

# The Avian Triage: Managing the First Steps

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**Abstract:** Emergencies are a common occurrence when dealing with avian patients. In addition to true acute emergencies, their ability to mask their symptoms can result in a chronic illness developing into an acute presentation. Preparation and planning can make the life or death difference in an avian emergency where the first few steps are the most crucial. The support staff play a critical role in the triage process, so having the proper plan in place can make the entire process more efficient.

The following discussion will focus on the triage process and how patient monitoring must coincide with effective client communication and obtaining a relevant history. Having the ability to recognize the most elusive signs and symptoms while communicating with the client and veterinary team are the key elements during any emergency. This discussion will review common species, most common emergencies, handling, initial treatments and other supportive care techniques. When discussing the avian emergency, it is important to review the CPR process and the skills required to streamline a code situation. This includes techniques for intubation, intravenous or intraosseous catheter placement, and positive pressure ventilation, among others. Overall, having the skill set to organize, prepare, and facilitate all aspects of an avian emergency will increase the efficiency of the hospital and increase the patient treatment success rate. It will also allow the support staff to expedite the first steps of a true avian emergency quickly and effectively.

## Introduction

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Avian emergencies are frequently seen amongst animal hospitals, due to their innate ability to hide and mask symptoms in order to avoid predation. In addition to being masters of disguise, they can also exhibit acute emergencies that require immediate attention. It is imperative that the support staff have the knowledge base in order to streamline these emergencies. Due to their high metabolic rates and small stature, birds can decompensate very quickly due to handling and stress. Support staff should have the ability to recognize signs and symptoms of illness, know proper restraint techniques, streamline communication with clients, perform advanced treatments, and CPR. With the possibility of a poor prognosis and rapid decline, it is important to utilize the skills in the following discussion in order to ensure the effectiveness and success of any avian emergency.

## Common Companion Avian Species

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Birds are the most popular specialty (or exotic) pet in the United States, only second to fish. Psittacines tend to be the most popular among them, which includes of number of species. Besides psittacines, there are still a number of other species that could present, and it's important to understand each one and the differences between them in order to implement appropriate treatment options. Each species could exhibit differences in anatomy, physiology, and behavior- which could alter handling, treatment plans, etc. The following is a list of some common companion avian species:

### Psittacines

Macaws	Eclectus
Cockatoos	Caiques
Cockatiels	Pionus
Amazons	Lories
Conures	Parakeets
African Greys	Quaker Parrots
Lovebirds	Meyer's Parrots
Parrotlets	Budgerigars

### Passerines

Finches	Canaries
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### Columbiformes

Doves	Pigeons
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### Galliformes

Chickens	Quail
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### Anseriformes

Ducks	Geese
Swans	

## Common Avian Presentations

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As it was stated previously, birds can present for anything from acute trauma to a list of possible chronic illnesses. Recognizing the differences amongst these common presentations can determine the clinical outcome. The following charts categorize some of the most common avian emergencies.

### Acute Trauma

<ul style="list-style-type: none"> <li>• Fractured Extremity</li> <li>• Abrasions and Lacerations</li> <li>• Bite wounds</li> <li>• Burns</li> <li>• Rhamphotheca trauma</li> <li>• Band or constricting wounds</li> </ul>	* Active bleeding (i.e. broken blood feathers)
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## Respiratory

- Tracheal obstruction
- Rhinitis/sinusitis
- Irritant or toxin
- Upper or lower airway disease (bacterial, fungal)
- Coelomic cavity disease (organomegaly, neoplasia, ascites, etc.)

## Gastrointestinal

- Anorexia
- Crop stasis
- Regurgitation
- Diarrhea/Melena/Undigested food

## Reproductive

- Cloacal/Uterine Prolapse
- Dystocia
- Ascites (reproductive disease/mass)
- Egg yolk peritonitis

## Cardiac

- Atherosclerosis
- Stroke

## Neurologic

- Seizures
- Ataxia and tremors
- Head trauma

## Recognizing the Signs: The Most Important Step

Having the ability to recognize the subtle signs and symptoms an avian patient may be displaying, is one of the most important skills the support staff can acquire. Birds will often become very elusive once an illness begins. So much so, that their debilitation will often go unnoticed by their owners for a significant amount of time. By the time owners may recognize something is awry, the patient can be at a fairly critical state. Owners may often only notice one symptom, when the bird may actually present with several. It is the support staff's main objective to be able to recognize the severity of the presentation. This will determine the initial steps that can establish the outcome of the case.

The subtle signs are the ones that easily can surpass most owners and any staff with an untrained eye. It is important to develop the skill to be able to simultaneously communicate with an owner while closely evaluating the avian patient. Most of these signs include tail bobbing, fluffed in appearance, sitting on the floor of the enclosure, sleeping or attempting to sleep on and off, open beak breathing, laying on keel, clenched feet and/or toes, or food particles/ liquid along head and/or rhamphotheca. Tail bobbing and open beak breathing typically indicate dyspnea with the cause possibly being a tracheal obstruction, coelomitis,

organomegaly, etc. Being fluffed in appearance may seem irrelevant, but can show a more sinister presentation at times. Most birds use this method in order to thermoregulate. The more air they trap within their feathers, the more heat they can use to help elevate their temperatures. A consistently fluffed appearance may indicate that they are having difficulty thermoregulating. Clenched feet and/or toes can be suggestive of a possible stroke event caused by atherosclerosis (usually associated with genetics or diet). Food particles and liquid around the head and/or rhamphotheca can indicate regurgitation. Sleeping on and off may not seem emergent, but it can be one of the most indicative symptoms of a more guarded prognosis. Birds do not appreciate being out of their common environment. They should be vocalizing, observing, and being generally “on alert” when not in their homes. Sleeping indicates a possible chronic illness that has taken its toll overtime and has officially caused the patient to decompensate. Any of the above symptoms could not only be very indicative of illness, but pain, as well. Noting the level of pain is also significant in the first steps of treatment.

Aside from the elusive signs, there are several that can tend to be a little more obvious. These are usually associated mostly with acute traumas or neurologic conditions. These include active bleeding, limping/wing drooping, or seizures. The majority of these presentations will most likely require immediate action, which will be addressed later in the discussion.

## **Streamlining Communication with the Client**

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Circling back around to the initial steps of any triage, one of the most essential points to discuss is how to properly streamline communications with the client in a high stress situation. Simultaneously evaluating a patient while asking pertinent questions and controlling the conversation can prove to be quite difficult. On presentation, clients can be stressed, upset, irrational, angry, etc. Having crucial communication skills during these moments can be quite beneficial in order to obtain relevant information effectively.

Sticking to a script and remembering to ask specific questions can help facilitate any conversation. With clients becoming irrational or upset, they may try to veer the conversation down a separate path regarding finances, their personal lives, or a story about the animal’s favorite toy. Staying focused on a script can keep the conversation on point and productive, thus speeding up the triage process and focusing on treatment. Which questions are the most important? How do you ask the least amount of questions and get the most useful information? A few general questions are necessary to begin the conversation:

1. “What brings you in today?”
2. “How long have you noticed these symptoms?”
3. “Does your pet have any medical history?”
4. “Is he/she on any medications?”
5. “Do we have permission to give medications?”
- 6 “CPR or DNR?”

It is usually necessary to retrieve a triage with 2 technicians. This allows one person to be able to communicate with the client while the other is evaluating the patient and possibly taking action pending the emergency. Species specific triage templates can be used to expedite the process once the patient has been taken for evaluation. These templates provide precise questions based on species, and help the technician ask appropriate questions once the owner can be escorted into an exam room. Husbandry forms are another tool that can be used to facilitate client communication. These forms ask detailed questions relevant to the patients' history of ownership (i.e. diet, previous medical history, medications, owners, etc.) The client can typically fill these out while the patient is being evaluated. This can help the doctor completely evaluate the patients' relevant history without delaying the treatment process.

### **Initial Treatment Actions: Have a Game Plan**

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The first treatments can determine the success of any avian emergency, which is why it is essential to have the skill to determine when to take action immediately, or provide non-invasive support. Any avian patient on emergency should never be handled without the presence of a veterinarian and/or speaking to the client first. One of the biggest concerns of any avian emergency is handling a critically ill patient, and having them decompensate quickly before speaking to the owner. The owner may not realize how compromised their pet was, and be quick to blame the staff if they are not properly advised prior to the exam.

It is also essential to have a game plan prior to any handling. The veterinarian and technician can typically perform a physical exam from a distance in order to determine some treatment options they may be able to prepare prior to handling. It is imperative to have the patient placed into heat support and/or oxygen therapy until a plan has been established. The goal is to decrease any prolonged handling and initiate supportive care. Any diagnostics can be done at a later time once the patient has been stabilized. Initial treatment options for most emergencies include analgesia, antimicrobials, and/or fluid therapy. Considering these options, a technician can help determine a game plan by preparing these treatments ahead of time based on the veterinarian's evaluation.

### **Analgesia**

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Multimodal pain management can be one of the most essential initial treatment options for any emergency. Determining how to avoid wind up and instill proper pain control can play a major role in any treatment plan. In most exotic species, especially birds, it can be difficult to determine proper pain control due to lack of literature and how each pain medication can affect each species. However, most pain management techniques have been effective based on clinical analysis, and the successful treatment of emergency cases. With that being said, there are a few dependable options that can be administered to avian patients to provide them with relief.

### **Non-Steroidal Anti-Inflammatories**

Non-steroidal anti-inflammatories are useful in most avian emergencies. Meloxicam is the most well-known NSAID used in birds and is available as an injectable or oral medication.

Injectable is usually preferred in most emergency cases as it should take effect faster than oral administration. Of course, it is desirable to have kidney values prior to administration, however, they are usually given to younger patients initially (who are least at risk for kidney failure). Most conditions instill some sort of inflammatory process, so it is important to consider an NSAID in order to gain full pain control. Dosage recognized in "Exotic Animal Formulary" 5<sup>th</sup> edition (James W. Carpenter) is 0.5 mg/kg Q 12 hours.

### **Opioids**

Opioids are a necessary analgesic for any patient presenting with mild to moderate pain. One of the most favorable opioids for avian patients include Butorphanol, a partial mu agonist/antagonist with strong agonist activity at the kappa receptors. There is literature stating that butorphanol provides a decent amount of analgesia in birds, however, its effects are very short lived and it has to be administered frequently (usually every 4-6 hours). Buprenorphine is another opioid known as a partial mu agonist. Its effects are much longer than butorphanol, however, there is not a lot of scientific evidence supporting its analgesic effects in birds. Clinically, some veterinarians have found it provides adequate pain relief and lasts for a longer period of time (usually given every 8 hours).

### **Local/Topical Anesthetics**

Depending on the presenting complaint, a local or topical anesthetic can be a very useful analgesic tool to help provide relief. It can also lower the amount of other pain relievers needed overall. Lidocaine is used fairly frequently on patients both topically and as an injectable. Injectable lidocaine can be used for trauma patients, for example, blood feathers that may need to be extracted. Dosage is typically 2 mg/kg for avian patients. It can also come in the form of a cream known as EMLA cream (2.5% lidocaine and prilocaine 2.5%). This is particularly useful prior to painful injections, IO or IV catheter placement. Local anesthetics can provide extra pain relief to lower the amount of stress overall during the treatment process.

### **Sedation**

Sometimes adding sedation in conjunction with pain relievers can be useful with pain management and creating a less-stressful physical examination. Sedatives are also always necessary when presented with an active seizure case. A benzodiazepine paired with an opioid can be a beneficial concoction during an emergency. Midazolam is usually the most popular choice in avian patients. It is especially useful because it can be given via different routes including intravenously, intramuscularly, or intranasally. Intranasal can be particularly beneficial given its' less invasive tactic. Keep in mind, this route may not be as effective in Galliformes and Anseriformes. Midazolam can also be reversed, which is another favorable quality of this benzodiazepine. Flumazenil is the antagonist used if the patient is required to be reversed.

### **Fluid Therapy and Evaluating Hydration Status**

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Fluid therapy is usually a requirement with the majority of avian emergencies, most of

which result in dehydration. Whether presenting with acute trauma which caused significant amount of blood loss, or a chronic illness that has been manifesting for days, both can cause notable fluid loss. Considering most avian species carry a typically high body temperature, it is important to always have warm fluids available. The temperature of these fluids should always be evaluated prior to administration. Lactated Ringers and Normosol-R are the most acceptable crystalloids given to avian patients. Usually, during the initial presentation, unless the patient is laterally recumbent, subcutaneous fluids are most desirable to administer since they are fast and less invasive. Fluid dosages can range from 50 ml/kg- 75 ml/kg based on level of hydration. One of the methods to determine hydration status is tenting the eyelid. If when the eyelid is gently tented, it remains in that position for an extended period of time, it is indicative of severe dehydration. If a patient presents for blood loss, it is extremely important to question the owner as to how much blood they believe was lost prior to presentation. Reestablishing a normal hydration status should be one of the primary goals when initially treating an avian emergency.

### **Antimicrobials**

Antimicrobials can be a vital addition to treating anything from a chronic illness to acute trauma. It is vital to start treating any possibly of infection that most likely has already began to worsen on presentation. For initial treatment, a broad-spectrum antibiotic that is available in injectable form can be most beneficial. They are easy and quick to administer, with some lasting for a long period of time (which means less handling overall).

Enrofloxacin is usually a very popular choice in most clinical settings. It is a fluoroquinolone that can be used as an initial treatment for chronic illnesses or unknown traumas. As an injection, it is administered subcutaneously into a fluid pocket to avoid the possibility of tissue necrosis (usually in warm LRS or saline). The dosage calls for every 24 hours, which is desirable to avoid restraining the patient as much as possible.

Doxycycline (Vibramycin) is a tetracycline that can be useful for other chronic illness emergencies that could present, usually as severe upper respiratory infections. This includes suspected *Chlamydophila psittaci* infections. Doxycycline should only be used in the vibrovenos formulation for intramuscular injections. Other formulations of injectable doxycycline can cause severe tissue necrosis. This injection can be painful and high in volume but the frequency is only every 5-7 days.

When presenting with certain traumas such as an animal bite wound, especially feline, it is imperative to get a broad-spectrum antibiotic onboard as quickly as possible. There are several injectable choices including Ceftazidime which is a 3<sup>rd</sup> generation cephalosporin. This medication dosage in avians is usually 100 mg/kg IM every 6 hours. Piperacillin/Tazobactam, otherwise known as Zosyn, is another option for bite wounds. This is an extended spectrum penicillin and beta lactamase inhibitor. This antibiotic has increased spectrum of activity, providing expanded coverage. The dosage is 100-200 mg/kg IM every 8-12 hours. In a clinical setting, if available, this tends to be the more desirable choice since the dose is every 12 hours vs. ceftazidime which is every 6 hours.

## **Game Plan is Set. Now What?**

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A plan has been formulated collectively between the doctor and technician, so now what are the next steps? In order to streamline the treatment process and move as effectively as possible, it is imperative to be completely prepared. That means, having all of the treatments pulled up and ready, a scale (weighing bucket), a prepared enclosure to place patient into when treatments completed, and emergency drugs available if the patient is a CPR code. During treatment, running around looking for equipment or medications is something that should be avoided. It prolongs handling and restraint, which can result in increased patient stress and possibly death. A breakdown of the treatments and order of which they should be performed, is essential to discuss with the doctor or other technician prior to the patient begin handled. This will help move things along more quickly. A weight should be retrieved before any other treatment to ensure dosages of medications or other treatments drawn up. Treatments, such as gavage feedings, should always be completed last to reduce the risk of regurgitation and aspiration. The patient should be placed into an appropriately set-up enclosure as soon as the treatments are completed, and observed, to make sure they can recover.

## **Always Be Prepared: CPR**

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When working in an emergency hospital, especially with avian patients, it is important to understand how to properly administer CPR. Avian patients can decompensate very quickly so it is always necessary to be prepared. Although CPR can be similar between mammals and birds, it is important to understand the differences, mostly due to anatomical distinctions. For example, when a patient begins to go agonal and a heart rate cannot be detected, it is important to begin cardiac compressions. Technically, it is impossible to perform direct cardiac compressions on birds' due to their overlying sternum or keel. However, sternal compressions should still be administered in order to pump air through the air sac system. The patient should be placed in dorsal recumbancy and compressions can be administered at 60-100 times per minute.

Airway access should be obtained using a cole tube or another non-cuffed ET tube. In smaller species, sometimes a larger IV catheter can be used if they are too small for manufactured ET tubes. Birds have complete tracheal rings that are extremely susceptible to damage and necrosis if a cuffed tube is used. The tracheal opening can easily be visualized in many species at the base of the tongue. The tube can be secured using tape wrapped around the tube and the rhamphotheca. It should then be connected to a non-rebreathing circuit delivering 100% pure oxygen. Intermittent positive pressure ventilation should be administered at 20-40 breaths per minute. Assuring airway access can be easily detected by observing the chest rising and falling with a bellowing action and attaching a capnograph.

IV or IO catheter access is essential in order to administer fluid therapy and emergency medications quickly. IV access can be obtained in several different vessels including the basilic vein (wing), metatarsal vein (foot), or tibial vein (lower leg). Sometimes upon presentation, the vessels are extraordinarily hard to visualize or gain access to. In these cases, sometimes it is more convenient and time savvy to administer an IO catheter. In birds, the most desirable



locations include the ulna on either wing, or the tibiotarsus. These catheters need to eventually be secured with suture after placement has been insured. It is important to recognize that IO catheters are avoided in the humerus and femur in these species due to them being pneumatic bones (i.e. housing air sacs). Once access has been established, a fluid bolus of a warm crystalloid should be administered at 10-25 ml/kg over 5 minutes.

Emergency drugs should also be simultaneously administered. Similar to other species, atropine and epinephrine are usually the initial medications given to the patient. For birds, the typical dosing for epinephrine is 0.01 mg/kg IV or IO and atropine is 0.02- 0.04 mg/kg IV or IO. Sometimes, especially during a seizure event if hypocalcemia is a concern, calcium gluconate can also be administered at 100 mg/kg IV or IO slow bolus. Heat support is usually a necessity during this whole process, as well. Birds have a very high metabolism, which means a very high rate of change, including drops in body temperature. Achieving the proper heat support can be administered by providing the patient with a hair hugger, water blanket, or hot dog blanket.

Preparation for CPR is always important which means having a fully stocked crash cart is a necessity in any emergency room. All crash carts should contain the following: ET tubes (all sizes), oxygen masks, catheters (all sizes), emergency drugs, tape, saline flush, needles, suture material, vetwrap, insulin syringes (30 unit, 50 unit, 100 unit), 1 ml syringes, 3 ml syringes, chlorhexidine scrub, and 4x4 gauze. It is especially helpful to make a checklist that can remain in the crash cart, making stocking and preparation more efficient.

## **Conclusion**

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In the field of treating any exotic animal species, especially birds, it is essential to always be prepared and knowledgeable about managing the first steps of an emergency case. It has been demonstrated that there are a number of reasons why the avian patient may present on emergency. Any case from an acute trauma to a chronic illness can present in a similar fashion, but it is essential to have the skills to differentiate and determine how guarded the prognosis may be. This may determine if the patient can survive the stress of being handled for more than just supportive care. Streamlining client communication can facilitate these emergencies and gather pertinent information in order to help prep the client for several different outcomes. Supportive care should be the main objective before any sort of diagnostics are even considered until the patient is stabilized. Anywhere from triaging on initial presentation and client communication to planning a treatment layout and CPR, technicians should be familiar with the hospital protocols. Time is of the essence in these cases, and it is important for the support staff to be educated and confident in their decision-making capabilities in order to efficiently streamline an avian emergency.

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