

## AVIAN EMERGENCY & CRITICAL CARE




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**OSU VETERINARY MEDICINE**

Summer Seminar 2024

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## AGENDA

- Introduction
- History and physical exam
- Diagnostics
- Treatments
- Common emergency presentations
  - Dyspnea
  - Reproductive
  - Gastrointestinal
  - Neurologic
  - Fractures
  - Dermatologic

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## INTRODUCTION

- Birds hide signs of illness
- A bird showing signs of illness in the hospital is likely in critical condition!
- May need to perform PE in stages
  - Get all your equipment ready before picking up the bird to minimize handling time
- May need to stabilize before diagnostics

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## SIGNALMENT

- Age
- Species
- Male or female?
  - How determined?
    - DNA sexing?
    - Laid eggs?
  - Sexually dimorphic?
    - Eclectus
    - Budgies
    - Cockatiels
  - Most parrots are NOT




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## HISTORY


- Housing
  - Cage
    - Galvanized?
  - Cleaning method
- Toxin exposure?
- Diet
  - Seeds? Pellets? Human food?
- Other animals
  - Any new birds? Quarantined?
  - Pet stores for nail trims?
  - Any other pets?



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## VISUAL EXAM

- Attitude
- Respiratory rate/effort
  - Increased respiratory effort:
    - ↑ Coelomic excursions
    - Wings held out from body



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### TRIAGE EXAM

- If dyspneic, may need to stabilize in oxygen before exam
- Warn owner that bird could die with handling!



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### TRIAGE EXAM

- Hydration status
  - Eyelid tent
  - Tackiness of skin
- Crop
- Body condition
- Palpate coelom
- Briefly auscultate
  - Heart, lungs, air sacs
- CRT
  - Basilic vein
  - Comb in chickens
- Weight



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### TRIAGE EXAM

- If bird becomes stressed with initial exam or appears critical, give bird a break for several minutes
  - Consider heat support and oxygen
  - Warn owner that bird could die!
- If appears stable on triage exam, move on to complete physical exam



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### FULL PHYSICAL EXAM

- Eyes
  - Palpebral
  - PLR?
  - Pecten
- Nostrils
- Beak occlusion/length
- Oral
  - Choana
  - Glottis
- Ears



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### FULL PHYSICAL EXAM

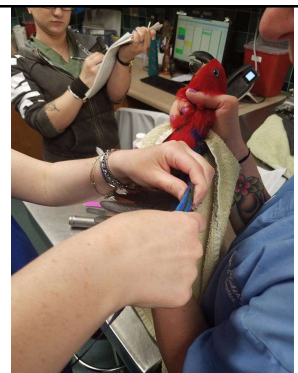
- Crop
- Coelomic palpation
- Vent/cloaca



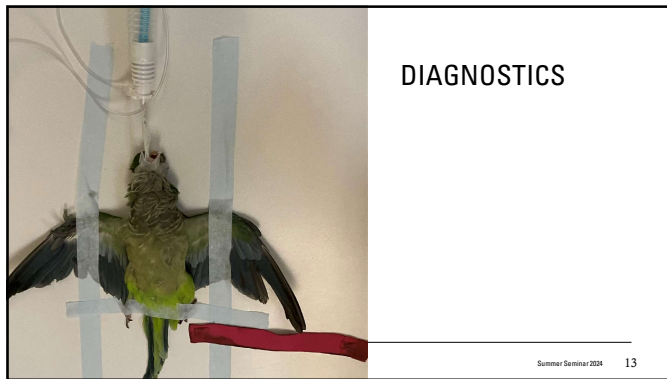
11

### FULL PHYSICAL EXAM

- Auscultate heart, lungs, air sacs
- CRT
- Palpate wings/legs
- Plantar surfaces
- Uropygial gland
- Feathers



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### BLOODWORK

- Maximum of 1% body weight
  - 1 mL in 100 g cockatiel
  - 0.3 mL in 30 g budgerigar
- Ideally take less in sick birds!
- Account for hematoma or any bleeding

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### BLOODWORK

Jugular

- Right larger than left
- Good site in most birds
  - Exceptions:
    - Waterfowl lack featherless tract
    - Pigeons have venous plexus
- Hold off well!

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### BLOODWORK

- Medial metatarsal vein
  - Good for poultry, waterfowl, pigeons, long-legged birds
  - Easy to place pressure bandage

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### BLOODWORK

- Basilic (ulnar) vein
  - Easy to visualize
  - Tends to form hematomas
  - Hold off well!
  - Not easy place to pressure bandage

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### BLOODWORK

- Hematology
  - Heterophils
  - Nucleated RBCs
  - Thrombocytes
- Biochemistry
  - Higher glucose
  - Kidneys: uric acid, urea
  - Liver: AST, bile acids
  - Proteins: albumin less accurate vs EPH
  - Cholesterol, triglycerides
  - Electrolytes

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## RADIOGRAPHS

- Sedation or anesthesia needed for most birds for proper positioning
  - Restraining awake birds for rads is stressful
    - Stress can be MORE dangerous than sedation/anesthesia!
    - Can fracture a wing!
  - Can be impossible to take rads on awake small birds without radiographing your fingers



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PLEASE DON'T DO THIS!



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## RADIOGRAPHS

- Feather-safe tape
  - Especially for wild birds that need perfect flight to be released



3M Micropore Surgical Tape



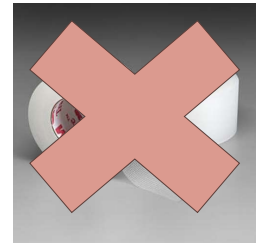
Scotch Blue Painter's Tape



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## RADIOGRAPHS

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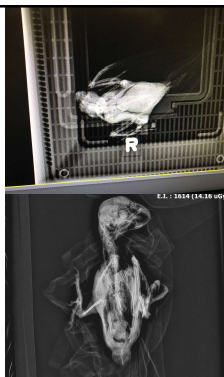


3M Transpore Surgical Tape is **NOT** recommended – damages feathers

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## RADIOGRAPHS

- “Bird-in-the-box” radiographs
  - ONLY to look for:
    - Mineralized eggs
    - Heavy metal



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## Treatment



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## SUPPORTIVE CARE

- Heat support
  - Most sick birds could benefit
  - Esp. tropical species like parrots
  - Use caution in heavily feathered, large, or overweight birds
    - Ex. Poultry, waterfowl, pigeons
    - Can overheat
- Oxygen
  - If dyspneic



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## FLUIDS

### SQ Fluids

- Mild-moderate dehydration
- Location: leg skin fold
- Maintenance ~70 ml/kg/d
  - Higher in passerines and young birds
  - Maintenance + dehydration divided over 2-3 boluses per day
- Ensure bubble forming
  - Too deep → can enter air sacs!



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## FLUIDS

### IV Fluids

- Moderate-severe dehydration
- Sites: medial metatarsal, jugular, basilic v.
- Parrots need e-collar and **CONSTANT** supervision with indwelling IVC
  - Self-removal → fatal hemorrhage!
- Self-removal less of a concern in larger birds with weaker beaks (poultry, waterfowl)

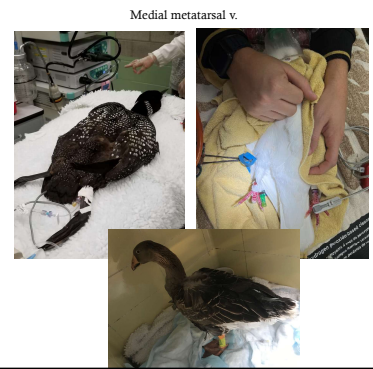


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## FLUIDS

### IV Fluids

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## FLUIDS

### IO Fluids

- Moderate-severe dehydration
- If unable to place IVC or concerned about self-removal
- Sites: distal ulna, proximal tibiotarsus
  - NOT pneumatized bones like humerus
  - Note: ulna pneumatized in pelicans, turkey vultures
- Painful!
  - Analgesics, local block, potentially sedation/anesthesia for placement

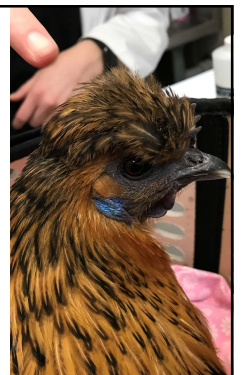


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## PAIN MEDICATIONS

### Non-Steroidal Anti-Inflammatories

- Mild pain
- Meloxicam
  - Safe in most bird species
  - 1 mg/kg q 12-24 h in most species
    - Pelicans need much less
  - No renal toxicity at 20 mg/kg q 12h x 7 d in kestrels
  - Renal toxicity at 5 mg/kg q 12h x 5 d in chickens



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## PAIN MEDICATIONS

### Opioids

- Moderate to severe pain
  - Fractures, wounds, egg-binding, etc.



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## PAIN MEDICATIONS

### Opioids

- Effectiveness of opioids varies by species and may be different from mammals
- Butorphanol
  - Kappa agonist
  - Poor analgesic in mammals
  - Effective in parrots
  - Not effective in kestrels



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## PAIN MEDICATIONS

### Opioids

- Buprenorphine: partial mu
  - Effective in kestrels, red-tailed hawks, pigeons
  - Not effective in parrots
- Hydromorphone: pure mu
  - Effective in kestrels
  - Not effective in cockatiels
  - Effective in Amazon parrots but associated with side effects (ataxia, nausea)



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## PAIN MEDICATIONS

### Opioids

- Tramadol
  - Effective in variety of species including ducks, Amazon parrots, kestrels, etc.



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## SEDATION & ANESTHESIA

### Sedation

- May be able to do some diagnostics/procedures with conscious sedation alone
- Midazolam 2-4 mg/kg + butorphanol 2-4 mg/kg IM works well in variety of birds
  - Smaller birds tend to need more sedation
  - Cockatoos more sensitive



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## SEDATION & ANESTHESIA

### Anesthesia

- Isoflurane or sevoflurane
- Often masked down
- Intubate if longer than a few minutes
- Monitoring: Doppler, pulse ox, ETCO2



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## NUTRITIONAL SUPPORT

- Offer variety of foods to hospitalized bird
  - Do NOT attempt to convert to new diet while sick
- If anorexic:
  - Tube/gavage feeding
  - Metal tubes for parrots
  - RR tubes for poultry, waterfowl, pigeons



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## FURTHER TREATMENT?

- Consider GI protectants
  - Esp. if prolonged anorexia in a small bird
  - Consider fecal occult blood
- Antimicrobials depending on diagnosis
- Steroids?
  - Birds very sensitive to immunosuppression
  - AVOID unless necessary (ex. LSA)
  - Often give concurrent antimicrobials



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## COMMON EMERGENCY PRESENTATIONS

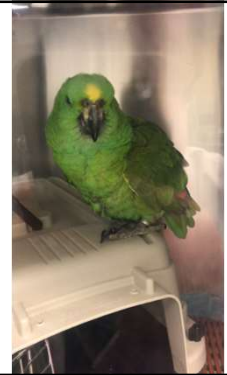


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## DYSPNEA

- Upper airway
  - Foreign body
  - Tracheal granuloma
- Lungs/air sacs
  - Bacterial: *Chlamydia*
  - Fungal: aspergillosis
  - Aspiration pneumonia
- Coelomic cavity
  - Effusion
  - Masses
  - Egg binding



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## DYSPNEA

- Respiratory toxins
  - Smoke
  - Nicotine
  - Teflon
  - Ammonia, bleach
  - Scented candles
  - Self-cleaning ovens
  - Avocado
    - Pericardial effusion

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## DYSPNEA

- Diagnostics
  - May need to delay until stable
  - Radiographs
    - Air sac thickening or lung consolidation
    - May not see changes until dz advanced
  - CT
  - CBC: leukocytosis, ↑ Hct
  - Infectious disease testing
    - Chlamydia PCR & serology



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## DYSPNEA

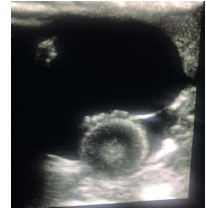
- Treatment
  - Oxygen!
  - Anti-inflammatories
  - Antimicrobials if indicated
  - Bronchodilators?
  - Low-dose sedation?



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## REPRODUCTIVE EMERGENCIES

- Egg binding
- Egg-related coelomitis
- Cloacal prolapse
- Phallus prolapse
  - Species with a phallus
    - Waterfowl



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## EGG BINDING

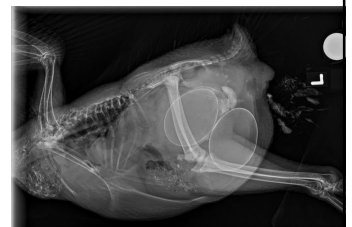
- Egg binding vs dystocia
  - Egg binding: prolonged oviposition
  - Dystocia: obstruction
- Causes:
  - Hypocalcemia
  - Excessive egg laying
  - Large egg
  - Salpingitis
  - Impaction
  - Neoplasia



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## EGG BINDING

- Diagnostics
  - Bird-in-the-box rad
  - Ideally positioned, sedated rads
  - CBC
  - Biochem: total Ca
  - iCa



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## EGG BINDING

- Medical management:
  - Heat support
  - Humid environment
  - Low stress
  - Oxygen
  - Fluids
  - Analgesics
  - Calcium
  - Antibiotics if concern for oviduct rupture



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## EGG BINDING

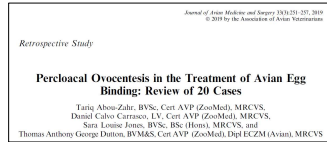
- Oxytocin?
  - Controversial
  - Give calcium first
  - Only if uterovaginal sphincter dilated and uterus free of adhesions
- Prostaglandins
  - Intracloacal PGE2 gel
  - Relaxes uterovaginal sphincter

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## EGG BINDING

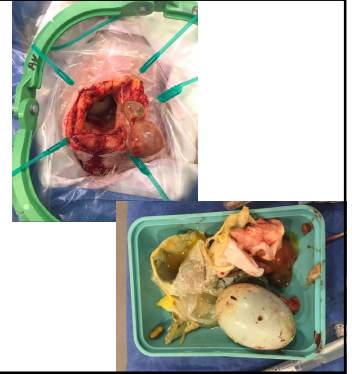
- Percloacal oocentesis (egg implosion)
  - Visualize egg thru cloaca
  - 18 g needle, aspirate contents
  - Remove shell if possible
  - Possible complications: hemorrhage, egg fragmentation
- Percutaneous oocentesis?
  - Risk of coelomitis
  - Egg could be ectopic!
  - **NOT RECOMMENDED**



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## EGG BINDING

- Cloacoscopy
- Advanced imaging (CT)
- Surgery
  - Salpingotomy vs salpingohysterectomy
  - OVE associated with high risk of fatal hemorrhage
  - Long-term GnRH agonists after salpingohysterectomy to prevent ectopic eggs



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## EGG BINDING

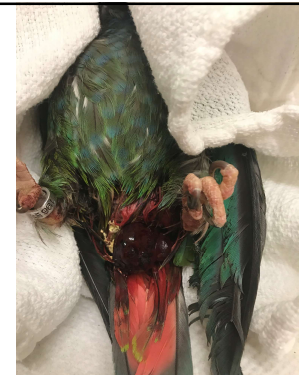
- Prevention
  - Husbandry
    - 10-12 hours darkness
    - No nesting sites/tents
    - Avoid high calorie foods
    - No petting over back
  - GnRH agonists
    - Leuprolide q 2-3 weeks
    - Deslorelin q 2-6 months



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## CLOACAL PROLAPSE

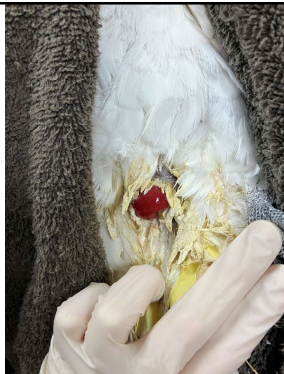
- Cockatoos > other parrots
- Causes:
  - Gastrointestinal/cloacal
    - Enteritis/cloacitis
    - Papillomatous masses
    - Foreign body
    - Neoplasia
  - Reproductive
    - Egg binding
    - Hormonal



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## CLOACAL PROLAPSE

- Diagnostics
  - Signalment and history!
  - Fecal cytology (wet mount, Gram stain)
  - Fecal flotation
  - Fecal culture
  - Bloodwork
  - Imaging
    - Esp. in females to look for eggs



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## CLOACAL PROLAPSE

- Treatment
  - Lubricate
  - Dextrose
  - Analgesia
  - Antibiotics
  - Replace prolapse
    - Sedation/anesthesia
    - Flush
    - Lubricated CTAs
    - 2 transverse sutures at 3 and 9 o'clock



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## CLOACAL PROLAPSE

- Long-term treatment:
  - Treat underlying cause
  - Reduce reproductive stimuli
  - Consider GnRH Agonists
  - Consider additional surgeries
    - Ex. Asymmetric cloacoplasty



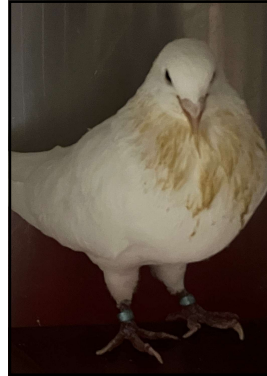
Asymmetric cloacoplasty

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## GASTROINTESTINAL EMERGENCIES

### Vomiting/Regurgitation and Diarrhea

- Bacterial ingluvitis/enteritis
- Yeast ingluvitis/enteritis
- Macrorhabdus ornithogaster*
- Avian ganglioneuritis (PDD)
- Foreign bodies
- Neoplasia
- Extra-GI disease: liver dz, pancreatitis



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## GASTROINTESTINAL EMERGENCIES

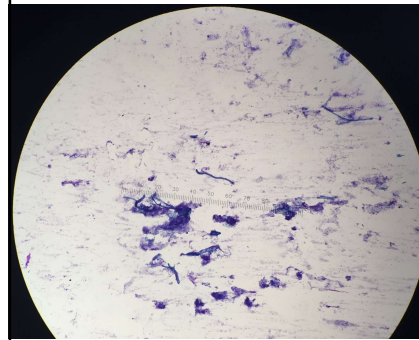
### Diagnostics

- Crop/fecal cytology
- Fecal flotation
- Crop/fecal culture (if indicated)
- Fecal occult blood
- Bloodwork
- Imaging
- Avian bornavirus PCR & serology
- Chlamydia PCR & serology



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### *Macrorhabdus ornithogaster* (avian gastric yeast, megabacteria)



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## NEUROLOGIC EMERGENCIES

- Toxins: lead, zinc
- Metabolic: hypocalcemia, hypoglycemia
- Bacterial encephalitis
- Viral: ganglioneuritis, AI, WNV, paramyxovirus
- Parasitic: *Baylisascaris*, *Sarcocystis*
- Idiopathic epilepsy
- Vascular: atherosclerosis
- Trauma



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## NEUROLOGIC EMERGENCIES

### Diagnostics

- Lead, zinc
- iCa
- CBC & chem
- Rads to look for heavy metal
- Advanced imaging (CT, MRI)
- Avian bornavirus PCR & serology



Pionus with avian ganglioneuritis

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## NEUROLOGIC EMERGENCIES

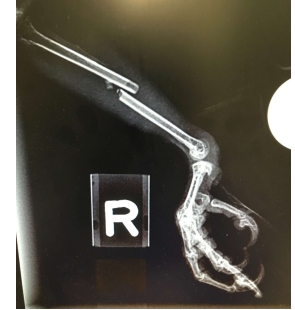
### Treatment of Seizures

- Benzodiazepines to stop seizures
  - Midazolam IM
  - Diazepam IV
- Levetiracetam
- Zonisamide
- Phenobarbital?
  - May not reach therapeutic levels
- Treat underlying cause

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## FRACTURES

- Causes: trauma, metabolic bone disease
- Consider concurrent injuries
- Discuss referral for sx vs external coaptation
- Birds heal fractures quickly!
- **ANALGESIA!**
  - Multimodal: NSAIDs, opioids, +/- gabapentin
- Antibiotics if open fx



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## FRACTURES

### Wing Fractures

- Humerus
  - Sx
  - Body wrap
    - F8 will not stabilize humerus!
- Radius/ulna
  - Sx
  - Figure-8 bandage



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## FRACTURES

### Leg Fractures

- Femur
  - Sx
  - Cage rest
    - CANNOT adequately stabilize with external coaptation
- Tibiotarsus
  - Sx
  - Tape splint for small birds
  - RJ bandage or splint for larger birds



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## DERMATOLOGIC EMERGENCIES?

### Broken Blood Feather

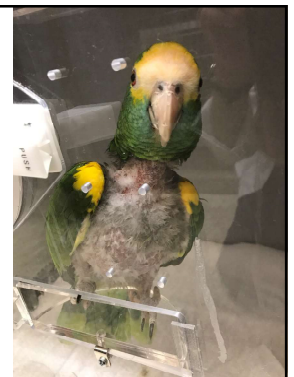
- Analgesics
  - Flight/tail feathers attached to bone!
- Grasp feather firmly with hemostats
  - Ensure removed entirely
- Fluids if blood loss

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## DERMATOLOGIC EMERGENCIES?

### Feather Destructive Behavior

- Not an emergency but may present through emergency
- Physical exam
- +/- bloodwork to evaluate systemic health
- Schedule an appointment for further diagnostics/discussion!
  - Environmental vs behavioral vs medical causes
  - Requires a long conversation with client!
    - Not really suited to time constraints of ER



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## SUMMARY

- Birds hide signs of illness
  - Can present "acutely" for chronic problems
- Physical exam can provide a lot of valuable information
- If bird appears critical, warn owner that bird could die with handling!
- Stabilization and reducing stress are very important
- Diagnostics can allow for targeted treatment

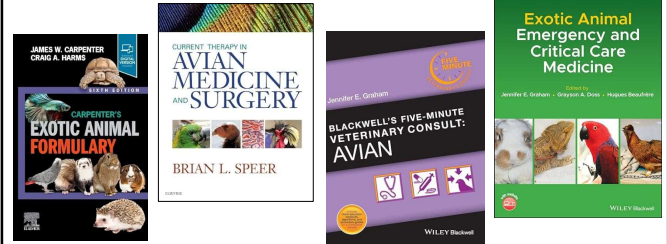


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## RESOURCES



References available upon request

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## THANK YOU!

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