EDUCATION

# Hesi Case Study Burns Pediatrics

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## Introduction: Understanding the HESI Case Study on Burns in Pediatrics

The HESI (Health Education Systems, Inc.) exam is a critical milestone for nursing students, designed to assess clinical judgment and readiness for the NCLEX. Among the many challenging scenarios, the **Hesi Case Study Burns Pediatrics**stands out as a comprehensive test of a nurse's ability to manage one of the most traumatic injuries in children. Burn injuries in pediatric patients present unique physiological, psychological, and developmental challenges. This article offers an in-depth exploration of burn care in children through the lens of a typical HESI case study, covering everything from initial assessment and fluid resuscitation to pain management and family education. By integrating evidence-based practices and clinical reasoning, we aim to provide nursing students and practicing nurses with a robust framework for handling pediatric burn cases effectively.

## The Unique Considerations of Pediatric Burns

Children are not small adults. Their anatomy, physiology, and psychological responses to injury differ significantly. In the context of a HESI case study on burns in pediatrics, nurses must account for:

- Thinner skin: Infants and young children have thinner epidermis, which leads to deeper burns at lower temperatures and faster heat transfer.
- Larger body surface area to weight ratio: This increases fluid loss and risk of hypothermia.
- Higher metabolic rate: Children experience hypermetabolism after major burns, requiring aggressive nutritional support.
- Developmental stage: Pain, anxiety, and separation from caregivers can exacerbate distress.

In a typical HESI case study, the patient might be a toddler who pulled a hot liquid from a stove, resulting in partial-thickness burns on the chest and arm. The nurse must immediately recognize the need for a systematic approach: primary survey, secondary survey, and continuous reassessment.

## Initial Assessment and Airway Management

The first priority in any burn case, especially in pediatrics, is the ABCDEs. A HESI case study often begins with the patient presenting to the emergency department. The nurse might note:

- Airway: Look for signs of inhalation injury—hoarse cry, stridor, singed nasal hairs, carbonaceous sputum. Children with facial burns or burns in an enclosed space are at high risk.
- Breathing: Assess respiratory rate, work of breathing, and oxygen saturation. Eschar on the chest or circumferential burns can restrict chest expansion, requiring escharotomy.
- Circulation: Check pulse, capillary refill, and blood pressure. Fluid resuscitation begins immediately using the Parkland formula, but children require careful monitoring due to their smaller fluid reservoirs.

In the HESI scenario, the nurse might be asked to calculate the fluid needs based on weight and total body surface area (TBSA) burned. For example, for a 10 kg child with 15% TBSA burns, the formula is: 4 mL x weight (kg) x % TBSA. Half of this total is given in the first 8 hours, with the remainder over the next 16 hours. The case study may also test recognition of inadequate resuscitation: decreased urine output (

## Wound Assessment and Classification

The HESI case study requires the nurse to accurately classify burn depth and extent. In pediatrics, the "Rule of Nines" is modified—the head and neck account for 18% in infants (vs. 9% in adults), and each lower limb is 14% (vs. 18% in adults). A helpful mnemonic is the **Lund-Browder chart**, which adjusts for age.

Burn depth categories include:

- Superficial (first-degree): Pain, erythema, no blistering. Heals spontaneously.
- Partial-thickness (second-degree): Blisters, wet appearance, pain. May heal with scarring.
- Full-thickness (third-degree): Dry, leathery, insensate due to nerve destruction. Requires surgical intervention.

In the case study, the nurse might identify a mixed-depth burn and prioritize debridement and dressing changes. A common test question: "Which finding indicates a need for escharotomy?" Answer: absent distal pulses or worsening respiratory effort from chest restriction.

## Pain Management in Pediatric Burns

Burn injuries are among the most painful experiences. In a HESI case study, pain management is a key nursing intervention. Children often cannot verbalize pain effectively; therefore, behavioral and physiological cues (crying, guarding, tachycardia, hypertension) are essential. **Multimodal analgesia** is recommended:

- Opioids: Morphine or fentanyl for procedural and background pain, with careful dosing to avoid respiratory depression.
- Non-steroidal anti-inflammatory drugs (NSAIDs): Ibuprofen for mild to moderate pain, but caution with renal function and bleeding risk.
- Non-pharmacological methods: Distraction (toys, videos), guided imagery, parental presence, and soothing touch.

The HESI scenario might present a child who is inconsolable during dressing changes. The nurse should anticipate administering pre-procedural analgesia and, for severe cases, consider ketamine for procedures. Understanding the principles of **non-pharmacologic comfort measures** is critical for holistic care.

## Fluid Resuscitation and Monitoring

Fluid shifts are dramatic after burns. In pediatrics, the goal is to maintain end-organ perfusion while avoiding fluid overload. The nurse’s role in a HESI case study includes:

- Calculating the Parkland formula and adjusting based on urine output.
- Inserting a Foley catheter to strictly measure output (goal 1–2 mL/kg/hr for children).
- Monitoring for signs of fluid overload: respiratory crackles, edema, jugular venous distension.
- Weighing the child daily to track fluid balance.

An example question: "A 12 kg child with 20% TBSA burns has received half of the calculated fluid in the first 8 hours. Urine output is 0.5 mL/kg/hr. What should the nurse do?" Answer: Increase IV fluid rate because the child is under-resuscitated.

## Infection Prevention and Wound Care

Infection is a leading cause of morbidity and mortality in pediatric burn patients. The HESI case study will test the nurse’s knowledge of:

- Topical antimicrobials: Silver sulfadiazine (avoid around eyes, face, or over eschar), mafenide acetate (effective against gram-negatives but painful on application), or bacitracin for facial burns.
- Dressing techniques: Clean technique (not sterile) for minor burns, sterile for major burns. Frequent dressing changes reduce bacterial colonization.
- Signs of infection: Increased pain, purulent drainage, foul odor, fever, or leukocytosis. Wound cultures may be ordered.
- Tetanus prophylaxis: Ensure vaccination status is current.

The nurse in the case study might observe that the burn wound has turned a greenish color and has a sweet odor—indicative of Pseudomonas infection. Immediate action includes contacting the provider for culture and changing the topical agent.

## Nutritional Support and Metabolic Needs

Children with major burns experience a hypermetabolic state that can persist for months. The HESI case study often includes questions about nutritional interventions:

- Calorie requirements: Up to 1.5–2 times the basal metabolic rate. Indirect calorimetry is the gold standard for measuring needs.
- Protein: Essential for wound healing and immune function; typically 2–3 g/kg/day.
- Enteral nutrition: Preferable to parenteral; a nasogastric or nasoduodenal tube is placed early.
- Monitoring: Daily weights, serum albumin, prealbumin, and nitrogen balance.

A typical case question: "The nurse is caring for a 3-year-old with 25% TBSA burns. The child is refusing to eat. What is the best action?" Answer: Initiate enteral feeding via nasogastric tube to meet metabolic demands.

## Psychosocial and Developmental Considerations

Children experience significant emotional trauma from burns. In a HESI case study, the nurse must evaluate the child’s developmental level and coping mechanisms. For example:

- Infants and toddlers: Separation anxiety from parents is paramount. Encourage rooming-in and consistent caregivers.
- Preschoolers: Fear of pain and mutilation. Use simple explanations, medical play, and comfort objects.
- School-age children: May fear disfigurement and peer rejection. Provide opportunities for expression through drawing or journaling.
- Adolescents: Body image concerns and need for control. Involve them in care decisions and peer support groups.

Parents also need support. The nurse must assess for guilt (especially in cases of neglect or accidental injury) and provide emotional support without blame. The HESI scenario might include a mother who constantly apologizes to the child—the nurse should respond with therapeutic communication and referral to social work or child life specialist.

## Family Education and Discharge Planning

Discharge planning begins at admission. The HESI case study emphasizes teaching families about:

- Wound care at home: How to change dressings, signs of infection, and when to call the provider.
- Scar management: Use of pressure garments, silicone sheets, and sun protection for at least one year.
- Physical and occupational therapy: Range of motion exercises to prevent contractures. Splinting may be

required.

- Pain management: Scheduled oral analgesics, non-pharmacologic interventions.
- Nutrition: High-calorie, high-protein diet, possibly with supplements.
- Follow-up: Burn clinic appointments, psychology referral, and school reintegration planning.

A common test question: "The nurse is teaching the parents of a child with healed second-degree burns about itching. What intervention is most effective?" Answer: Apply cool compresses and moisturizer, keep nails short, and use antihistamines as prescribed.

## Critical Thinking in the HESI Case Study Format

The HESI case study on burns in pediatrics is not merely about rote memory; it assesses clinical judgment across the nursing process. The format often presents a series of unfolding events—initial presentation, deterioration, recovery—requiring the nurse to prioritize interventions. For instance:

- Scenario: A 5-year-old arrives with facial burns and stridor. What is the priority? (Airway—prepare for intubation).
- Next: After intubation, the child's blood pressure drops. What fluid adjustments are needed? (Increase rate of IV fluids).
- Later: The child develops a fever and wound odor. What action should the nurse take? (Notify provider, obtain wound culture, and prepare to change topical therapy).

Each step requires synthesis of knowledge about burns, pediatrics, pharmacology, and psychosocial support. Mastering these case studies builds the critical thinking essential for safe, effective nursing practice.

## Conclusion

The **Hesi Case Study Burns Pediatrics**is a quintessential tool for nursing students to develop competency in managing one of the most complex pediatric emergencies. From initial assessment and resuscitation to long-term psychosocial care, every intervention demands a solid foundation in pediatric physiology, evidence-based practice, and compassionate communication. By systematically addressing airway, breathing, circulation, pain, infection, nutrition, and family support, nurses can significantly improve outcomes for burned children. As you prepare for the HESI exam or real


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