

Exam 4 Concept Review

Be able to triage patient:

1- Resuscitation

- Overdose, Cardiac Arrest, Severe respiratory distress, Unresponsive & ventilated

2- Emergent

- Shortness of breath (with overall stable vitals), chest pain, multiple trauma that is A&O

3- Urgent

- Abdominal pain, hip fracture in older adult

4- Less urgent

- Laceration, UTI (with stable vitals), closed fracture

5- Non urgent

- Scratched eye, rash, minor burn, med refill

Difference between urgent and non-urgent.

Know your ABCs:

- **Airway and C-Spine**
 - **Inhalation injury (e.g. fire victim)**
 - **Obstruction (partial or complete) from foreign bodies, debris (vomit), or tongue**
 - **Penetrating wounds &/or blunt trauma to upper airway structures**
- **Breathing**
 - **Anaphylaxis**
 - **Flail chest w/ pulmonary contusion**
 - **Hemothorax**
 - **Pneumothorax (e.g. open, tension)**
- **Circulation**

- Direct cardiac injury (e.g. MI, trauma)
- Pericardial tamponade
- Shock (e.g. massive burns, hypovolemia)
- Uncontrolled external hemorrhage
- Hypothermia
- Disability
 - Head injury
 - Stroke
- Exposure
 - Bug bites
 - Temperature (Heat Stroke, Frostbite)
 - Submersion Injuries- Nonfatal Drowning *While struggling to breathe, this is an Airway Issue*

Apply past assessment skills

Know normal, baseline of your patient, improvement of condition, deterioration of condition, primary survey

- Primary Survey:
 - Rapid assessment of life-threatening conditions
 - Should be completed systematically
 - Use standard precautions
 - Guide primary survey with ABCDE principle

Be able to prioritize patients

Use ABC's. Then Maslow's. In emergencies, use Color Tagging System shown below.

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

BLACK= (Expectant)—Pt is expected to die—SEPARATE FROM OTHERS AND PROVIDE COMFORT CARE

- Unresponsive patients with penetrating head wounds, high spinal cord injuries, wounds involving multiple anatomic sites and organs, 2nd/3rd degree burns in excess of 60% of body surface area, seizures or vomiting w/in 24hrs after radiation exposure, profound shock w/ multiple injuries, agonal respirations; no pulse, no blood pressure, pupils fixed and dilated

RED= (Immediate) Urgent—Pt needs immediate care—Life threatening injury that can be saved if treated quickly= TREAT FIRST

- -- Sucking chest wound, airway obstruction secondary to mechanical cause, shock, hemothorax, tension pneumothorax, asphyxia, unstable chest and abdominal wounds, incomplete amputations, open fractures of long bones, and 2nd/3rd degree burns of 15%–40% total body surface area

YELLOW= (delayed) Injuries are significant and require treatment but can wait hours without threat to life or limb= TREAT SECOND

- Stable abdominal wounds w/o evidence of significant hemorrhage; soft tissue injuries; maxillofacial wounds w/o airway compromise; vascular injuries w/ adequate collateral circulation; genitourinary tract disruption; fractures requiring open reduction, debridement, & external fixation; most eye & central nervous system injuries

GREEN=(minimal) Minor/ Ambulatory= Treatment can wait several hours to days= MOVE PT OUT OF THE WAY

- Upper extremity fractures, minor burns, sprains, small lacerations without significant bleeding, behavioral disorders or psychological disturbances

Understand consent in emergency care and standard care

In Emergent Care, Implied Consent may be appropriate if pt is unable to give due to mental status, condition, or pain medications and treatment is medically necessary

In Standard Care, Informed Consent requires that the pt understand risks, benefits, and alternative treatments. Nurse must verify pt is informed and able to sign willingly, and nurse must witness pt and provider sign informed consent form.

Triage roles (roles and what each role does)

NURSE: May be asked to perform duties outside their areas of expertise

- EX: CCU RN intubates patient or places a chest tube
- May serve as triage officer

- **Ensure patient safety & be aware of state regulations related to nursing practice**
 - **Triage Officer: Rapidly assesses injured—Assigns tags (One person=Initial Triager)**
 - **Other EMS perform life saving treatments on-scene**
 - ****Staff control all entrances—Traffic control is VERY important**
 - ***Pts are continually triaged*-- Current presentation may change tagging**

When can we discharge a patient? As soon as they are stable enough--Once they are to a point where they can return to an outside care provider-- in disasters, clearing beds is VERY important

Education on disaster readiness supply kit

Backpack, clean clothing, sturdy footwear

Pocket knife, 3-day supply of water (1 gallon per person per day), 3-day supply of non-perishable food, blankets/sleeping bag/pillow, first aid kit

Adequate supply of prescriptions, battery operated radio, flashlight/batteries, credit card/cash/traveler's checks

Extra keys, full tank of gas

Cell phone

Toiletries

Matches in waterproof container

Family education

- Fire drill & escape plan
- Know how to turn off water and gas supply
- Have food supply for 3 months

PPE

Level A: highest level of respiratory, skin, eye, and mucus membrane protection

Self-contained breathing apparatus, fully encapsulating/vapor-tight/chemical resistant suit with chemical-resistant gloves and boots

Level B: highest level of respiratory protection but a lesser level of skin and eye protection

Include SCBA and chemical resistant suit but is not vapor tight

Level C: requires air-purified respirator (uses filters/sorbent materials to remove harmful substances from air)

Chemical resistant coverall with splash hood, chemical-resistant gloves and boots

Level D: normal work uniform

Disaster preparedness and education

Emergency Operations Plan

Activation response: where, how, when

Internal/External Communication: communication to and from prehospital arena

Plan for coordinated patient care

Security Plans

Identification of external resources

Plan for people management, traffic flow

Data management strategy

Demobilization response

After-action report/corrective plan

Plan for practice drills, anticipated resources, MCI planning

Shock:

Treatments

- Assess ABCs
- Start IV & fluid and electrolyte replacement

Assessment (s/s, and after treatment)

Third spacing (before treatment)

Burns: (full-thickness, deep partial-thickness, partial-thickness, Superficial burns)

75.1 Depth of injury					
	Superficial thickness	Superficial partial thickness	Deep partial thickness	Full thickness	Deep full thickness
AREA INVOLVED	Damage to epidermis	Damage to the entire epidermis and some parts of the dermis	Damage to entire epidermis and deep into the dermis	Damage to the entire epidermis and dermis Can extend into the subcutaneous tissue Nerve damage	Damage to all layers of skin Extends to muscle, tendons, and bones
APPEARANCE	Pink to red No blisters Mild edema No eschar	Pink to red Blisters Mild to moderate edema No eschar	Red to white Blisters rare Moderate edema Eschar soft and dry	Red, black, brown, yellow, or white No blisters Severe edema Eschar hard and inelastic	Black No blisters No edema Eschar hard and inelastic
SENSATION/HEALING	Painful/Tender Sensitive to heat Heals within 3 to 6 days No scarring	Painful Heals within 2 to 3 weeks No scarring, but minor pigment changes	Painful and sensitive to touch Heals in 2 to 6 weeks Scarring likely Possible grafting	Sensation minimal or absent Heals within weeks to months Scarring Grafting	No pain Heals within weeks to months Scarring Grafting
EXAMPLE	Sunburn Flash burn (sudden intense heat)	Flash flame and scalds Brief contact with hot object	Flame and scalds Grease, tar, or chemical burns Prolonged exposure to hot objects	Scalds Grease, tar, chemical, or electrical burns Prolonged exposure to hot objects	High-voltage or prolonged electrical burns Flames

S/S with nursing actions

Priority Nursing actions:

- Assess for airway patency
- Administer oxygen as prescribed.
- Obtain vital signs
- Initiate IV line & begin fluid replacement as prescribed
- Elevate extremities if no fractures are obvious
- Keep client warm & place the client on NPO status

Tetanus toxoid may be prescribed for prophylaxis

Labs (ABGs, H&H)

Monitor ABG for acidosis/alkalosis

H/H may be [falsely] elevated/decreased d/t third spacing

TREATMENT

Fluid Resuscitation

Formula	Solution	Amount
Modified Brooke	5% albumin in isotonic saline Lactated Ringers w/o dextrose	0.5mL to 15mL/kg/%TBSA burn
Parkland (Baxter)	Crystalloid only (Lactated Ringer's)	4mL/kg/%TBSA burn
Modified Parkland	Crystalloid only (Lactated Ringer's)	4mL/kg/%TBSA burn +15mL/m ² of TBSA

Surgical Procedures

Ø *Escharotomy*

- ü Incision through the eschar
 - o Relieves pressure & improves circulation

Ø *Fasciotomy*

- ü Incision through the eschar & fascia
 - o Relieves pressure when escharotomy does not & improves circulation

Ø *Skin coverings*

- o Biologic skin coverings
 - § Autograft: patient's own skin
 - § Allograft: cadaver skin

§ Xenograft: skin from animals

- o Synthetic skin coverings
- o Biosynthetic dressings
- o Wound grafts

Monitoring each system

Cardiovascular

Decreased cardiac output, increases workload on heart, increased oxygen demand, vasoconstriction

--> tachycardia, decreased tissue perfusion

Pulmonary

Inhalation injury

Upper: obstructive and causes severe upper airway edema

Lower: hypersecretion, bronchospasm, loss of ciliary action, severe edema, atelectasis, hypoxia

Fluids

Massive shift of fluid out of vessels, loss of plasma

Capillary walls more permeable

Water, Na, Albumin move into interstitial spaces (third spacing occurs)

Intravascular volume depletion

Electrolytes

Na/K shift

Na: hyponatremia d/t movement into interstitial spaces

K: hyperkalemia d/t injured cells and hemolyzed RBC releasing K into circulation

Kidney

Decreased blood perfusion --> decreased glomerular filtration rate, urine volume

Muscle damage--> release of myoglobin, excreted through kidneys --> red urine

AKI, Kidney ischemia can occur

Inflammation & Healing

Burning injury to tissues & vessels causes coagulation necrosis

Neutrophils & monocytes accumulate at site of injury

Fibroblasts & newly formed collagen fibrils appear & begin wound repair w/in 1st 6-12 hrs after injury

Immunologic Changes

Skin barrier is destroyed → at risk for infection

Thermoregulatory

Loss of integumentary system → loss of body temp regulation

Hypothermia occurs

Gastrointestinal

Decreased tissue perfusion → organ ischemia, hypoactive bowel sound, no bowel sounds, decreased feeding intolerance, paralytic ileus, signs of gastric erosion

Prioritize care

Phase	Goal
<ul style="list-style-type: none">• Resuscitation/Emergent Phase<ul style="list-style-type: none">○ Begins at time of injury○ Ends w/ restoration of normal capillary permeability○ Duration usually 48-72 hr○ Includes prehospital care & emergency care	The primary goal is to maintain a patent airway, administer IV fluids to prevent hypovolemic shock, & preserve vital organ functioning

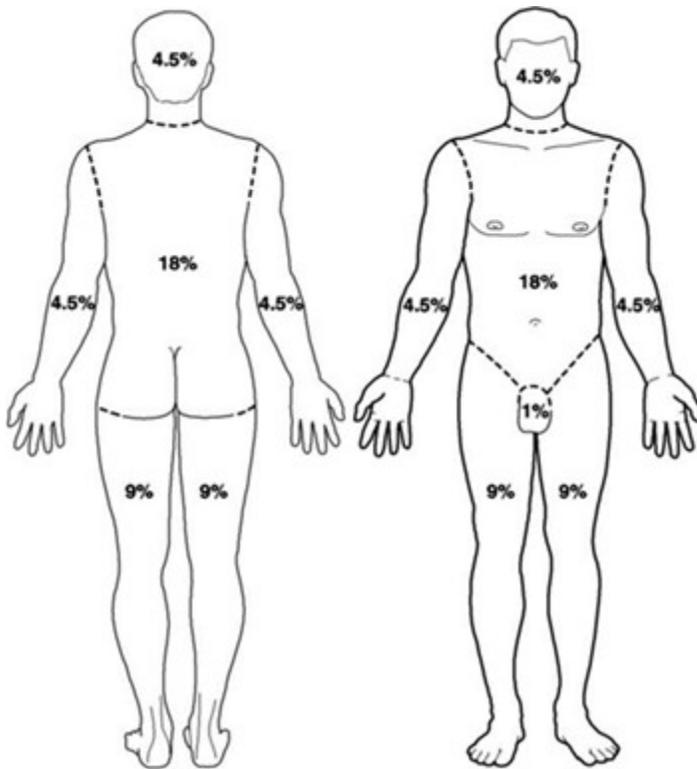
<ul style="list-style-type: none"> • Resuscitative Phase <ul style="list-style-type: none"> ○ Begins w/ initiation of fluids ○ Ends when capillary integrity returns to near-normal levels & large fluid shifts have decreased ○ Amount of fluid administered is based on client's weights & extent on injury ○ (Most fluid replacement formulas are calculated from the time of injury & not from the time of arrival at the hospital) 	<p>The goal is to prevent shock by maintaining adequate circulating blood volume & maintaining vital organ perfusion.</p>
Phase	Goal
<ul style="list-style-type: none"> • Acute Phase <ul style="list-style-type: none"> ○ Begins when the client is hemodynamically stable, capillary permeability is restored, & diuresis has begun ○ Usually begins 48-72 hr after time of injury ○ Focus on infection control, wound care, wound closure, nutritional support, pain management & physical therapy 	<p>The emphasis during this phase is place on restorative therapy, & the phase continues until wound closure is achieved.</p>
<ul style="list-style-type: none"> • Rehabilitative Phase 	<p>The goals of this phase are designed so that the client can gain independence &</p>

- o Overlaps acute phase of care
- o Extends beyond hospitalization

achieve maximal function.

Rule of nines (what it is and do a calculation of it)

The most common method used to estimate the extent of burns in adults is the rule of nines. This system is based on anatomic regions, each representing approximately 9% of the TBSA (total body surface area), allowing clinicians to quickly obtain an estimate of burn size. If a portion of an anatomic area is burned, the TBSA is calculated accordingly—for example, if approximately half of one arm were burned, the TBSA burned would be 4.5%.



Psychosocial aspects

Emotion	Possible Verbal Expression
Fear	<ul style="list-style-type: none"> o Will I die? o What will happen next? o Will I be disfigured? o Will my family & friends still love me?

Anxiety	<ul style="list-style-type: none"> o I feel out of control. o What's going to happen to me? o When will I look normal again?
Anger	<ul style="list-style-type: none"> o Why did this happen to me? o The nurses enjoy hurting me. o I hope the person who did this to me dies.
Guilt	<ul style="list-style-type: none"> o If only I'd been more careful. o I'm being punished because I did something wrong.
Hopefulness	<ul style="list-style-type: none"> o What do I need to do to survive this injury emotionally & return to my life/family/friends? o What am I meant to learn from this injury?
Depression	<ul style="list-style-type: none"> o It's no use going on like this. o I don't care what happens to me. o I wish people would leave me alone.

Emotional Support

Encourage patient to help with care and look at burns

In acute phase, patient may not help. This is their way of coping

Encourage patient to make decisions in patient's care

Assist client through stages of grief

Referrals for social workers, psychiatry, counselor, spiritual advisor

Fire safety

Keep kids away from matches/lighters/fires/stoves/irons

Maintain functioning of smoke/CO2 detectors, fire drills at home/work, water heater temp <120

No smoking in bed, with oxygen; don't use flammable liquids to start a fire, no electrical cords under carpets

Store chemicals in approved containers with labels

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

Anthrax: BIOLOGIC WEAPON: Category

- **Caused by *Bacillus anthracis***
 - **Naturally lives in soil in the spore state**
- **Contraction**

- **Raw meat**
- **Inhalation of spore**
- **Odorless & invisible**
- **Can travel long distance before disseminating**
- **Signs and Symptoms**
 - Early: flu-like symptoms, sore throat, mild fever, fatigue, muscle aches, nausea**
 - Late: chest discomfort, shortness of breath, coughing up blood, painful swallowing, high fever, trouble breathing, shock, meningitis**
- **Treatments/ Actions**
 - **Penicillin, Erythromycin, Gentamicin, Doxycycline**
 - **Standard precautions**
 - **Patient is not contagious**
 - **Cremation is recommended**
 - **Blood Test can Identify**

Ebola virus: BIOLOGIC WEAPON: Category

- **Contraction:** an infectious and frequently fatal disease marked by fever and severe internal bleeding, spread through contact with infected body fluids by a filovirus (*Ebola virus*), whose normal host species is unknown. When people become infected with Ebola, they do not start developing [signs or symptoms](#) right away. This period between exposure to an illness and having symptoms is known as the incubation period. A person can only spread Ebola to other people after they develop signs and symptoms of Ebola.
- **Signs and Symptoms:**
 - **Early:**
 - **Fever**
 - **Aches and pains, such as severe headache, muscle and joint pain, and abdominal (stomach) pain**
 - **Weakness and fatigue**
 - **Gastrointestinal symptoms including diarrhea and vomiting**
 - **Abdominal (stomach) pain**
 - **Unexplained hemorrhaging, bleeding or bruising**

- Late:
 - red eyes
 - skin rash
 - hiccups
- Treatments/ Actions
 - Providing fluids and electrolytes (body salts) through infusion into the vein (intravenously).
 - Offering oxygen therapy to maintain oxygen status.
 - Using medication to support blood pressure, reduce vomiting and diarrhea and to manage fever and pain.
 - Treating other infections, if they occur.

Sarin gas: CHEMICAL WEAPON: NERVE AGENT: Category

- Contraction
 - Inhalation, contact
- Signs and Symptoms
 - Early: Increased secretions, gastrointestinal motility, diarrhea, bronchospasm
 - Late: loss of consciousness, convulsions, paralysis, respiratory failure, death
- **Treatments/ Actions**
 - **Decontamination: Soap & water**
 - **Treatment: Supportive care, Benzos, Atropine, Pralidoxime**

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Smallpox: BIOLOGIC WEAPON: DNA VIRUS: Category

- **Contraction**
 - **Contact & droplet**
 - **Highly contagious**
- **Signs and Symptoms: begin 7-17 days after exposure**
 - **Early: Fever, Back Pain, Nausea/ Vomiting, Malaise, Headache**
 - **Late: Maculopapular Rash**
- **Treatments/ Actions**
 - **Vaccine Available**

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Hydrogen cyanide: Blood Agent: Category

Contraction

Breathing air, drinking water, eating food, or touching soil that contains cyanide

Signs and Symptoms

Early: tachypnea, tachycardia, seizures, coma

Late: respiratory/cardiac arrest, respiratory failure, death

Treatments/ Actions

Decontamination: soap and water

Treatment: sodium nitrite, sodium thiocyanate, hydroxocobalamin

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Botulism: BIOLOGIC WEAPON

- **Contraction: *Clostridium Botulinum***
 - **Inhalation**
 - **Improperly canned food**
 - **Contaminated wound**
 - **Cannot spread from person to person**

- **Signs and Symptoms: Serious Paralytic Illness**

Early

Ingested: Neurologic symptoms begin 12-36 hours

Inhalation: Neurologic symptoms begin 24-72 hours

Late: Progresses to paralysis of arms, legs, trunk, and/or respiratory muscles

- **Treatments/ Actions**
 - ***NO Vaccine***
 - **Food & wound botulism can be treated if diagnosed early**
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Gas odor: Category

- Contraction
- Signs and Symptoms
 - Early
 - Late
- Treatments/ Actions

Assessment/Treatment of:

Heat Stroke - Medical Emergency (Goal is to reduce temperature)

Manifestations:

- Temperature > 40° C (104° F)
- Lack of perspiration
- Hypotension
- Tachycardia
- AMS → hallucinations, loss of muscle coordination, combative
- Abnormal K⁺ & Na⁺ levels

Management:

- Cool sheets/towels
- Cold bath
- Ice
- Cooling blanket
- Environmental controls
- Immersion in cold bath if accessible
- Rectal thermometer
- Monitor airway, VS, ECG, mental status, UO, labs

Frostbite:

- Third degree:
 - o Deep tissue damage

Fourth Degree

Deeper tissue damage

Complete lack of blood flow with necrosis

May require amputation

Management:

- Restore body temperature
 - Warming blanket
 - Warm IV fluids

Hypothermia

- Core body temperature <35 C or 95F

Manifestations:

- Suppressed shivering with temps <90F
- Poor judgement
- Drowsiness
- Hypotension
- Bradycardia
- Hypoxia
- Pulmonary edema
- Ataxia

Management

- Warm IV fluids
- Bair hugger
- Warm blankets
- Warm room temperature
- Rectal temperature
- Warm humidified air
- Monitor airway, ABGs, vitals, EKG, labs

Nonfatal Drowning

- Hypoxia => Hypercapnia => bradycardia => dysrhythmia
- Fresh water
 - Loss of surfactant
 - Unable to expand lungs
- Salt Water
 - Pulmonary edema due to osmotic effects of salt in the lungs

Management

- CPR
- Maintain cerebral perfusion
- Maintain adequate oxygenation
- Intubate with PEEP
 - Improves oxygenation
 - Prevent aspiration
 - Correct intrapulmonary shunting

- Maintain hemodynamic & body temperature
- Monitor ABGs and labs

Carbon monoxide poisoning “Early=Flushed”

Blood Level (%)	Clinical Manifestations
1-10	Normal level
11-20 (mild poisoning)	HA Flushing Decreased visual acuity Decreased cerebral functioning Slight breathlessness

Blood Level (%)	Clinical Manifestations
21-40 (moderate poisoning)	HA N/V Drowsiness Tinnitus & vertigo Confusion & stupor Pale to reddish-purple skin Decreased BP Increased & irregular heartbeat Depressed ST segment on ECG
41-60 (severe poisoning)	Coma Seizures Cardiopulmonary instability
61-80 (fatal poisoning)	Death

Assessment:

Monitor for hypovolemia, shock ⇒ “Know s/s”

May develop paralytic ileus with larger burn
Shivering
May be scared

Treatment: O2 100% on non-rebreather mask