For the Birds
Essentials of Avian Bandaging

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Why bandage birds?

- Many reasons wildlife rehabilitators would want to bandage an avian patient
- Birds are not small mammals!
- Need to be familiar with these differences
- Anatomy, feathers, pain response, and restraint
Why bandage birds?

- To provide protection and support for an injured area
- To cover wounds during the healing process
- To immobilize a severe wound to allow better healing
Why bandage birds?

- To immobilize a fracture prior to surgery
- To immobilize a fracture during healing
Why bandage birds?

- To protect healthy structures from damage
Why bandage birds?

- To protect an intravenous catheter or intraosseous catheter
Avian Anatomy

- Understanding avian anatomy helps when applying bandages
- There are many similarities to mammals
- Certain unique structures have developed as adaptations to flight
Avian Anatomy

- Enlarged sternum with flattened keel
- Coracoids and clavicles
- Fusion of the sacrum and thoracic vertebrae
- Light skull
- Lengthening and elimination of some bones of the wing
Avian Anatomy

- How to secure bandages
- What will be tolerated
- What joints need to be immobilized
- How long do bandages stay in place for
- Avian healing times more rapid than mammals
- Problems with contracture of tendons and loss of muscle
- Role of physiotherapy
- How birds injure themselves in captivity and how to protect them
Feathers

- Feathers affected by wounds and injuries
- Wound exudate contaminates feathers
- Pull don’t cut feathers
- Consider anesthesia
- Avian skin tears easily, use caution
Feathers

- **Primary feathers** - Feathers located along the metacarpal are called primaries. These are the long flight feathers. Most birds have 9 – 10 primaries.

- **Secondary feathers** - Feathers located along the ulna are called secondaries. These are the inner flight feathers. Most birds have 9 -25 secondaries.

- **Tertiary feathers** – Feathers located along the humerus are called tertiaries. These are the inner-most flight feathers, closest to the body. Most birds have 3-4 tertiaries.

- **Covers** – The row of contour feathers that cover the base of the flight feathers are known as primary coverts and secondary coverts.
Feathers

Feathers and bandaging

- Minimize damage to the feathers
- Include the appropriate feathers
- Avoid leaving residue on feathers (sticky or oily)
- Use tape that won’t pull feathers
- Remove tape in direction of feather growth
- Avoid tight bandages
Wound management

- Wound management is an important part of bandaging
- Similar principles as mammal treatments
- Clean area, remove feathers carefully
- Can use tape to hold feathers back
- Dilute chlorhexidine for contaminated wounds
- Flush with warm saline
- Apply antimicrobial like Flamazine or Polysporin ointment
Wound management

- Avian patients will present a range of injuries
- Cuts and lacerations
- Open fractures
- Burns
- Husbandry related problems (such as bumblefoot)
Wound management

- How the wound is treated will depend on:
  - the area affected
  - the species
  - the type of wound
  - the frequency of treatment
  - the stage in wound healing
Wound management
Wound management
Pain management

- Pain management needs to be included in your treatment protocols
- Handle fractures gently
- Changing bandages and flushing wounds can also cause pain to the patient
- For painful procedures consider doing the procedure under anesthesia.
Pain management

- Pain medications are an important part of treatment plan
- Common pain medications include NSAIDs (meloxicam) and opioid agonists (tramadol)
- Supportive care - keep the bird warm, dry and clean
- Ensure the bandage is not the cause of the pain
Pain management

- Birds may not show pain in the same way as domestic mammals
- Evolved to minimize behaviours that would lead to predation
- Increased heart rate and respiratory rate
- Escape reactions
- Vocalizing
- Decreased movement
- Increased movement

- Decreased appetite
- Weight loss
- Reduction in social grooming
- Sitting away from the flock
- Decreased chattering
- Guarding behaviour
- Aggressiveness
- Excessive grooming or picking at an area
- Other changes in normal behaviour
Restraint

- Birds need to be properly restrained for their safety and for the safety of the handler.
- This is particularly true when working with larger birds such as raptors.
- Proper restraint also ensures that the bandage can be applied properly.
Restraint
Restraint
Restraint
Restraint
Restraint

- In many cases the preferred method of restraint is anesthesia
- Allows painful procedures to be carried out
- Allows for better outcome
- Ideal for high-stress birds
Bandaging supplies

- Before starting the bandaging process be sure to have all your supplies on hand
- Avian bandages need to be light but supportive
- Use the minimal amount of material to decrease the weight
- Try lighter weight substitutions – Tegaderm is a good alternative to conventional bandaging material
- Tape selected should not be too sticky or leave residue on the feathers
- Bandages need to stay in place without too much tape
<table>
<thead>
<tr>
<th>Bandaging Material</th>
<th>Brand Name</th>
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<tbody>
<tr>
<td>Self-adherent wrap</td>
<td>Coban™, Vetrap™ CoFlex™</td>
</tr>
<tr>
<td>Multipurpose paper tape</td>
<td>Durapore™, Micropore™</td>
</tr>
<tr>
<td>Perforated plastic surgical tape</td>
<td>Transpore™</td>
</tr>
<tr>
<td>Soft cloth surgical tape</td>
<td>Medipore™, Zonas™</td>
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<tr>
<td>Elastic tape</td>
<td>Elastikon™</td>
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<tr>
<td>Foam tape</td>
<td>3M™ Ivory PVC Foam Tape</td>
</tr>
<tr>
<td>Thermoplastic splint</td>
<td>VetForm™ Thermoplastic, Haxalite™</td>
</tr>
<tr>
<td>Foam covered metal splint</td>
<td>SAM® Splint</td>
</tr>
<tr>
<td>Transparent adhesive dressing</td>
<td>Tegaderm™, Telfa™ Clear Wound Dressing</td>
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</table>
Bandaging supplies

- Be creative! May need to make your own bandages
- Make your own splints out of light-weight items such as paper clips, straws, tongue depressors or use thermoplastic splints or foam covered metal splints
Bandaging supplies

- Wound care will require additional supplies
- warm saline flush
- hydrocellular adhesive dressings (e.g. duoDERM)
- hydrogel dressings (e.g. Intrasite Gel)
- non-adherent dressings
The patagium

- Elastic skin that stretches from the proximal humerus to the carpal
- The patagial tendon is present along the leading edge
- Wounds can create scar tissue
- Bandages that are too tight can damage patagium
- Tendon can contract if wing is flexed for too long
- No longer than 5 days!
Changing bandages

- Bandages should be changed regularly.
- If the bandage is covering a wound, then the bandage may need to be changed daily.
- Any bandage that is wet or soiled or is causing discomfort to the bird should be changed immediately.
Fractures

- The basic rules of fractures management apply to birds.
- Immobilize the joint above and below the fracture.
- **Cannot** stabilize fractures of the humerus or the femur by bandaging
Fractures

- Wounds need to be managed.
- Antibiotics and pain medications need to be administered.
- Cage rest and restricted activity is recommended for at least 3 weeks.
- Need to change bandage every 5 days!
Fractures

- Bandages and splints can be used to immobilize a fracture.
- Depending on the bone and the type of fracture, this may be sufficient treatment.
- Other times the bandaging is used to stabilize the fracture before surgery.
Avian bandages

- The type of bandage will depend on the species, the weight and size of the bird, and the type of injury.
- We will go over the most common bandaging techniques and the indications for their use.
Carpal bumper bandage

- Protection of carpal area and prevention of injury
- Can also be used to bandage wounds and abrasions to the carpal area
Interdigitating bandage

- Prevention of injuries (ie ball bandage on other foot)
- Bandage for very minor lacerations of the pad of the foot
- Chronic issues of wearing down of pili on metatarsal pads
- Use as base for bandage for damaged talon sheaths
Ball bandage

- Bandage for injuries to the toes and metatarsal pads
- Indicated for use in the treatment of severe bumble foot
- Used to stabilize fractures of the toe or foot
- Can be added to splints of legs for fractures that need additional immobilization
Shoe bandage

- Bandage for wounds, lesions of the metatarsal pads and webbing (water birds)
- Support for fractures of the toe
- Protect wounds and abrasions of the metatarsal pads
- Extension of IV bandages, leg splints
IV Catheter Bandage

- To support and protect the leg after placement of an IV catheter
Tail guard

- To protect tail feathers from damage in cases of cage rest
- Used mostly in raptors
Figure-8 wrap

- Used for stabilization for fractures and injuries of the wing (radius, ulna, metacarpal bones NOT the humerus)
- Support of soft tissue injury and wounds with drooped wing
Figure-8 wrap
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Figure-8 wrap
Body Wrap

- Use with a Figure-of-8 bandage to stabilize a humeral fracture
- Use with a Figure-of-8 bandage to stabilize multiple fractures of the wing
- Use alone to stabilize shoulder injuries (coracoid, clavicle or scapula)
- Use alone to support a drooped wing with unknown cause
Body Wrap
Body Wrap
Body Wrap
Z-Splint

- Used to stabilize tibiotarsal fractures
- Used to stabilize tarsometatarsal fractures
- NOT recommended for femur fractures
Z-Splint
Z-Splint
Z-Splint