Avian emergency & critical care

Yvonne R.A. van Zeeland, DVM, PhD, MVR, Dip. ECZM (Avian)
Division of Zoological Medicine, Utrecht University, Netherlands

Introduction

- Recognizing critical patients
  - Emergency or not??
- General guidelines
  - Handling techniques
  - Physical & fecal exam
  - First aid and stabilization

Emergency or not??

- Life-threatening emergencies
  - Immediate action necessary
  - Examples
    - Trauma, e.g. bite injury
    - Excessive, uncontrollable bleeding
    - Burns
    - (Suspected) intoxication
    - Dyspnea/Respiratory distress
    - Seizures or collapse
    - Hematochezia or melena
    - Persistent tenesmus

- Urgent care needed
  - See bird as soon as possible
  - Usually within 24 hrs
  - Examples
    - Eye trauma
    - Anorexia, decreased appetite
    - Particularly in smaller birds!
    - Sudden onset of swelling
    - Fractures
    - Vomiting and/or diarrhoea

Avian emergency and critical care

Part I: General guidelines

Yvonne van Zeeland,
DVM, MVR, PhD, Dip. ECZM (Avian)
Division of Zoological Medicine, Faculty of Veterinary Medicine, Utrecht University

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Emergency or not??

- Educate the staff!!!
  - Handling of phone calls
    - Type of bird? Age? Gender?
    - What is the problem?
  - Instruct owners about visit
    - Use of a carrier or cage to transport bird to the clinic
    - Bring feces, medications, ...

Emergency or not??

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Emergency or not??

- Non-urgent problems
  - Need to be looked at, BUT can often wait a few days
  - Closely monitor the bird in the meantime!

History taking

- Related to the problem
  - Type, duration, course, treatments, etc
- General condition of the bird
  - Appetite, drinking, feces, behavior
- Housing & nutrition
  - Commonly involved in disease
- Prior health issues
  - Previous illnesses
  - Preventive treatments

Observation

- From a distance
  - Cage incl. droppings
    - Carrier ~ cage
  - General impression
    - Less stressful

Handing a sick bird

WHAT THINGS TO CONSIDER WHEN HANDLING A CRITICALLY ILL BIRD?

1. Remove ALL items from cage
2. Close doors & windows
3. Make sure everything is prepared
4. Minimize time of handling

Handling smaller birds

Birds do not have a diaphragm
Small birds can easily suffocate when grasping them around the thorax

Handling parrots

Use a towel in stead of gloves

Better protection for both the bird and yourself!
Restraint of a parrot

- Filmpje Lafeber – Restraint

Physical examination

- ‘Hands on’ examination
  - Body condition
  - Short term ~ crop palpation
  - Long term ~ pectoral muscles
- Body weight

- General physical examination
  - Different for birds and mammals
  - From head to tail
  - Limit handling of critical patients!

Fecal examination

- Macroscopic evaluation
  - Urine – pu/pd
  - Urate – biliverdinuria (hepatopathy)
  - Feces – diarrhoea, blood, undigested seeds...

- Microscopic evaluation
  - Wet mount – helminth eggs, flagellates, coccidia
  - Hemacolor – bacteria

First aid and stabilization

- Critical patients are often dehydrated and malnourished
  - Nutritional support, gavage-feeding
  - Fluid therapy
  - Thermal support

- In case of dyspnea
  - Extra oxygen

NEVER give corticosteroids to birds in shock!

Nutritional support

- Quick depletion of glycogen stores in granivorous spp.
- Enteral versus parenteral route
  - Syringe or gavage-feeding, esophageal or gastric tubes
Gavage-feeding

- Metal versus rubber tubes

Gavage-feeding

- Seed-eaters versus carnivorous spp.

Gavage-feeding

- Feeding regime
  - Warm, fresh formula
  - 1.5 - 2.5% of bodyweight
  - 2 to 4 times per day
- Risks and contraindications
  - Aspiration of food
  - Laceration of oropharynx
- Always last procedure to perform!

Fluid therapy

- Fluids should be administered to any patient that is dehydrated or in shock
- Poor tissue perfusion due to low or uneven blood flow
  - Absolute versus relative

Fluid selection

- Crystalloids
  - Saline
    - Normal (0.9%)
    - Hypertonic (7.5%)
    - (lactated) Ringer’s solution
    - Glucose 5%
- Colloids
  - “plasma expanders”
- Oxygen carriers
  - Blood
  - Oxyglobin®
### Routes of administration

**Oral fluid administration**
- Recovering birds, in good condition
- Small amounts, via syringe or with food

**Subcutaneous route**
- Large volumes at once
  - 1-2 times per day
  - Not stressful
- Two locations
  - Between shoulder blades
  - Inguinal space

**Intravenous route**
- Most ideal when fluid deficit >5%
- BET also limitations...
  - Limited access
  - Risk of overhydration
  - Poorly accepted
- Constant monitoring!
- Mainly for critical patients or anesthetic procedures

**Intravenous route**
- Right jugular vein
  - Largest vessel
  - Mainly for boluses
    - Crystalloids 10 ml/kg
    - Colloids 5 ml/kg
- Basilic vein
- Medial metatarsal vein
Intraosseus catheters
• Accessible in most species
• Locations
  – Ulna
  – Tibiotarsus
• Humerus and femur NOT to be used in birds!
  – Connected to airsacs

Routes of administration
Intraosseus catheters
• Place under anesthesia
• Check placement
  – Basilic vein
  – Radiographs
• Same risks & benefits as IV EXCEPT minimal risk when catheter is pulled...

Amount of fluids
• Frequently recommended formula
  – % dehydration x bodyweight (g) = fluid deficit (ml)
  – Replace 50-100% of fluid deficit in first 24h
  – Add fluid requirements for maintenance
    • 50 ml/kg/24h (~ 2 ml/kg/h)
• Divide SQ fluids over 2 to 3 boluses/day
• IV or IO fluids
  – Potential risk of overhydration => pulmonary edema

Thermal support
Higher core body temperature & metabolism
Ambient temperature 25 – 30 °C
Up to 35 °C in nestlings

Thermal support
Various options to provide heat
Thermal support

Monitor carefully for signs of overheating

Oxygen supplementation

- Dyspneic patients may benefit from extra O2
  - Recognition of dyspnea by clinical signs
  - Recommended O2 levels 40 - 50%

Once patient is stabilized...

- Further diagnostic work-up to identify cause
  - Hematology & Biochemistry
  - Diagnostic imaging
  - Endoscopy
- Therapeutic intervention
  - Drug therapy
  - Surgical intervention
- Prognosis

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Part II: Common emergencies

Yvonne van Zeeland,
DVM, MVR, PhD, Dip. ECZM (Avian)

Psittacosis

- Chlamyphila psittaci
  - Recent purchase
  - Contact with other birds
  - Biliverdinuria

Common emergencies

- Anorexia - psittacosis
- Respiratory distress
  - Tracheal obstruction
- Neurologic diseases
  - Lead intoxication
  - Hypocalcemia
- Reproductive diseases
  - Egg binding
  - Cloacal prolapse
- Gastrointestinal diseases
  - Vomiting, diarrhoea
- Orthopedic emergencies
  - Fractures
- Trauma
  - Beak trauma
  - Cat bite
  - Blood feather
Diagnostics
- Swab conjunctiva/choana/cloaca
  - QuickVue® test [ELISA] (antigen)
  - Stamp (modified Ziehl-Nielsen)
  - IFT
  - PCR
- CBC & Biochemistry
  - TP + electrophoresis
  - Serology (ELISA)

Treatment
- Zoonosis ~ Notifiable disease
- Therapy for the individual bird
  - Doxycyclin 75-100 mg/kg IM
  - Once per week, 5-6 weeks
  - ONLY Vibramycin IV® (Pfizer)
- Flock treatment
  - Medicate via drinkwater and/or feed
  - Doxycyclin, 800 mg/l drink water
  - At least 4-6 weeks

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Respiratory distress
- Clinical signs & differential diagnosis
  - Upper and lower respiratory tract
  - Space-occupying masses in coelom
  - Metabolic abnormalities

Tracheal obstruction
- Severe dyspnea
  - Sudden onset
  - Stridor
  - Loss or change of voice
- Placement in O₂ cage

Diagnostic work-up
Tracheoscopy
1.9 or 2.7 mm rigid endoscope, 0 °C
Therapy

- Air sac tube placement
- Treatment with antifungals & antibiotics
- Diagnostic work-up
  - Radiograph, CT
  - Prognostic value
- Remove obstruction
  - Endoscopic guidance

Endoscopic-guided removal

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Lead intoxication

History & signs suggesting heavy metal poisoning
- Unsupervised when outside cage
- Possible sources of lead

Diagnostic work-up

- Radiographs
- Toxicology
  - Blood lead levels
    - 0.5 ml heparinized blood
    - Reference < 2 μmol/l
- Hematology & Biochemistry
  - Uric acid
  - Hematocrit
Therapy

- Chelation therapy
  - Ca-EDTA 30 – 50 mg/kg q12h IM
  - Penicillamine 55 mg/kg q12h PO
- Remove particle from GI tract
  - Laxating drugs
  - Endoscopy, surgery
- SQ fluids (limit renal damage)

Intoxications

- National toxicology center (humans)
  - Potential information on toxicity & available antidotes
- General guidelines
  - Prevent further uptake
     - Laxating drugs (e.g. lactulose)
     - Binding toxins (e.g. Norit)
  - Increase excretion via kidneys
     - Forced diuresis (100-150 ml/kg/24h)
  - Specific antidote (if available)

Hypocalcemia

- Particularly common in Grey parrots
- History
  - Falling from perch
  - Tremors
  - Fed all-seed diet
- Differential Dx
  - Renal disease

Diagnostic work-up

- Hematology & Biochemistry
  - Total calcium
    - < 2 mmol/l (2.1 – 2.6 mmol/l)
  - Ionised calcium
    - < 1 mmol/l (1.2 – 1.4 mmol/l)
  - Phosphate
  - Total protein

Treatment

- Ca-borogluconate
  - 50 – 100 mg/kg IM q12h
- Calcium supplementation via food
- Multi-vitamin injection
- Convert to another diet
- Exposure to UV-B

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Egg binding

- Often smaller-sized birds
  - Sitting on bottom of cage, tenesmus
  - Clinical signs dependent on pressure on other organ systems

Radiographs

- Egg visible on radiographs
  - Depends on degree of calcification
  - Note polyostotic hyperostosis!

Treatment

When this does not result in the bird laying the egg
  => Surgical intervention
  - Manually remove the egg
    - Via the cloaca
  - Ovocentesis
    - Transcloenal
    - Cloacal
  - Ventral laparatomy

Egg binding

- Physical examination
  - Abdominal distension
  - Dependent on calcification
    - Hard, round swelling
    - Doughy consistency

Radiographs

- Egg visible on radiographs
  - Depends on degree of calcification
  - Note polyostotic hyperostosis!

Treatment

- Supportive care
  - Medical intervention
    - Ca-borogluconate
    - Prostaglandin E2
    - Oxytocin
  - Quiet, dark environment, increased humidity & environmental temperature

Egg removal via cloaca

- Use lone star retractor to visualize the uterovaginal sphincter
- Drill hole in the egg => Aspirate contents
Egg removal via cloaca

- Collapse egg shell
- Remove remaining pieces
- Drill hole in the egg => Aspirate contents => Use lone star retractor to visualize the uterovaginal sphincter

Cloacal prolapse

- Prolapse of cloaca/vagina/uterus/oviduct
- Often secondary to other disease

Treatment

- Keep moist, prevent damage
  - Water soluble lubricants
  - Clean with 0.9% NaCl
- Restore normal anatomy, reposition prolapsed tissue
  - Lubricated swab
- Prevent recurrence
  - NO purse string suture, but two separate interrupted sutures

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Regurgitation

- Behaviour
- Husbandry issues (neonates)
- Crop related diseases
- Disease of the GI tract (gastric ulcer)
- Disease outside GI tract (peritonitis)
- Central (vomiting center)

Regurgitation (chick)

- Crop burn
  - Wound management
  - Esophageal tube
- Delayed crop emptying
  - Consistency of food
  - Temperature
- Sour crop
  - Yeast or bacteria
- Overfeeding
- Trauma, perforation
Regurgitation

- Diagnostic work-up
  - Crop swab
  - Hematology & Biochemistry
  - Radiographs, Ultrasound
- Treatment
  - Aimed at initiating cause
  - Symptomatic
    - Metoclopramide 0.5 mg/kg q8-12h
    - Cisapride 1 mg/kg q12h PO

Diarrhoea

- Infectious versus non-infectious causes
- Diagnostic work-up
  - Fecal exam, radiographs, hematology & biochemistry
- Hallmark of supportive care is fluid replacement

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Fractures

- Clinical signs
  - Wing droop, inability to fly
  - Lameness, unequal weight bearing
- Often extremities, long bones
  - Thin cortices, little soft tissue
  - Note: connection to air sacs!
- Radiographic evaluation

Therapy

- Stabilisation (bandaging)
- Analgesia
  - Carprofen 2 mg/kg q12h PO
  - Meloxicam 1.5 mg/kg q12h PO
- Antibiotics for open fractures
- Adaptations to enclosure
  - Leg band removal
- Collar to prevent damage?
  - Provide distraction

Wing bandaging techniques

- Figure-of-eight bandage & Body-wrap
**Leg bandaging techniques**
- Conservative treatment with bandage
  - Femur
  - Tibiotarsus
  - Tarsometatarsus

**Foot bandaging techniques**
- Metatarsal bandage & Ball bandage

**Ball bandage**
- The different layers of a ball bandage

**Donut bandage**
- Decrease pressure on pressure points
  - Birds of prey, bumble foot

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**Trauma**
- Various types of trauma possible
  - Wound management, analgesia
  - Green bruises (biliverdin)?
- Beak injuries: Repair or not?
- Hemorrhage
  - Manual pressure or cauterization
  - Blood feather
Cat or dog bite
• May be lethal to birds
  Pasteurella multocida septicemia
• Treat before symptoms occur!

Therapy
  • Wound management (as needed)
  • Amoxicillin 100 mg/kg q12h IM
  Do NOT use procain-penicillin

Conclusions
• General guidelines to treat avian emergencies
  – Handling, clinical examination
  – First aid and supportive care for critical patients
• Dependent on the cause and severity, additional diagnostic and therapeutic intervention needed
  – Triage, assess priority and urgency
  – Extensive knowledge on avian medicine needed
    • Journals, books, (post-graduate) training, ...

Questions???
Thank you for your attention!