Be able to triage patient:

Difference between urgent and non-urgent.

From ATI:

TRIAGE

5 Level System of Triage:

Level One: Resuscitation—requires immediate treatment to prevent death (ex. cardiac arrest)

Level Two: Emergent (ex. chest pain w/ cardiac history)

Level Three: Urgent (ex. abdominal pain)

Level Four: Less Urgent (ex. laceration)

Level Five: Nonurgent—non-life-threatening condition requiring simple evaluation and care management (ex. rash)

From book:

Need to collect full set of vitals that includes a pain assessment, history of current event and past medical history, neuro assessment findings, weight, allergies, domestic violence screening, necessary diagnostic data

Routine triage directs all resources to the most critically ill patients, regardless of outcome; field or disaster triage you have to use resources to benefit and save the greatest number of people. So who has the best chance of surviving?

Know your ABCs

From ATI:

ABCDE PRINCIPLES

AIRWAY/Cervical Spine—if you don't have a patent airway, the rest is useless. With hypoxia, brain injury or death will occur in 3-5 min.

Awake and responsive, airway is open. If airway is lost, check for blood, broken teeth, emesis, or other foreign materials blocking airway

Unresponsive WITHOUT suspicion of trauma—head-tilt/chin-lift maneuver to open airway, which lifts tongue away from laryngopharynx

DO NOT PERFORM IF CLIENT HAS CERVICAL SPINE INJURY, INSTEAD DO THE FOLLOWING:

Unresponsive WITH suspicion of trauma—modified jaw thrust maneuver, place hands on either side of clients head and locate jxn between maxilla and mandible. Lift jaw superiorly while keeping cervical spine aligned. Clear obstructions with finger sweep if visible, or suction if not. Maintain with adjuncts (oro or nasopharyngeal airway).

- Use a bag valve mask w/100% oxygen for clients who need additional support during resuscitation until an advanced airway is established
- Use a nonrebreather w/ 100% oxygen for clients who are spontaneously breathing.

BREATHING

- Assessment Method
- Auscultation of breath sounds
- Observation of chest expansion and respiratory effort
- Notation of rate and depth of respirations
- Identification of chest trauma
- Assessment of tracheal position
- Assessment for jugular vein distension

CIRCULATION

- After you have adequate ventilation, move on to circulation
- Assess heart rate, blood pressure, peripheral pulses, and capillary refill
- Nurse considers cardiac arrest, myocardial dysfunction, and hemorrhage as precursors to shock leading to ineffective circulation
- SHOCK DEVELOPS IF CIRCULATION IS COMPROMISED
    - Increased HR, hyptension, tissue ischemia, necrosis

Interventions for circulation: perform CPR, assess for external bleeding, apply pressure to visible, significant bleeding, use large-bore IV catheter for access in antecubital fossa of both arms (w/o obvious injury in extremity), infuse isotonic IV fluids such as LR, NS, and/or blood products.

Interventions for shock: administer oxygen, apply pressure to obvious bleeding, elevate lower extremities to shunt blood to vital organs, administer IV fluids and blood products, monitor v/s, remain with client and reassure, support for anxiety.

DISABILITY

Quick assessment to determine client's LOC

AVPU mnemonic is useful or Glasgow Coma Scale

A—Alert, V—responsive to VOICE, P—responsive to PAIN, U—unresponsive

Glasgow Coma Scale

Eye-opening response (4-1)

- Spontaneous
- To voice
- To pain
- None

+ Verbal Response (5-1)

- Oriented
- Confused
- Inappropriate words
- Incomprehensible sounds
- None

+ Motor Response (6-1)

- Obeys commands
- Localized Pain
- Withdraws
- Flexion

- Extension
- None

Must be repeated at frequent intervals to ensure immediate response to any change

EXPOSURE

Remove clothing to full visual assessment, always take off in a resuscitation situation.

Preserve items that may be evidence (clothing, bullets, drugs, weapons).

*Victims of trauma are at risk of hypothermia due to exposure, unwarmed oxygen, and cold IV fluids.

Hypothermia can lead to eventual coma, hypoxemia, and acidosis.

Apply past assessment skills: Know normal, baseline of your patient, improvement of condition, deterioration of condition, primary survey, be able to prioritize patients,

Always be checking for AMS or changes in level of consciousness

From ATI:

PRIMARY SURVEY

Rapid assessment of life-threatening conditions, completed systematically

Standard precautions are in place—gloves, gowns, eye protection, face masks, shoe covers —to avoid contamination with bodily fluids

Guided by ABCDE principles

From book:

- The primary survey focuses on stabilizing life-threatening conditions using ABCDE method
- Establish patent airway
- Provide adequate ventilation and resuscitate as needed, but FIRST assess for cervical spin injury and chest trauma
- Evaluate and/or restore cardiac output, control bleeding/hemorrhage, prevent and treat shock
- Maintain and restore effective circulation
- Prevent and manage hypothermia
- Check peripheral pulses
- Reduce any closed fractures, esp if pulselessness occurs
- Neuro checks using GCS with motor and sensory eval of spine (see Fig 65-9)
- Quick method is AVPU
- A-alert and responsive
- V-verbal, to they respond to commands
- P-respond to pain only?
- U-unresponsive

Know how to color code triage patients and actions for those colors

From lecture:

Red = Immediate—life threatening injury but survivable w/ minimal intervention, can progress rapidly to expectant if treatment is delayed, FIRST PRIORITY

(sucking chest wounds, airway obstruction secondary to mechanical cause, shock, hemothorax, tension pneumothorax, asphyxia, unstable chest and abdominal wounds, incomplete amputations, open fractures of long bones, 2nd or 3rd degree burns of 15-40% TBSA)

Yellow=Delayed—injuries are significant and require medical care but can wait hours w/o threat to life or limb, SECOND PRIORITY

(stable abd wounds w/o significant hemorrhage, soft tissue injuries, maxillofacial wounds w/o airway compromise, vascular injuries w/ adeq collateral circulation, GU tract disruption, fractures requiring open reduction, debridement, and external fixation, most eye and CNS system injuries)

Green=minimal—injuries are minor and treatment can be delayed hours to days, move out from main triage area, THIRD PRIORITY

(upper extremity fractures, minor burns/sprains, small lacerations w/o significant bleeding, behavioral or psychological disorders/disturbances)

Black=expectant—injuries are extensive and unlikely to survive w/o definitive care, separate from others but don't abandon, give comfort care, FOURTH OR LAST PRIORITY

(significant trauma, unresponsive, agonal respirations, pulselessness, no BP, pupils fixed and dilated)

Understand consent in emergency care and standard care

From book:

Informed consent is needed for invasive procedures unless patient is unconscious or in critical conditions, and you also need consent for transfer if possible. If patient is incapacitated, may attempt to contact POA or family members to give consent.

For this reason, use fast acting agents that are minimally sedating, and also so that changes in LOC and other areas can be better assessed

Triage roles (roles and what each role does)

Depends on what type of triage you are doing, ED will include getting all the facts and history and then may bypass chain of command depending on patients condition, in order to fast track certain treatments or diagnostics. All about efficiency and discharging those who don't need to stay ASAP. Disaster situation you do whatever you need to do, working from top to bottom priority patients. Plan should have some idea of what role you will play, may not include patient care directly but could be more logistics, supply chain, communications.

When can we discharge a patient?

When there is no longer threat of disability or injury, they are not a danger to themselves or others

Education on disaster readiness supply kit

Canned goods/food that won't go bad quickly, water, alternatives to electricity (lots of battery or solar powered items), first aid materials, basic OTC medications

PPEs

From ATI:

Standard precautions are in place—gloves, gowns, eye protection, face masks, shoe covers—to avoid contamination with bodily fluids

Disaster preparedness and education

From lecture:

Joint commission requires hospitals to create an emergency preparedness plan and it must be practiced at least 2x/year.

Emergency Operations Plan: Activation Response (where, how, when), Internal/External Communication Plan (to and from hospital), Plan for coordinated patient care

Also security plans, ID external resources (local, state, federal and info on how to activate them), and plan for people management and traffic flow, data management strategy (backup system for charting, tracking, and staffing), demobilization response (deactivation)

Shock:

Treatments:

fluid resuscitation or blood products, vasopressors

Assessment (s/s, and after treatment)

Poor perfusion leads to decreased tissue oxygenation and altered mental status, hypotension, tachycardia, decreased blood pressure.

Want to see increased cardiac output, decrease in heart rate, improved blood pressure, decreased capillary refill

Burns: (full-thickness, deep partial-thickness, partial-thickness, Superficial burns). S/S with nursing actions. Labs (ABGs, fluid volume, potassium, H&H). Treatments including fluids, how to monitor each system, surgical procedures. Prioritize care. Rule of nines (what it is and do a calculation of it). Psychosocial aspects. Fire safety (RACE, rescue, alarm, contain, extinguish/evacuate)

From ATI:

*If the dermis is destroyed, skin can no longer regrow over the affected area and requires a graft

Metabolism increases to maintain body heat w/ burn injury or tissue damage, so caloric needs will increase

- Dry heat injuries: open flames and explosions
- Moist heat injuries: hot liquid or steam
- Contact burns: hot metal, tar, or grease
- Chemical burns: exposure to a caustic agent (industrial, cleaners)
- Electrical burns: current passes through body, can cause severe damage (loss of organ function, tissue destruction, cardiac or respiratory arrest)
- Thermal burns: clothes ignite from heat or flames from electrical sparks
- Flash (arc) burns: current travels through air from one conductor to another, with body contact as well

- Conductive electrical injury: person touches electrical wiring or equipment
- Radiation burns: therapeutic treatment for cancer or sunburn

Percentage of TBSA: standardized charts for age groups, needed to calculate medication dosages, fluid replacement volumes, caloric needs

Depth of Burn: layers of skin and tissue involved (Superficial, Partial, Full, Deep Full Thickness)

- Superficial: epidermis
    - No blisters, mild edema, no eschar
- Partial (superficial or deep): depends on how much of dermis is affected
    - Superficial—pink to red, blisters, mild to mod edema, no eschar
    - Deep—red to white, blisters rare, moderate edema, eschar soft and dry
- Full: invasion into subcutaneous tissue, nerve damage
    - Red, black, brown, yellow, or white; no blisters, severe edema, eschar hard/inelastic
- Deep Full: will affect muscle and bone
    - Black, no blisters, no edema, eschar hard/inelastic

Face, hands, perineum, feet: usually more damage to underlying tissue as skin is thinner

- Minor burns: full thickness of <2% TBSA, or partial of <10% TBSA
- Moderate burns: full thickness between 2-10% TBSA, partial thickness between 15-25% TBSA
- Major burns:
    - full thickness >10% TBSA
    - partial thickness >25% TBSA
    - age>60
    - presence of a chronic cardiac, pulmonary, or endocrine condition
    - presence of electrical burn injury
    - presency of inhalation injury or other complicated injury
    - burns to eyes, ears, face, hands, feet, perineum

Health Education/Prevention

Adeq fire extinguishers and smoke alarms, emergency numbers near phone, plan in the event of fire (meeting place, don’t re-enter), stop/drop/roll, store matches/lighters away from kids, water heater at 120, clean chimneys and fireplaces, use back burners or turn handles to side, place hot cups back from edge of counter, cover electrical outlets, keep flammable objects away from heat, wear appropriate PPE when handling chemicals, protect from sun injuries, avoid tanning beds, avoid smoking in bed or under the influence, don’t smoke or have open flames around oxygen, don’t add flammable substances to an open flame.

Inhalation injury s/s: singed hair, sooty sputum, hoarseness, wheezing, edema of septum, smoky smelling breath

- Impending loss of airway s/s: hoarseness, brassy cough, drooling or difficulty swallowing, audible wheezing, crowing, stridor

Carbon monoxide exposure s/s: headache, weakness, dizziness, confusion, erythema (pink or cherry red skin), upper airway edema, sloughing of respiratory tract mucosa

General s/s: hypovolemia/shock can result from fluid shifts IC/intravascular→interstitial (occurs in first 12h and continues for up to 36h)

- Hypotension, tachycardia, decreased CO

Rule of Nines: quick approximation of TBSA affected by burns, front and back trunk 18%, arms (P and A both 4.5%), legs (P and A both 9%), genitals/perineum 1%, head (P and A 4.5%).

Lund and Browder method: more exact

Palmar method: quick way to approximate scattered burns by using palm of clients hand as a reference = 1% TBSA

Resuscitation phase with initial fluid shifts (first 12-36h):

Elevations in glucose (stress), BUN (fluid loss), Hct/Hbg (third spacing), Potassium (cell destruction), Chloride (fluid loss and reabsorption), carboxyhemoglobin (smoke inhalation), plasma lactate (cyanide toxicity), ABGs (metabolic acidosis)

Decreases in sodium (third spacing), total protein, blood albumin

Fluid remobilization phase to diuretic stage (First 24-72h):

Decreases in Hgb/Hct (fluid shift back), sodium (renal and wound loss), potassium (renal loss and movement back into cells), WBC (up then down), protein and albumin (Fluid loss)

Increases in glucose (stress), ABGs (slight hypoxemia and metabolic acidosis)

Phases of Burn Care: Emergent (resuscitative, to 48h), Acute (48h, or when fluid shift resolves and ends with closure of wound), Rehabilitative (when most of burn area has healed and ends when client achieves highest level of functioning possible, can take years)

Nursing Interventions:

- Remove anything that may continue to burn client (clothes, jewelry)
- Use cool water on injuries but NOT ICE
- Flush chemical burns with lots of water
- Cover burn with clean cloth (prevent infection and hypothermia)
- Provide warmth
- Perform ABCDE survey and treat

Minor Burns:

- Provide analgesics
- Cleanse with soap and tepid water (be gentle)
- Use antimicrobial ointment
- Use nonadherent, hydrocolloid dressing
- Avoid greasy lotions or butter on burn
- Teach about s/s of infection
- Tetanus immunization if needed

Moderate and Major Burns:

Initially, s/s are SNS manifestations (fight or flight) tachycardia, increased RR, decrease GI motility, increased blood glucose

*Upper airway edema becomes pronounced 8-12h after you start fluid resuscitation

Crowing, stridor, dyspnea require intubation

Give humidified, supplemental oxygen

Support airway and ventilation (PaO_2 < 60 mm Hg)

Chest physiotherapy, have client cough and deep breath, use incentive spirometer

Suction q1h as needed

FLUID RESUSCITATION

- Administer half the total 24h IV fluid volume within first 8h of injury, then remaining volume over next 16 hours (first 24h).
- Start with isotonic crystalloid solutions (NS or LR)
- Infuse colloid solutions (albumin or synthetic plasma expanders) after first 24h
- Assess for fluid overload: edema, engorged neck veins, rapid/thready pulse, lung crackles/wheezes
- Monitor output hourly for color, specific gravity, protein (30 ml/hr or 0.5 ml/kg/hr)
- Prepare to administer blood products
- Avoid PO analgesics as absorption may be decreased
- Use IV opioids (morphine, hydromorphone, fentanyl, ketamine or NO)
- Medicate before dressing changes or procedures
- Use nonpharm methods of pain control
- Provide relief for pruritis (oral meds, keep skin lubricated, provide diversions)
- Client should pat vs. scratching for itchy areas

*May see temperature remain increased for several weeks but isn't necessarily a sign of infection instead due to increased metabolism r/t issues w/ thermoregulation

Parkland (Baxter) formula—4ml x kg x %TBSA = total volume for first 24h, use LACTATED RINGERS, ½ of total in 1st 8 hours, ¼ q8h after

Bioterrorism: (category, s/s—first and later, how it is transmitted, treatments/actions)

Anthrax

From lecture:

Biological, raw meat or inhalation of spores, odorless and invisible, treat with antibiotics (penicillin, erythromycin, gentamicin, doxycycline), patient isn't contagious so standard precautions, cremation is recommended

Ebola virus

Biological, flu-like symptoms, massive/widespread hemorrhagic disease, supportive treatment, no vaccine

Sarin gas

From lecture:

Chemical, s/s: increased secretions, GI motility, diarrhea, bronchospasm. Decontaminate with soap and water. Treat with supportive care, benzos, atropine, pralidoxime

Smallpox

From lecture:

DNA virus so biological, contact and droplet but vaccine available, s/s 7-17 days after exposure, fever, back pain, N/V, malaise, and HA, maculopapular rash occurs 1-2d after symptoms

Hydrogen cyanide

From lecture:

Chemical weapon (blood agent), s/s: tachypnea, tachycardia, coma, seizures, can progress to respiratory arrest or failure, cardiac arrest, death. Decontaminate with soap and water. Treatments include sodium nitrite, sodium thiocyanate, hydroxocobalamin

Botulism

From lecture:

Biological, serious paralytic illness (progressive, arms and legs to trunk to respiratory muscles), contracted by inhalation/improperly canned food/contaminated wound/can't spread from person to person, if ingested s/s begin 12-36h, inhaled neuro symptoms in 24-72h, no vaccine

Gas odor and misc.

From lecture:

Chemical, vesicant agents include things like lewisite, sulfur mustard, nitrogen mustard, phosgene. s/s: superficial to partial-thickness burn w/ vesicles that coalesce. Decontaminate with soap and water. Blot, do not rub dry.

Chemical, pulmonary agent is phosgene, s/s: pulmonary edema, bronchospasm, blurry vision, pain then blisters followed by partial to full thickness burn. Copious flushing and fresh air. Airway management, ventilatory support, bronchoscopy

Assessment/Treatment of:

Frost bite

From book:

Graded from 1st to 4th degree.

Don't allow patient to ambulate if lower extremities are affected.

Place areas in circulating water bath set between 98-104 degrees for 30-40 min at a time.

AVOID HANDLING AFFECTED AREAS AND DON'T MASSAGE

Elevate to control edema. Leave hemorrhagic blebs alone but may drain and debride blisters to decrease inflammation and encourage healing

Risk for hypovolemia, hyperkalemia, and infection. Use aseptic technique, check tetanus status, give NSAIDs for pain and inflammation.

May require escharotomy, fasciotomy (compartment syndrome).

Encourage active ROM to prevent contractures.

Heat Stroke

From book:

Heat Stroke

Widespread injury to heart, liver, kidneys, and coagulopathies possible.

s/s: confusion, delirium, bizarre behavior, coma, seizures, elevated body temp (>105), hot, dry skin, *anhidrosis, tachypnea, hypotension, tachycardia

Heat Exhaustion

s/s: high body temp with HA, anxiety, syncope, *profuse diaphoresis, gooseflesh, orthostasis

Cardinal symptoms of heat exhaustion and heat cramps are muscle cramps (shoulders and lower extremities), profound diaphoresis, and extreme thirst

Prioritize establishing IV access for fluids (CABs vs. ABCs)

Reduce core temp to 102 as quickly as possible using cool sheets/towels/sponging, ice the neck, groin, axillae, chest—spray with tepid water

Cooling blankets and cold water bath

**STOP AT 100.4

Monitor v/s, ECG, CVP, LOC throughout. 100% oxygen due to hypermetabolic state. Risk of metabolic acidosis and seizure. Check labs for enzymes (brain and heart injury, BUN/creatinine, CK, ABGs)

Diazepam for seizures and chlorpromazine to stop shivering.

From ATI:

<u>HEAT EXHAUSTION</u>

Excessive diaphoresis and tachycardia lead to dehydration. Need rapid treatment for dehydration and low sodium to prevent progression to heat stroke.

<u>HEAT STROKE</u>

Medical emergency, can lead to death

s/s: elevated temp, lack of perspiration (anhidrosis), low BP, increased HR, decreased urinary output, alterations in mental status, abnormal blood K and Na levels

- Assess using ABCDE
- Give oxygen PRN
- Large bore IV for rapid infusion NS
- May need indwelling urinary catheter
- Apply ice packs and cooling blankets

Preventative Actions

- Wear lightweight, loose-fitting clothes
- Avoid excessive sun-exposure
- Stay indoors when it is extremely hot
- Limit alcohol and caffeine
- Sunscreen of at least 30 SPF
- Take a cool shower or bath

Carbon monoxide poisoning

From book:

Oxygen carrying capacity of hemoglobin is reduced because greater affinity and binding of CO_2. Most likely to see CNS symptoms as brain doesn't get enough oxygen.

s/s: HA, muscle weakness, palpitations, dizziness, confusion progressing to coma, pink or cherry red skin but can also be pale or cyanotic.

Give 100% oxygen. Pulse ox isn't useful because Hgb will be saturated but by CO_2 not O_2.

Get the patient or person fresh air, loosen clothing, CPR as needed, keep warm, keep calm and encourage rest, no smoking or drinking