another area and the referring veterinarian will need to evaluate the effect of therapy or to provide further medications. Treatment and follow-up visits should be done locally whenever possible.



### Staff Responsibilities

Staff members play a major role in the success of any practice. They should be familiar with the clinic's general recommendations on diets, husbandry and preventive health care. Developing an office manual that includes job descriptions, client instructions, hospital protocol and general data on various species of birds will serve as a reference text for the entire staff. Veterinary assistants should be expected to keep the hospital clean, maintain a patient's food and water supply, fill prescriptions and perform routine procedures such as restraining, medicating and grooming birds. All staff members should be encouraged to have their own companion birds in order to better relate to the clients and their birds. It is critical that staff members' and clinic birds be screened for infectious diseases to prevent them from serving as a source of infection for clients' birds. Assistants should also be encouraged to attend continuing education seminars.



**FIG 7.3** Some veterinarians maintain a select group of avian diets and safe toys while others refer clients to pet supply retailers that meet established standards. Videotapes can be used in the reception area to teach clients how to better care for their pets. Client information brochures are available in the waiting room and in the examination room (courtesy of Cathy Johnson-Delaney).

### Communicating with the Client

When a client calls for an appointment, the receptionist must instruct the client on the proper way to transport the bird to the clinic so that an evaluation of enclosure management and diet can be made. The water dish should be emptied before transport, but enclosure substrates should not be changed so that droppings from the past several days can be evaluated. The client should also be instructed to collect several fresh fecal samples at home by placing plastic wrap under the perch. The samples should be folded in the plastic and refrigerated until transport to the clinic. A paper towel placed over the enclosure substrate will help identify fresh droppings produced during the trip to the hospital. The client should also bring previous medical records, samples of the normal diet and samples of any abnormal discharges.

If the bird is showing signs of illness, the client should be instructed to warm the enclosure interior to 85-90°F and to cover it in such a way that this

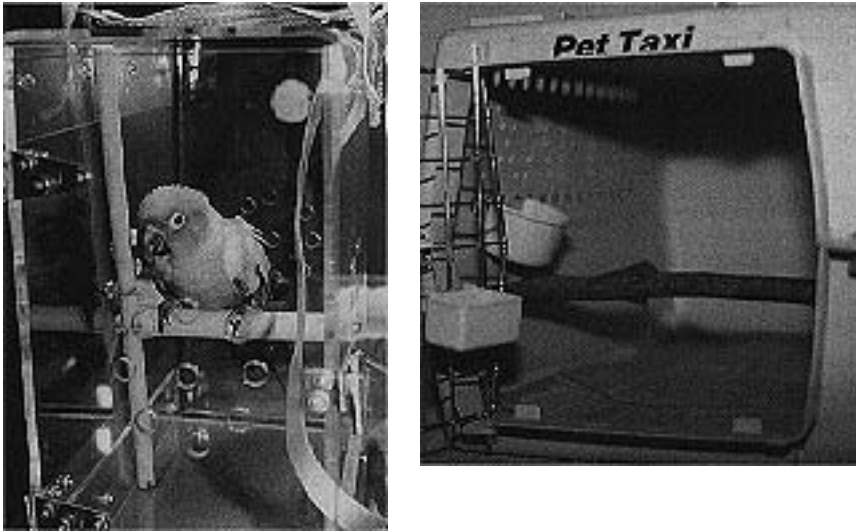
temperature may be maintained on the way to the hospital. Loose layers of plastic wrap under the regular enclosure cover may be helpful. If the ambient temperature is less than 60-75°F, it is recommended that the car be pre-warmed as well. Likewise, if ambient temperature exceeds 90°F, care must be taken to prevent hyperthermia.

A bird brought into the hospital on its owner's arm is an accident waiting to happen (Figure 7.4). Therefore, it should be hospital policy that all animals be maintained in an enclosure while in the reception area. If it is not possible to bring a bird's enclosure, a small animal carrier can be modified with the addition of a perch.

It is helpful for the staff to introduce themselves to new clients and to tell them what to expect during the office visit. The receptionist should give instructions for filling out the information forms. The technician should weigh the bird, discuss husbandry with clients and assist with restraint during the examination. At many clinics, a client can make an appointment with the veterinary technician for routine grooming procedures such as wing clips, weight monitoring and beak and nail trims.

An initial hospital visit will require extra time for filling out paperwork and providing a client with instructions concerning proper husbandry. Detailed information about the diet and home environment are crucial in evaluating the avian patient, as malnutrition and improper management are common causes of medical problems. The technician should take a Polaroid snapshot of the client and bird for the bird's medical record. The client should be provided a folder-type health record with a pocket to maintain receipts and examination certificates. This folder will serve as a reminder that birds need the same kind of routine preventive medical care as other pets.

For most psittacine birds, semi-annual examinations are recommended with emphasis on detecting sub-clinical problems (see Chapter 8). Many practices give the new client a "New Bird Kit" on the initial visit. This kit can include the health examination folder, client education materials, a hemostatic agent, a telephone sticker with the phone numbers of the clinic and recommended emergency clinic, samples of recommended avian foods and subscription information to bird magazines. Many clinics have customized bags with the clinic name, address, phone number and logo, as well as a space provided for the



**FIG 7.4** To prevent serious injuries to avian patients, the hospital policy should be that all birds are maintained in an enclosure while in the hospital. Additionally, birds being transported from one area of the hospital to another should be placed back in an enclosure to prevent accidental releases and injuries (right) (courtesy of Cathy Johnson-Delaney).

bird's name. This helps emphasize the clinic's commitment to personalized attention for each patient.

### Record Keeping

The medical record system used in most small animal clinics can be modified for avian patients. A problem-oriented checklist works well for avian cases. A copy of the initial history and examination form should be included in the folder sent home with the client. A certificate of veterinary examination is usually necessary when performing post-purchase examinations for aviaries or pet shops. Two copies should be made so that one remains in the clinic records and the other goes with the client.

The computerized record systems used in many small animal practices can be easily adapted for avian patients, including modifying reminder forms to list avian procedures. Diagnostic software packages for the avian patient are under development.

Another proven way to maintain a positive client relationship is by communicating with them through the use of "Welcome to the practice" cards, sympathy cards and clinic evaluation forms.

From the initial examination and identification of potential problems with diet and husbandry to daily assessment of a hospitalized bird's condition, communication with the client is essential. If a bird must be hospitalized, the client should be given a written estimate of the medical plan and costs, and a hospital consent form should be signed. The higher cost of

avian services as compared to those for dogs and cats reflects the increased amount of time avian patients require, as well as the increased training and expertise required by the veterinary staff.

### Hospitalization Protocol

Clients apprehensive about hospitalizing their birds may feel more at ease if they are introduced to the staff members who will be caring for the bird and shown where their bird will be housed. To avoid disturbing other patients, a videotape of the facility may be used. Sometimes it is enough to explain how the enclosure is set up and what enrichments are provided such as heat, light, music and visibility of humans. Visitation policies may vary on a case-by-case basis. A patient that is highly bonded

to its family and becomes depressed when separated (beyond its illness) may greatly benefit from regular visitation. The client may also be able to entice a reluctant patient to eat. On the other hand, if the bird has a contagious disease or is recovering from a serious injury or surgical procedure, the excitement and activity associated with a visit may be contraindicated. In any case, clients should be encouraged to call during specified times to receive updates on the condition of their pets.

Before a bird is discharged from the hospital, the technician should instruct the client on how to administer medications and provide the recommended care, including provisions for keeping the bird warm on the way home. It is usually advisable that written home care instructions, the hospital bill and the recheck appointment be discussed prior to reuniting the bird and the client to prevent the client from being distracted by the pet.

A phone call the day after discharge allows the veterinarian to evaluate the patient's condition and gives the client an opportunity to ask questions. A client evaluation form mailed several days following a visit may help reveal the client's perspective of the clinic's strengths and weaknesses. The survey should be short and include multiple choice questions and space for written comments regarding clinic facilities, staff, telephone courtesies, pricing and medical treatment. A return envelope will encourage client participation.



## Travel Considerations

Occasionally clients will request health certificates in order to transport birds between states or countries. Most airlines are now refusing to transport wild-caught birds, and many domestic carriers are refusing to ship companion birds on the grounds that it is difficult to differentiate between domestically raised and imported birds. Airlines that will ship companion birds within the United States will specify the type of carrier they will accept and the conditions of release from liability that must be authorized. According to aircraft manufacturers and airline engineers, temperature ranges in the cargo bins, which are designated for carriage of animals, vary from 40°F to approximately 70°F, depending upon the aircraft type used by the transporting airline. Newer-generation jets (eg, 757s) generally have warmer temperatures in the cargo bins and therefore are more comfortable for animals.

Carrier specifications for international shipment are set by the International Air Transport Association, and many airlines use these standards for domestic flights as well. It is advisable to be familiar with these carrier specifications and to contact the state veterinarian regarding what is considered a properly completed health certificate for a companion bird. Use of the term “health certificate” should be discouraged because it is impossible to determine from a physical examination if a bird is healthy. A complete evaluation requires extensive laboratory work and radiology, and even then it may be impossible to determine if the bird is latently infected with an infectious agent. Use of a “Certificate of Veterinary Inspection” to accompany the state regulatory form may be appropriate. An evaluation does not guarantee that a bird will remain healthy following transportation.

If a client plans to take a bird traveling by car, it is recommended that the bird first be given a full examination to detect subtle problems that might manifest during the stress of traveling. When possible, it is advantageous to place the bird in a familiar enclosure for travel. An adequate food supply should be carried, as not all diets are available in all areas. Clients should also consider weather, potential hazards (eg, animals, children) in homes or campgrounds where they will be staying, policies of hotels and motels, and if the disruption in daily routine will adversely affect the bird. For some birds, it is less stressful to be left at home or boarded. A brochure entitled “Traveling with Your Pet” is available from

the ASPCA Education Dept., 441 East 92nd St., New York, NY 10128.

Birds that are boarded at a veterinary clinic must be kept isolated (different air space with different caretakers) from ill birds as well as from other boarding birds from different households. Clinics with limited space may board birds from a single household at one time. Establishing a bird-sitting service using clinic staff or outside individuals works well and decreases the risk of exposing birds to infectious agents. If bird-sitters visit more than one household a day, they must take precautions to prevent disease transfer between homes.

## Accommodating the Avian Patient

In order to transform a traditional small animal clinic into an “avian friendly” clinic, a number of modifications should be considered. A separate avian waiting room would be ideal, but if that is not possible, an area that is not in direct contact with dogs, cats and children should be designated for bulky bird enclosures and carriers.

Furnishings for the avian practice should be comfortable, durable, washable and easily disinfected. Reception and exam room chairs should be of varnished, metallic or plastic finishes. The removable canvas backs and seats of director’s-style chairs can be easily washed and disinfected and come in many colors and fabric designs.

## Safety Considerations

The areas of the hospital where birds will be handled outside of their enclosures should be bird-proofed, and appropriate nets for catching birds should be available. Ceiling fans are not recommended for avian hospitals. Wall fans, radiators, baseboard heaters, light fixtures and other electrical equipment must be shielded from direct contact. Open windows should be securely screened and be covered with blinds or draperies. Open shelves, bottles and jars may be viewed as perches by free-flying, frightened birds. Waste baskets should be placed in cabinets or

have fitted lids, cold sterile instrument trays should be covered, and counter tops should be kept clean.

Equipment in the exam room, including a gram scale, an auxiliary light source, a magnifying head loop, speculums, towels or restraint cloths, oxygen, heating pad, lamp and diagnostic and first-aid equipment should all be within easy reach. Furniture should be minimal, including chairs for the clients, sufficient table surfaces for enclosure security and a stool for the practitioner. Areas with minimal furniture are more secure and easier to keep clean.

### ■ Housing

Appropriate enclosures for avian patients must also be considered. A separate avian housing area that can be maintained at 80-85°F is preferable, but not essential. Birds may be housed in aquariums with screened covers, intensive care units or converted small animal enclosures. Aquariums are relatively inexpensive and easy to clean and disinfect. Screen-covered tops provide good ventilation, while the aquariums themselves hold heat and reduce hospital contamination from discarded food and droppings. They also offer complete visibility and easy access to the patient. Heating pads placed under or along one side of the aquarium can raise the interior ambient temperature to 85-90°F. Surgical drapes or clean towels can be used to cover portions of the aquarium to retain additional heat and allow the bird a more private convalescent area. A five-gallon aquarium works well for small birds, a ten-gallon size for medium-sized birds and a twenty-gallon size for larger birds.

Commercial and custom-designed aquariums heated with warm water make excellent housing units for sick birds. Some hospitals use avian isolation units, complete with separate heat and ventilation.

Existing small animal kennels can be converted by installing a removable perch and lining the enclosure with brown wrapping paper or butcher paper. Newspaper print may stain the feathers of white birds. Heating pads or clamp-lamps provide supplemental heat, and towels, plastic wrap, acrylic or plexiglass sheets can be placed over the front of the enclosure to retain heat (Figure 7.5). Enclosure doors should be removed, scrubbed and soaked in disinfectant after each bird. Spraying a light coat of Pam cooking oil or silicone on the bars will facilitate the removal of excrement.

Avian enclosures should be easily viewed from across the room or through a window to minimize the need to approach the enclosure to evaluate a patient. The staff member who feeds, cleans and interacts with the bird should not be the same person who provides “threatening” medical treatment. The bird is less likely to be defensive around a non-threatening person, and a more accurate assessment of changes in its daily condition can be made.

### ■ Preventing the Spread of Disease

Many avian pathogens can be spread through aerosol and feather particulates, and an efficient ventilation system of laminar flow design will minimize hospital contamination. As fresh air enters one side of the room, it passes across the examination area and is pulled outside by exhaust fans with vents placed approximately two feet above floor level in the opposite wall from the fresh air vent. Air filtration systems (purifiers) designed to decrease particulates and pathogens to the 0.1-1.0 micron range are recommended for use in the reception, examination, treatment and housing areas. The maintenance requirements and volume of air exchanged vary with each system. These units reduce aerosolized hair, dander, feathers, dust and contagions that would otherwise accumulate in the environment. In initially designing a hospital, areas with separate air flow systems should be incorporated to allow for the separation of patients that require routine care from those that may have infectious diseases. Hospital suites for housing sick birds should be divided into small, easily cleaned areas that also have separate air flow systems.



**FIG 7.5** A small animal hospital enclosure can be easily modified to house avian patients. Plastic curtain rod holders are glued to the sides of the enclosure to hold removable perches. Hard plastic containers are used for food and water, and the bottom of the enclosure is covered with butcher wrap (newspaper ink may stain some feathers) (courtesy of Cathy Johnson-Delaney).

All equipment used on avian patients should be thoroughly disinfected between patients. It should be stressed that all disinfectants are toxic and must be handled with care to prevent problems in hospital premises or patients. No disinfectant can work effectively in the presence of organic material (see Chapter 2). Food and water dishes, feeding devices, perches and other enclosure accessories should be free of food and excrement prior to being soaked for 30 minutes in a phenol or quaternary ammonia disinfectant. Disinfected items should then be put through an automatic dishwasher (hot water cycle), rinsed thoroughly and dried before re-use. Disinfected supplies should be stored in closed cabinets or containers away from areas where they may be exposed to aerosols and particulates from ill patients. Quaternary ammonia solutions (quats) are satisfactory for use as table washes or in cold sterilization trays, and can be used to clean enclosures and soak capture nets, dishes, perches and grooming tools. Because these solutions may be nephrotoxic to birds, equipment must be thoroughly rinsed after being soaked in quaternary ammonia compounds. Quats are the disinfectants of choice against chlamydia and have a wide range of effectiveness against many other pathogenic bacteria and viruses. A phenol-type disinfectant is recommended by the United States Department of Agriculture (USDA) for use in quarantine stations and other avian facilities. It has activity against the Newcastle disease virus and many other pathogens. Phenols may be used for cleaning enclosures and other equipment, but because they are irritating to skin, rubber gloves should be worn, and enclosures and instruments must be thoroughly rinsed prior to direct contact with birds.

Chlorhexidine has the advantage of being gentle to tissues and equipment and is effective against viruses and candida, but it is not effective against chlamydia and many other pathogenic bacteria. It can be used in some cases in the drinking water or as a wound or sinus irrigation solution or in liquid diets and hand-feeding formulas. Other types of disinfectants useful in the avian practice are isopropyl alcohol for cleaning surfaces and instruments; iodophores such as povidone iodine solutions (hand soaps, scrubs and wound irrigations) and chlorine bleach for cleaning non-metal surfaces, equipment and utensils. Good ventilation is important when using any disinfectant, and surfaces must be thoroughly rinsed and dried before coming in contact with birds.

Floors in the avian hospital should be vacuumed frequently to prevent the accumulation of feathers, dander and foodstuffs. Because vacuum cleaners, electric brooms and small portable cleaners tend to scatter viruses into the air, it is advisable to spray the bags prior to, during and after use with a disinfectant. In vacuums that do not use bags, the intake pieces, brush attachment and collection chambers must be disinfected thoroughly after each use. The exteriors of such appliances, as well as the exhaust vents, need to be kept clean and disinfected as well.

The order in which hospitalized avian patients should be maintained follows the same pattern as that for working with other animals: clean, feed and treat beginning with the healthiest and ending with the most highly contagious and critically ill. Any bird within the hospital that is sick for an unconfirmed reason should be considered highly contagious until proven otherwise. When working with a patient with a highly infectious disease, it is advisable for the attendant to wear a mask and hospital gown that can be changed. Attendants should also use a disinfectant spray on their clothing and hair between birds. Hospital counters, shelves and tables should be wiped down with disinfectants after each use.

## ■ Equipment

The specialized equipment needed to practice avian medicine is minimal. Many small animal practices already have isoflurane anesthesia (mandatory for avian practice), ophthalmic-sized surgical instruments and suture materials, an endoscope, a radio-surgery unit and radiographic equipment. Additional equipment acquisitions should include a high quality gram scale (Figures 7.6, 7.7), avian mouth speculums, gavage needles and a radiographic positioner. Bandaging and splinting supplies, protective collars and dental acrylics for orthopedics and beak repair are also necessary.

Other equipment required for an avian practice includes heavy ceramic bowls and a variety of perches that can be easily cleaned and disinfected (Figure 7.8). It is important that hospital perches be made of non-porous material such as heavy plastic or epoxy/resin composites. Perches of porous material (eg, wood) should be disposed of after use. Household fixtures (eg, towel racks, curtain rods, shower rods) and PVC pipe are good choices for perches (Figure 7.9).

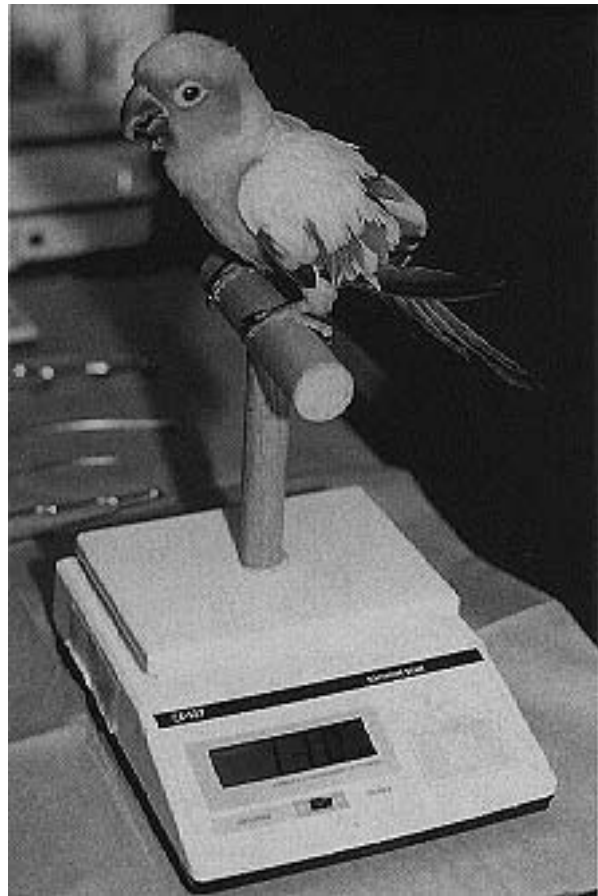




### Diagnostic Equipment

Equipment necessary for basic in-house avian diagnostic tests includes a binocular microscope with oil immersion capability (1000x), hematocrit centrifuge, refractometer, hemacytometer, bacteriologic incubator, alcohol lamp or Bunsen burner, and basic laboratory supplies such as staining kits, coverslips, slides, hematocrit tubes, serum separators and culturettes (Figure 7.10).

Several serum chemistry testing systems are commercially available. Dry chemistry analyzers are fast, easy to operate and require very small sample sizes. Those currently used in avian practices are the

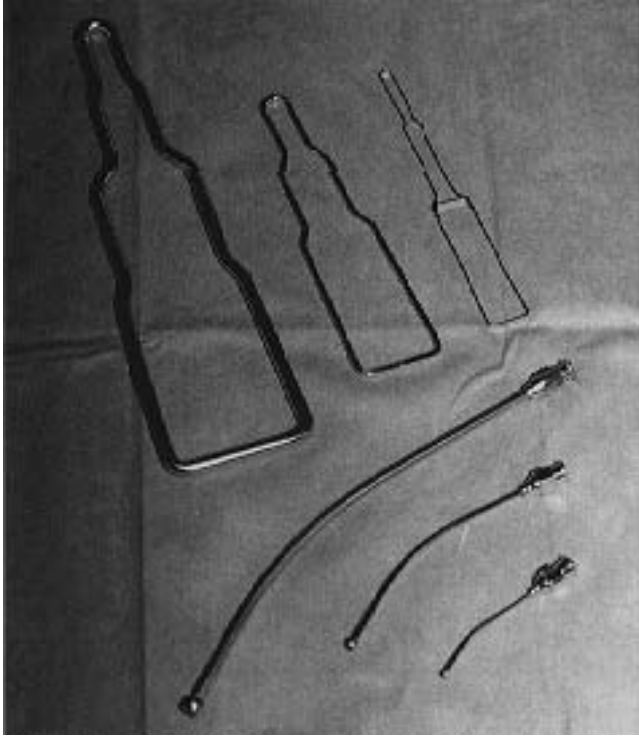


**FIG 7.6** An accurate gram scale is mandatory in the avian hospital (top left). Scales can be fitted with perches, or light-weight containers can be used to facilitate weighing (bottom left). Digital units that have an automatic tare feature are easiest and fastest to use (above) (courtesy of Cathy Johnson-Delaney).

Kodak DT60 Analyzer,<sup>a</sup> the VetTest 8008,<sup>b</sup> the Reflotron<sup>c</sup> and the Seralyzer.<sup>d</sup> Both the Kodak and the VetTest units can run a typical avian profile including AST, uric acid, glucose, calcium, total protein and albumin. The Kodak DT60 has the largest test menu and includes a full electrolyte panel. The VetTest includes software that provides some normal avian values and diagnostic information (Figure 7.11). Both machines have proven to be reliable, easy to operate and have demonstrated consistent results when used in avian practice.

“Wet chemistry” analyzers such as the Gemstar II Chemistry System<sup>e</sup> and the Analyst<sup>f</sup> also run tests applicable to avian patients but require larger sample sizes than do the dry chemistry analyzers. These machines have been shown to be reliable and provide good quality results in some clinics; however, the sample size needed may be prohibitive with some avian patients. The major advantage to the wet

chemistry systems is the significantly lower cost per test. Hematology, cytology and microbiology equipment, techniques and supplies are covered in depth in Chapters 9, 10 and 11.



**FIG 7.7** Mouth speculums and feeding tubes (either stainless steel or red-rubber type) are essential pieces of equipment in the avian practice (courtesy Cathy Johnson-Delaney).



**FIG 7.8** Food and water containers used in the hospital should be durable, noncorrosive and easy to disinfect. Stainless steel, hard plastic and crockery bowls work best.

Although many clinics perform in-house diagnostic tests, most find it necessary to use the services of consultants from time to time. Board certified radiologists and histopathologists who have had experience diagnosing avian cases are especially helpful. Commercial clinical pathology laboratories that specialize in avian and exotic patients are indispensable for isolation and identification of avian pathogens that require specialization beyond the capacity of most veterinary hospitals.

### ■ Submitting Samples to an Outside Laboratory

The decision regarding which tests to perform in-house and which to send to other laboratories depends on several factors: speed of desired results, effect of results on therapeutic decisions, staff ability to perform tests accurately and frequently enough for proficiency, the amount of staff time needed to perform a test, equipment sensitivity and suitability for sample volume, cost of equipment, staff training, consultation and trouble shooting. While it is frequently convenient to have results of tests available during the patient's visit or on weekends and holidays, the results have to be accurate and reliable, as well as cost-effective.

Considerations for choosing an outside laboratory include experience in avian diagnostics, types of services and tests available, sensitivity and specificity of the tests offered, policies regarding laboratory supplies and transport media, mailers, billing and invoice policies, direct fees for tests, turnaround time for results being reported and method of reporting (telephone, fax, computer, mail). A laboratory that is reporting sensitive data by fax should require that the clinician sign a release form stating that the fax



**FIG 7.9** PVC pipe can be used to construct low perches that are used for extremely ill birds. This material is easy to clean and disinfect but should not be used for long-term perching (greater than two weeks) to prevent foot and leg problems. The perch can be wrapped with a layer of self-adherent bandage material to improve traction. The bandage material is changed between patients (courtesy Cathy Johnson-Delaney).

is secure to receive confidential information. There are potential legal ramifications of laboratories reporting sensitive information regarding infectious diseases by phone, and high quality laboratories will provide this information only by mail or to a secure fax machine. It is important to become acquainted with laboratory submission and shipment protocol and methods of reporting results. Submitted samples should always be clearly identified and accompanied by a written report indicating the tests requested, a brief history of clinical signs, differential or tentative diagnosis and any medications being used. It is advisable to keep appropriate transport media and shipping containers in the hospital. Sources of dry ice, liquid nitrogen or cold packs should be identified before these products are required. Ideally, all samples submitted should meet the following criteria:

1. Baseline samples should be taken prior to administration of medication. Correct sample collection techniques should be used (free-flowing blood not nail clip for blood work).
2. Samples should be collected aseptically from anatomic sites likely to contain pathogens.
3. Samples should be taken during the acute phase of the disease rather than the chronic stage.
4. A relevant synopsis of the disease process or flock outbreak should be included.
5. Any pertinent background information and differential diagnoses should be provided.

Samples submitted for bacteriology, virology, chlamydia isolation or necropsy require special consideration. Direct communication with the laboratory prior to shipment is advisable. If the laboratory does not provide pick-up service, other couriers may be used. Shipments should be planned to arrive early in the day during the week.

Most samples for bacteriologic screening should be kept moist in an appropriate transport medium, refrigerated but not frozen and sent immediately with cold packs. Chlamydia isolation may be more successful if tissues are frozen and shipped with dry ice, rather than refrigerated immediately and then shipped on regular ice. Fecal samples or cloacal swabs in specific chlamydia transport medium may be submitted for antemortem diagnosis. Refrigerants must be sealed in leak-proof plastic bags, and dry ice should be packed to allow for the carbon dioxide to escape after sublimation, without contaminating the samples. Refrigerants should constitute about 50 percent of the weight of the contents of the package. Styrofoam-lined boxes with sturdy cardboard, wood or plastic exteriors are preferred for shipping refrigerated specimens. To comply with legal and medical

responsibilities, specimens should be packed with sufficient material to absorb any leaking fluid as well as to protect the specimen from damage.



**FIG 7.10** A binocular microscope and standard supplies for collecting culture samples should be available in the avian practice (courtesy of Cathy Johnson-Delaney).

## Pharmaceuticals

Very few pharmaceuticals are specifically licensed for use in avian species, but the Federal Drug Administration (FDA) has exercised discretion in enforcing extra-label drug use in companion animals to avoid the adverse impact on animal health that could result if the human drugs were unavailable for veterinary use. Avian practitioners should be aware that the promotion, distribution and use of human drugs in animals results in violation of the Federal Food, Drug and Cosmetic Act when:

1. A drug labeled for human use accompanied by labeling which prescribes, recommends, or suggests a use for animals, for which the product is not generally recognized as safe and effective, is an unsafe new drug under section 512(a) and is adulterated under section 501(a)(5) of the Act.
2. The use or intended use of a human drug in animals by a veterinarian causes such drug to be considered a misbranded drug under section 502(f)(1) of the Act.
3. A drug labeled for human use that is promoted, distributed or otherwise intended for animal use is misbranded under section 502(f)(1) of the Act if

its labeling fails to bear adequate directions for animal use.

4. The use of a human drug in food-producing animals may cause adulteration of the food. If the residue is a human drug, the food is adulterated under section 402(a)(2)(A) of the Act.

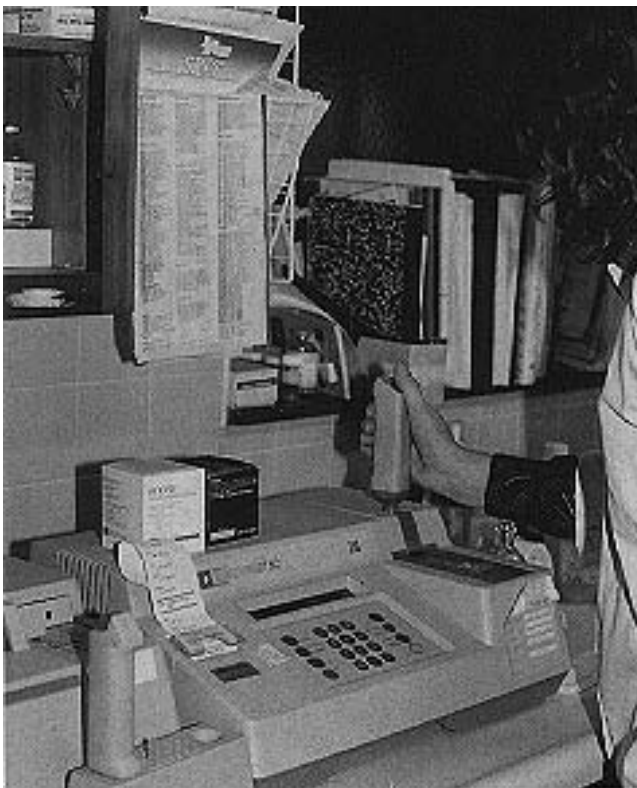
Regulatory action has not ordinarily been considered concerning the distribution of human drugs for use in companion or non-food-producing animals provided all of the following conditions exist:

1. Intended animal use of the human drug is not established by labeling, advertising, promotional activity or in any other overt manner.
2. There is no approved veterinary drug version of the human drug available.
3. The human drug does not represent a significant risk to the animal when prescribed, dispensed or administered by a veterinarian.

## Environmental Responsibility

In addition to medical care for individual pets, avian practitioners also have a responsibility to the global avian population because of their importance in the environment. Many of the species maintained as pets are threatened or endangered in the wild because of habitat destruction and capture for the pet trade. Most leading professional, avicultural and conservation-oriented organizations are actively promoting domestically raised, not wild-caught, birds for pets. Throughout the world there are increased legislative efforts to stop or at least control importation of wild-caught birds. The avian practitioner should promote the purchase of domestically raised birds and keep clients informed of conservation efforts.

Occasionally, the avian practitioner must try to determine the origin of a bird for medical purposes. Imported birds that have passed through USDA quarantine stations are banded with a stainless steel band with a code of three letters followed by three numbers. The quarantine system is designed strictly to prevent diseases of importance to the poultry industry from entering the United States. Quarantine procedures for imported birds include a 30-day stay in an approved quarantine facility, screening for Newcastle disease, and a 30-day treatment with



**FIG 7.11** Several types of “dry” and “wet” serum chemistries machines have been shown to be effective in the avian practice. These machines have the advantage of providing rapid, inexpensive test results (courtesy of Cathy Johnson-Delaney).

chlortetracycline for chlamydiosis. Random screening for *Salmonella enteritidis* phage type 4 is being conducted by the USDA to prevent this human pathogen from entering the United States. Quarantine procedures are being reviewed by the USDA, but major changes in the system will require time. Information concerning the importation and quarantine process, USDA regulations, ports of entry and health certificates for shipment of birds out of the country are available from state veterinary offices or regional APHIS/REAC offices. Other regulatory agencies in the United States involved in bird trade are the US Department of the Interior, The Convention on International Trade in Endangered Species (CITES) and the US Department of Treasury — Customs Service, which watches for smuggled birds. The Fish and Wildlife Service is charged with restricting imports and exports of many species of birds which may require special permits if listed in CITES. Information about transporting listed species may be obtained through the US Fish and Wildlife Service, PO Box 3507, Arlington, VA 22203-3507; 703-358-2093.

Avian veterinarians should be able to assist clients in purchasing healthy birds by recommending reputable breeders. Clients should be advised that a tame,

domestically raised bird may initially cost more but will be a better-adjusted, healthier pet and require less medical care and behavioral training than a wild-caught, imported, less-expensive bird of the same species. Clients should be wary of “bargain” birds from the flea market, classified advertisements or garage sales. If a bird is diagnosed with exotic Newcastle disease (VVD) virus and definite proof of proper importation cannot be produced, the bird along with any birds that have been in direct contact may be confiscated, tested and euthanatized. Many states also require proof of hatching or legal importation before issuing a license to an aviary or breeding facility. The avian veterinarian should record a bird’s band number, tattoo number, microchip number, or any pertinent physical information in the medical record. If the band is removed, the client should keep a copy of this record along with the removed band.

#### ■ Products Mentioned in the Text

- a. Kodak DT60 Analyzer, Eastman Kodak, Rochester, NY
- b. VetTest 8008, IDEXX, Portland, ME
- c. Reflotron, Boehringer-Mannheim, Indianapolis, IN
- d. Seralyzer, Miles, Elkhart, IN
- e. Gemstar II Chemistry System, Schiapparelli Biosystems
- f. Analyst, DuPont, Wilmington, DE

#### ■ References and Suggested Reading

1. **Altman RB:** Establishing an avian practice. *Proc Assoc Avian Vet*, 1990, pp 390-393.
2. **Antelyes J:** Tactics vs. strategy in practice. *J Am Vet Med Assoc* 191(12):1542-1544, 1987.
3. **Antelyes J:** Client hopes, client expectations. *J Am Vet Med Assoc* 1997(12):1596-1597, 1990.
4. **Bauck L:** Client compliance in avian medicine. *Proc Assoc Avian Vet*, 1990, pp 491-493.
5. **Bennett PM, et al:** Development of LYNX: A computer application for disease diagnosis and health monitoring in wild mammals, birds and reptiles. *Vet Rec* 128:496-499, 1991.
6. **Cooper JE:** Veterinary work with non-domesticated pets. *I Brit Vet J* 142(5):411-419, 1986.
7. **Elkins AD, Brackenridge S:** Methods of coping with stress and prevention of burnout in veterinary practice. *Comp Cont Ed No Am Ed Small Animal* 14(2):157-161, 1992.
8. **Fudge AM:** Avian practice tips. *Vet Clin No Amer Sm Anim Prac* 21(6):1121-1134, 1991.
9. **Gallerstein GA, Acker H:** “Mixed” avian/small animal practice management: Some of the critical components. *Proc Assoc Avian Vet*, 1991, pp 66-77.
10. **Garbe JAI:** Wildlife law: The international and federal components. *J Zoo & Wildl Med* 21(2):140-154, 1990.
11. **Harrison GJ, Harrison LR:** Management procedures. In Harrison GJ, Harrison LR (eds): *Clinical Avian Medicine and Surgery*. Philadelphia, WB Saunders Co, 1986, pp 85-100.
12. **IME:** Computers in avian practice. *Assoc Avian Vet Today* 2(4):196-201, 1988.
13. **IME:** Practice tips. *J Assoc Avian Vet* 4(3):152-154, 1990.
14. **IME:** Avian practice management part II. *Assoc Avian Vet Today* 1(1):15-16, 1987.
15. **Ingraham AS:** The chemistry of disinfectants and sterilants. *Contemp Topics - AALAS* 31(2):18-23, 1992.
16. **Jenkins J:** Promoting practice loyalty through an enhanced owner/bird bond. *J Assoc Avian Vet* 6(20):1992.
17. **Johnson-Delaney CA (ed):** Avian Emergency Care: A Manual for Emergency Clinics. Seattle, Assoc of NW Avian Vet, 1991.
18. **Kidd R:** Making the most of your clinical pathology laboratory. *Vet Med Jan*:12-20, 1991.
19. **Lawyer DF:** Disinfection of animal environments. In Kirk RW (ed): *Current Veterinary Therapy X*. Philadelphia, WB Saunders Co, 1989, pp 90-95.
20. **Levine BS:** Avian diagnostics: A guide to caring for caged birds. *Vet Med May*:469-481, 1987.
21. **Lyon K:** Sources of information. *Vet Clin No Amer Sm Anim Prac* 21(6):1111-1120, 1991.
22. **Macwhirter P:** Avian practice in Australia. *Proc Assoc Avian Vet*, 1989, pp 46-56.
23. **Marshall R:** The management of diseases in the pet shop. *Proc Assoc Avian Vet*, 1991, pp 205-223.
24. **McDonald SE:** Avian reference list. Introduction to Avian Medicine and Surgery. *Assoc Avian Vet*, 1991, p R2-1.
25. **Merkel E:** Concurrent small animal/exotic practice: Technician’s role. *Proc Assoc Avian Vet*, 1989, pp 454-457.
26. **Mitzner B:** In-house laboratory testing for the avian practice. *J Assoc Avian Vet* 6(2):88-90, 1992.
27. **Nye RJ:** How to select avian equipment, supplies and laboratories for the small animal hospital. Introduction to Avian Medicine and Surgery. *Assoc Avian Vet*, 1991, pp R1-R12.
28. **Roskopf WJ, Woerpel RW:** The role and importance of the avian health technician in today’s clinical setting. *Proc Assoc Avian Vet*, 1990, pp 489-490.
29. **Stonebreaker B:** Developing an avicultural practice. *J Assoc Avian Vet* 4(1):13-14, 1990.
30. **Wilson L:** Care and handling of clients from phone calls to office calls. *Proc Assoc Avian Vet*, 1989, pp 449-453.
31. **Zimmer JF, et al:** Evaluation of the efficacy of selected commercial disinfectants in inactivating *Giardia muris* cysts. *J Am An Hosp Assoc* 24:379-385, 1988.