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PALS
STUDY GUIDE

PEDIATRIC ADVANCED
LIFE SUPPORT

WHAT IS PALS?

PALS is a systematic approach to the assessment and management of critically ill or injured infants and children. It focuses on early recognition, high-quality interventions, and effective teamwork to improve outcomes.

- **Life-Threatening Emergencies**
- **Airway & Breathing**
- **Shock**
- **Arrhythmias**
- **Cardiac Arrest**
- **Team-Based Care**

KEY PRINCIPLES

- Early Recognition
- High-Quality CPR
- Effective Communication
- Appropriate Interventions
- Reassess Continuously

PALS CPR QUALITY FOR KIDS

RATE	DEPTH	RATIO
100-120/min	⅓ AP diameter (about 2 inches/5cm)	30:2 (1 or 2 rescuers)

WHAT IS THE PALS ALGORITHM?

The PALS Algorithm is a structured, step-by-step guide to help healthcare professionals manage pediatric emergencies effectively.

1. **Pediatric Cardiac Arrest Algorithm**
   Step-by-step guide for managing pediatric cardiac arrest.
2. **Pediatric Tachycardia With Pulse**
   Assess and treat fast heart rate with a pulse.
3. **Pediatric Bradycardia With Pulse**
   Assess and treat slow heart rate with a pulse.
4. **Pediatric Septic Shock Algorithm**
   Identify and treat infections causing shock and organ dysfunction.
5. **Pediatric Post-Resuscitation Algorithm**
   Care after ROSC to stabilize and optimize recovery

Goal: Deliver timely CPR, advanced interventions, and critical decisions that save lives.

INITIAL ASSESSMENT

PEDIATRIC ASSESSMENT TRIANGLE (PAT)

Rapid assessment of a child's clinical status in 30-60 seconds without touching.

APPEARANCE (TICLS)

- **Tone**: Assess movement and muscle tone.
- **Interactiveness**: Evaluate the child's response to people and surroundings
- **Consolability**: Determine if the child can be comforted.
- **Look/Gaze**: Check for normal eye contact and visual focus.
- **Speech/Cry**: Assess the strength and quality of speech or crying.

WORK OF BREATHING

- **Abnormal airway sounds** (stridor, wheezing, grunting)
- **Abnormal positioning** (tripod, sniffing)
- **Retractions** (supraciavicular, intercostal, subcostal)
- **Nasal flaring or head bobbing**

CIRCULATION TO SKIN

- **Pallor** (pale skin)
- **Mottling** (patchy discoloration)
- **Cyanosis** (bluish color around lips, fingers, or toes)

PRIMARY ASSESSMENT

ABCDE APPROACH

Identify and treat life-threatening problems. Perform simultaneously with interventions.

A — Airway

- Check airway patency
- Clear any visible blockage
- Apply basic maneuvers:Head tilt, chin lift

B — Breathing

- Check rate & effort
- Chest expansion
- Provide oxygen
- Assist ventilation if needed

C — Circulation

- Check pulse perfusion
- Capillary refill
- Control bleeding
- IV/IO access
- Give fluids/meds

D — Disability

- Check neurological status using AVPU/GCS
- Pupil check
- Blood glucose

E — Exposure

- Fully expose
- Prevent heat lose
- Look for injuries or rashes

PALS TARGETED INTERVENTIONS

- Targeted temperature management
- Oxygenation & ventilation goals
- Special populations (Pregnancy, Elderly)
- Medication safety & dosing
- Closed-loop communication

AGE-SPECIFIC CONSIDERATIONS

- **Infants**: < 1 year
- **Children**: 1 year - puberty

NOTE: Adjust equipment, drug doses, and CPR technique accordingly.

SECONDARY ASSESSMENT

SAMPLE & FOCUSED PHYSICAL EXAM

Perform a focused history & physical exam to identify the underlying cause and guide treatment.

SAMPLE

- **S** **Signs & Symptoms:** Current symptoms and changes in condition.
- **A** **Allergies**: Known drug, food, or environmental allergies.
- **M** **Medications**: Current prescribed or over-the-counter medications.
- **P** **Past Medical History**: Relevant medical conditions, surgeries, or illnesses.
- **L** **Last Oral Intake**: Time and contents of the child's last food or drink.
- **E** **Events leading up**: Events leading up to the illness or injury.

FOCUSED PHYSICAL EXAM

1. **Head & Neck**: Check for trauma, swelling, or signs of infection.
2. **Chest**: Assess breath sounds, chest movement, and heart/lung sounds.
3. **Abdomen**: Check for distension, tenderness, or organ enlargement.
4. **Extremities**: Assess pulses, capillary refill, movement, and sensation.
5. **Skin**: Look for rashes, color changes, bruising, or dehydration signs.

DIAGNOSTIC TESTS & MONITORING

ECG

Detects arrhythmias and cardiac abnormalities.

Pulse Oximetry & Capnography

Monitors oxygenation and ventilation.

Blood Tests

Evaluates glucose, electrolytes, blood gases, and other markers.

Imaging Studies

Identifies trauma, respiratory, or internal conditions.

SHOCK EMERGENCY

TYPES OF SHOCK

1. **Hypovolemic Shock**: Caused by fluid loss from dehydration, bleeding, or burns.
2. **Distributive Shock**: Includes septic, anaphylactic, or neurogenic shock, where vascular tone is abnormal and blood is improperly distributed.
3. **Cardiogenic Shock**: Results from heart failure, myocarditis, or congenital heart defects, leading to poor cardiac output.
4. **Obstructive Shock**: Caused by tension pneumothorax, cardiac tamponade, or massive pulmonary embolism, which obstructs blood flow.

KEY INTERVENTION

- ✓ **Early recognition**: Assess vital signs and perfusion to identify shock before hypotension develops.
- ✓ **Rapid vascular access**: Establish IV or IO access for fluids and medications.
- ✓ **Fluid resuscitation**: Administer isotonic fluids (20 mL/kg) rapidly, except in cardiogenic shock, where fluids are given cautiously.
- ✓ **Vasopressors and inotropes**: Use medications such as epinephrine, norepinephrine, or dobutamine if fluid therapy is insufficient.
- ✓ **Definitive Treatment**: Treat the underlying cause of shock.

CARDIAC ARREST EMERGENCY

Check Responsiveness and Call for Help:
- Tap and shout to assess responsiveness.
- If unresponsive, call emergency services and get an AED/defibrillator.

Assess Breathing and Pulse:
- If the child is not breathing normally or has no pulse, begin CPR immediately.

Chest Compressions:
- Infants (under 1 year): Use the two thumbs–encircling hands technique or use the heel of one hand on the center of the chest
- Children (1 year to puberty): Use one or two hands depending on the size of the child.
- Depth: About 1.5 inches (4 cm) for infants and 2 inches (5 cm) for children.
- Rate: 100–120 compressions per minute.
- Allow complete chest recoil between compressions.

Rescue Breaths:
- Give 2 breaths after every 30 compressions for a single rescuer, or 15:2 if two rescuers.
- Each breath should last about 1 second and make the chest visibly rise.

Use of AED/Defibrillator:
- Use an AED as soon as available.
- Follow prompts and deliver a shock if indicated, then resume CPR immediately.

Continue CPR:
- Alternate cycles of compressions and breaths.
- Reassess pulse and rhythm every 2 minutes.
- Continue until the child shows signs of life or advanced help takes over.

TEAM DYNAMICS

REVIEW OF KEY TOPIC IN PALS

- **Pediatric Assessment Triangle (PAT)** - Rapidly assesses appearance, breathing, and circulation
- **Primary Assessment (ABCDE)** - Identifies and treats life-threatening conditions.
- **Shock Management** - Recognize, treat, and correct the cause of shock.
- **High-Quality CPR** - Provide effective CPR and early AED use.
- **Team Dynamics** - Communicate clearly and work as a team.

REMEMBER: **Stay Calm. Act Fast. Teamwork Save Lives.**