Preparedness for Office Emergencies

Objectives (1 of 2)

• Explain the importance of preparedness for common pediatric emergencies in the office setting.
• Describe need for physician and staff education, including practice sessions.
• Identify equipment and supplies needed for the treatment of office-based emergencies.

Objectives (2 of 2)

• Assess the stabilization and transport priorities for patients with major trauma presenting to the office.
• Describe minor surgical procedures for the office setting.
Pediatric Emergencies in the Office Setting
• Anaphylaxis and allergic reactions
• Respiratory distress (asthma, airway obstruction)
• Seizures/status epilepticus
• Sepsis/shock
• Trauma

Preparing Your Office Staff
• Telephone triage
• Monitor the waiting room.
• Staff education: All staff should receive a minimum of pediatric BLS training.
• One staff member should be trained in ALS.
• Periodic practice drills: plan and practice
• How and when to contact EMS

Emergent Signs or Symptoms
• Active seizures
• Altered mental status
• Difficulty breathing
• History of ingestion or overdose
• Pallor or cyanosis
### Basic Equipment and Supplies

#### (1 of 2)

- **Airway**
  - Oxygen source with flow meter
  - Self-inflating bag with reservoir
  - Oxygen masks (simple, nonrebreather) in premature, infant, child, adult sizes
  - Suction apparatus and catheters
  - Nebulizer for inhalation

#### (2 of 2)

- **Monitoring**
  - Pulse oximeter, blood pressure cuffs of various sizes
  - Cardiac arrest board

- **Length-based resuscitation tape**

- **Vascular access**
  - IV catheters and tubing
  - Intravenous solutions (Ringer lactate or normal saline)
  - Syringes
  - Butterfly needles

### Basic Emergency Medications

- Albuterol (salbutamol) 0.5% nebulization solution
- Ceftriaxone
- Dextrose 25% and 50%
- Epinephrine (adrenaline) 1:1,000
- Flumazenil (if stocking benzodiazepine)
- Lidocaine (lignocaine) 1%
- Lorazepam or diazepam
- Naloxone 1 mg/mL
- Tetanus toxoid (diphtheria and tetanus toxoids and acellular pertussis or tetanus-diphtheria-pertussis vaccine)
- Corticosteroids
- Diphenhydramine (oral)
**Expanded Equipment (1 of 2)**

- Electrocardiograph monitor/defibrillator or automated external defibrillator
- Endotracheal tubes
  - 2.5 to 8.0 mm
- Intraosseous needles
- Nasal and oral airways
- Nasogastric tubes
- Laryngeal mask airways (1-3)
- Laryngoscope handle
- Laryngoscope blades
  - Straight 0-2
  - Curved 2.3
- Pediatric Magill forceps
- Stylets

**Expanded Equipment (2 of 2)**

- Rapid glucose check meter and blood glucose strips
- Cervical collars
- Lumbar puncture kit
- Splints
- Urine dipsticks

**Expanded Emergency Medications**

- Activated charcoal
- Atropine (0.1 mg/mL)
- Diphenhydramine (IV)
- Epinephrine (adrenaline)
  1:10,000
- Ipratropium for nebulization
- Phenytoin, fosphenytoin, or phenobarbital
Emergency Transport

• EMS activation
• EMS personnel skill level
• Hospital capabilities
  – Pediatric intensive care unit
  – Pediatric trauma center

Management of Specific Emergencies (1 of 2)

• Minor head trauma
• Minor torso trauma
• Soft tissue injuries
• Lacerations
  – Suturing/staples/tissue adhesive in office setting
• Human and animal bites
• Foreign body removal
  – Ocular, nail bed, soft tissue, cerumen removal, aural/nasal
• Minor burns

Management of Specific Emergencies (2 of 2)

• Subungual hematoma
• Paronychia
• Skin abscess incision and drainage
• Fishhook removal
• Ring removal
• Penile zipper injury
• Contact lens removal
• Eye patching
• Tooth reimplantation and stabilization
• Reduction of inguinal hernia
• Reduction of paraphimosis
• Reduction of rectal prolapse
Case Study 1: “Fell Off Bike”

- A 6-year-old boy fell off his bicycle, striking back of head on pavement. He was not wearing a helmet.
- He is brought to the office by his parents with pain over a bump on the back of his head.
- He is alert, he is breathing without retractions, and his skin color is normal.

Initial Assessment

PAT:
- Normal appearance, normal breathing, normal circulation

What are your initial management priorities?

Minor Head Trauma: Assessment

- Management priorities:
  - Evaluate ABCs.
  - Determine whether patient has had loss of consciousness or is amnestic to event.
  - Thorough history and physical examination
  - Radiographic imaging as indicated
Case Outcome

• Vital signs normal
• Physical examination findings normal except for an occipital contusion
• Patient discharged home
• Parents given aftercare instructions

Minor Head Trauma: Aftercare Instructions (1 of 2)

• Child to ED if any of the following signs or symptoms appears:
  – Disorientation or other unusual behavior
  – Drowsiness, with difficulty arousing the patient
  – Severe headache or stiff neck

Minor Head Trauma: Aftercare Instructions (2 of 2)

• Child to ED if any of the following signs or symptoms appears:
  – Seizure (call EMS)
  – Clear drainage from ear or nose
  – Persistent vomiting
  – Double vision or other neurologic symptom
Case Study 2: “Fell Off Bike”

- A 7-year-old boy struck his left side after falling off a bicycle 4 hours earlier. He was wearing a helmet and had no loss of consciousness.
- Now presents to office with mild left flank pain.

Initial Assessment

Vital signs:
- Heart rate 80/min, respiratory rate 18/min, blood pressure 100/70 mm Hg, temperature 37.4˚C, weight 30 kg

Minor Torso Trauma: Assessment

- Certain physical findings warrant immediate evaluation:
  - Chest pain with respiratory distress
  - Abdominal pain or distention
  - Vomiting
  - Severe mechanism of injury
Case Progression
• Physical examination findings are normal except for left flank tenderness
• Urine dipstick is positive for 2+ blood.

What are your assessment and management priorities?

Minor Trauma and Hematuria:
Assessment (1 of 2)
• Hematuria is an important indicator of intra-abdominal injury.
• Urine dipstick performed on any child with history of abdominal trauma
  – Negative: No further evaluation needed.

Minor Trauma and Hematuria:
Assessment (2 of 2)
• Dipstick positive: Must send for formal urinalysis
  – If urinalysis reveals >20 RBCs per HPF, patient should be evaluated for renal injury.
  • Minor: Ultrasonography or abdominal CT
  • Major: Abdominal CT
Case Outcome

• Urinalysis revealed 15 RBCs per HPF.
• Patient felt better and was discharged.
• Parents given aftercare instructions:
  – Return within 48 hours to recheck patient.
  – Patient praised for use of bicycle helmet, and street safety discussed.

Minor Trauma: Patient/Parent Education

• Key role for pediatrician and family physician
• Age-appropriate guidance in a number of areas:
  – Injury prevention: Infant car seats, seatbelts, bicycle helmets, pool safety
  – Illness prevention: Poisonings, signs and symptoms of serious illness

Case Study 3: “Hit Forehead”

• A 3-year-old girl running in the living room tripped and struck her forehead against coffee table.
• She cried immediately; you note a 1-cm laceration above the left eyebrow.
• She is alert and active; she is breathing without retractions, and color is pink.
**Initial Assessment**

**PAT:**
- Normal appearance, normal breathing, normal circulation
- You decide to repair the laceration in your office.
- LET is applied to the wound.

**Case Outcome**

- Patient was cooperative and gently restrained.
- Parents were at bedside and offered support to the patient.
- Wound closed using 6.0 nylon interrupted sutures.

*Could a tissue adhesive have been applied?*

**Wound Management: Tissue Adhesive?**

- Possibly, depends on tension at wound site
- Other considerations:
  - Avoid contact with mucosal surfaces.
  - Avoid areas with hair.
  - Do not place inside wound.
  - Do not use on large, gaping wounds.
**Tissue Adhesive Application Technique**

- Inform parents and patient of procedure.
- Clean wound, and achieve hemostasis.
- Approximate wound edges. Use gentle brush stroke to apply a thin film of adhesive over wound. Apply 3 to 4 layers and hold for 30 to 60 seconds.
- Instruct the patient and parents:
  - Keep the wound clean and dry.
  - Glue will fall off on its own.

**Wound Assessment**

<table>
<thead>
<tr>
<th>Mechanism of injury</th>
<th>Sharp or blunt, bite?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time since injury</td>
<td>Suture up to 12 hours, face 24 hours</td>
</tr>
<tr>
<td>Foreign body</td>
<td>Explore and obtain radiograph if metal or glass foreign body suspected</td>
</tr>
<tr>
<td>Functional examination</td>
<td>Neurovascular, muscular, tendon</td>
</tr>
</tbody>
</table>

**Types of Anesthesia**

<table>
<thead>
<tr>
<th>Agent</th>
<th>Onset (Duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAC</td>
<td>15 min (1 h)</td>
</tr>
<tr>
<td>LAT/LET</td>
<td>20 min (1 h)</td>
</tr>
<tr>
<td>Lidocaine (lignocaine)</td>
<td>10 min (1 h)</td>
</tr>
<tr>
<td>Bupivacaine</td>
<td>20 min (4 h)</td>
</tr>
</tbody>
</table>
Wound Preparation

- Remove excess dirt/debris by washing in sink (if possible).
- Cleanse anesthetized wound by irrigating with normal saline using a 20- to 60-mL syringe and 18-gauge angiocatheter or splash shield.
- DO NOT use iodine-based solutions, hydrogen peroxide, or hexachlorophene inside wounds.
- DO NOT suture until hemostasis is achieved.

Simple Interrupted Stitch (1 of 3)

- Select appropriate suture material.
- Enter skin at 90 to skin and ≤5 mm from wound edge.

Simple Interrupted Stitch (2 of 3)

- Follow curvature of needle.
- Exit opposite side at same depth and distance.
Simple Interrupted Stitch (3 of 3)

- Tie square knot (surgeon’s knot).
- Tie two additional knots to secure stitch.

---

Horizontal Mattress Stitch (1 of 3)

- For wounds under slight tension
- Once simple stitch is complete
- Enter on same side as exit, then enter opposite side.

---

Horizontal Mattress Stitch (2 of 3)

- Pull stitch through.
**Horizontal Mattress Stitch (3 of 3)**

- Tie to create a horizontal mattress.
- Everts edges
- Do not use on cosmetic areas (face).

**Corner Stitch (1 of 2)**

- Useful in triangular-shaped wounds
- Place interrupted stitch on one side of triangle.
- Insert needle through apex of triangle.

**Corner Stitch (2 of 2)**

- Needle exits at apex of triangle parallel to entrance stitch and is tied.
When Is It Appropriate to Remove Sutures?

<table>
<thead>
<tr>
<th>Body Region</th>
<th>Days</th>
<th>Suture Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalp</td>
<td>7-10</td>
<td>5-0, staples</td>
</tr>
<tr>
<td>Face</td>
<td>3-5</td>
<td>6-0</td>
</tr>
<tr>
<td>Upper trunk, arms</td>
<td>7-10</td>
<td>4-0 or 5-0</td>
</tr>
<tr>
<td>Lower trunk, legs</td>
<td>10-14</td>
<td>4-0</td>
</tr>
<tr>
<td>Joint areas</td>
<td>14-21</td>
<td>4-0</td>
</tr>
</tbody>
</table>

Case Study 4: “Bitten by Cat”

- Parents call office to ask whether they should bring in their 4-year-old son, who has been bitten by the family cat.
- Patient was scratched in face and bitten on right hand.
- Office staff advise parents to bring the child in immediately for evaluation.

Initial Assessment

PAT:
- Normal appearance, normal breathing, normal circulation
- Abrasions noted on face, and puncture wounds noted on right hand.

What is the role of staff in telephone triage?
Telephone Triage

- Determine which patients must be seen immediately in office or ED.
- Determine which patients can be scheduled for a routine appointment.
- Staff proficient in answering telephones:
  - Proper training is essential.
  - Establish protocols.

Human and Animal Bites (1 of 2)

- Ensure tetanus prophylaxis.
- Meticulously debride and irrigate the bite wound.
- Many can be left open, but if closure is necessary, loosely approximate wound edges.
- Bite wounds on head and face can be closed in usual manner.

Human and Animal Bites (2 of 2)

- Consider antibiotic prophylaxis for puncture and deep wounds, wounds on face, hands, feet, genitals, and all cat bites.
Foreign Body Removal: Nail Bed Splinter
• Consider use of digital block.
• Pass straight mosquito hemostat longitudinally along underside of nail.
• Straddle splinter edges with jaws of hemostat.
• Close jaws and gently extract splinter, pulling axially along orientation of splinter.

Foreign Body Removal: Ocular (1 of 2)
• Examine eye, including under lid, and locate foreign body.
• Apply topical anesthetic (proparacaine).
• Moistened cotton swab can be used to brush foreign body downward.
• If foreign body not seen, evert eyelid and rotate tarsal plate.

Foreign Body Removal: Ocular (2 of 2)
• If foreign body not removed with cotton swab:
  – A hypodermic needle, angled tangentially, can scoop the foreign body off the eye.
  – Use extreme caution when performing this procedure.
  • Must have cooperative patient.
Foreign Body Removal: Cerumen/Aural (1 of 2)

- Retract pinna posteriorly and insert operating head of otoscope into external canal.
- Pass thin-walled Frazier-type suction device to remove soft cerumen or loose foreign body.

Foreign Body Removal: Cerumen/Aural (2 of 2)

- Pass cerumen spoon or alligator-type forceps just beyond foreign body or cerumen.
- Rotate spoon or forceps until matter is entrapped, then gently extract.

Foreign Body Removal (1 of 2)

- Obtain radiograph to localize radiodense foreign body.
- Prepare wound site with antiseptic (iodophor).
- Anesthetize skin adjacent to and along length of foreign body.
Foreign Body Removal (2 of 2)

- Can use 18-gauge needle to probe for location of foreign body.
- Use straight mosquito hemostat to grasp foreign body and gently remove.
- Might need to extend entrance wound to expose foreign body as indicated.

Subungual Hematoma Drainage (1 of 2)

- Prepare nail with antiseptic.
- Unfold standard-sized paper clip (or use electrocautery device).
- Hold one end of unfolded paperclip in flame for several seconds until the tip is red hot.

Subungual Hematoma Drainage (2 of 2)

- Immediately apply to nail over hematoma, and press firmly.
- Once a hole is made in nail, remove paper clip or electrocautery device.
Fishhook Removal: Advance and Cut Method

- Prepare and anesthetize skin.
- Advance fishhook following curve of belly until barb passes outside skin.
- Cut off barb with wire cutters, then retract hook.

Fishhook Removal: Needle-Over-Barb Method

- Using hypodermic needle, puncture skin and place beveled tip facing barb and covering it (A).
- Rotate hook (B).
- Extract needle and hook as a unit (C).

Ring Removal

- Try using lubricant to gently ease ring off finger.
- Try to elevate digit and/or immerse in cold water.
- Can use ring cutter or string technique.
Ring Removal: String Method
• Place string beneath ring (A) and wrap string around distal aspect of the finger (B).
• Grasp proximal end of string and pull toward distal aspect of the finger to remove ring (C).

Penile Zipper Injury (1 of 2)
• Management options:
  – Consider infiltrating skin locally with lidocaine (lignocaine) only.
  – Douse zipper in mineral oil and use gentle traction to disengage zipper.
  – If caught in teeth only, cut zipper below entrapment and pull teeth of zipper apart, releasing foreskin.

Penile Zipper Injury (2 of 2)
• Split median bar of zipper mechanism with wire cutter.
• Remove zipper, freeing foreskin.
The Bottom Line

- Office preparedness can be achieved with dedication and cooperation of staff.
- Critical for office staff to receive appropriate education in emergencies and how to access EMS system.
- Key role of pediatrician/family physician to educate patients and parents in prevention strategies.
- Minor procedures can be performed in the office.

Credits

- Unless otherwise indicated, all photographs and illustrations are under copyright of Jones & Bartlett Learning, courtesy of Maryland Institute for Emergency Medical Services Systems, or the American Academy of Pediatrics.
- Slide 1: © Levent Koruk/Shutterstock, Inc.
- Slide 22: © greenland/Shutterstock, Inc.
- Slide 69: © tikona/Shutterstock, Inc.