Exam 5 Study Guide Fall 2022

Please review the main concepts from the movie, Contagion, as well as R-Naught. Also, review your epidemiology math questions.

DHW – Ch. 14	Risk of Infectious and Communicable Diseases	ATI Ch. 3 pp 23-25

1. **Compare and contrast endemics, epidemics, and pandemics.**

Epidemic:

a. Condition occurs when the rate of disease exceeds the usual (endemic) level of the condition in a defined population.

Pandemic:

b. Condition occurs when an epidemic occurs in multiple countries or continents. It is an epidemic that spreads worldwide.

Endemic:

A disease or condition is endemic when there is a moderate, ongoing occurrence in a given location or when an infectious agent becomes prevalent in a certain population or area.

2. **How do you break the chain of infection?**

Hand hygiene; immunizations

Page 303 , mosquito nets , DEET for mosquito vectors . Environmentally - Hand hygiene. Genetically alter the environment or vector . Get rid of standing water. Germicidal spray, changing the reservoir , quarantine. Masks
Page 25 ATI.

3. **Compare and contrast types of indirect versus direct mechanism of transmission of disease. Which diseases fit under each mechanism of transmission?**
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4. **What are the parts of the chain of infection (be specific)?**

The agent:

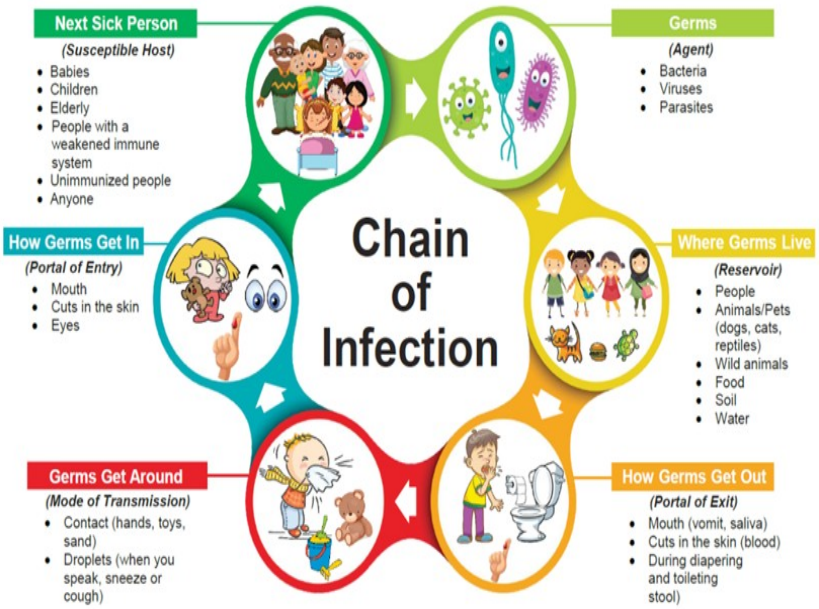
a. Is the physical, infectious, or chemical factor that causes the disease.
b. Ex:
    i. Chemical agents:
        1. Drugs
        2. Toxins
    ii. Physical agents:
        1. Noise
        2. Temperature
    iii. Infectious agents:
        1. Viruses
        2. Bacteria

The host:

c. Is the living being that an agent or the environment influences.
d. Ex:
    i. Susceptible host:
        1. Age
        2. Sex
        3. Genetics
        4. Ethnicity
        5. Immunological status
        6. Physiological state

The environment:

e. Is the setting or surrounding that sustains the host.
f. Ex:
    i. Physical environment:
        1. Geography
        2. Water/food supply
        3. Presence of reservoirs/vectors
        4. Not a SATA. Example mosquito- vector , agent - mosquito that is carrying like malaria and rocky mountain . Bacteria - agent .
        5. There is a question and one of the answers has "quarantine the human reservoir" in it, it is the answer.



5. What are host factors that can increase the risk of contracting a disease?

Just the presence of an infectious agent is not insufficient to produce an infectious disease, process requires susceptible host (SATA)

PAIRS

a. Physical / Emotional health
b. Age
c. Immune Status (Unimmunized
d. Race
e. Sex

6. What is the incubation period?

The time between exposure to an infectious agent and the manifestation of symptoms in the host

Each infectious disease has its own incubation period, but it can also vary in different hosts.

In a setting school nurse, chicken pox has 3 week incubation period. Keep the child home. Parents monitor the signs and symptoms teaching by school nurse. Parents should be informed (Primary))

7. Whom is a provider required to report diseases to?

Federal Level:

a. USDHHS is the US public health infrastructure that develops policies to protect the nation's health
b. CDC is a major USDHHS agency that protects the nation's health by developing guidelines that promote health and quality of life by preventing and controlling disease, injury, and disability
c. CDC maintains surveillance systems to analyze data for disease trends and outbreaks

State Level:

d. Healthcare providers and healthcare facilities are required to report certain infectious diseases to state health departments
e. State public health departments that monitor disease incidence and identify possible outbreaks within their states report these data to the CDC
    i. Certain infectious and/or communicable diseases must be reported to CDC

    Reported to the State health department.

8. What are risk factors for acquiring a STD (STI)?

Have multiple sexual partners

Do not use a condom during sex

Have other STDs

Have a sexual partner who has had an STD

9. **What are primary, secondar, and tertiary prevention interventions for sexually transmitted infections (STIs)?**
   Primary: sexual education, condoms, abstinence
   Secondary: Screening
   Tertiary: Treatment once diagnosed to prevent complications
10. **Which STI's have severe and debilitating long term effects?**
    HIV, HPV, Chlamydia, Gonorrhea, Syphilis
11. **What are the steps of an outbreak investigation and apply them in a scenario?**
12. Table 14.3 (ESC F IEC)
    a. Establish and verify diagnosis of reported cases; identify agents.
    b. Search for additional cases; collect critical data and specimens.
    c. Characterize cases by person, place, and time.
    d. Formulate and test tentative hypotheses regarding possible causative factors
    e. Implement control measures to control the outbreak
    f. Evaluate efficacy of control measures
    g. Communicate findings; prepare written reports.

Gather all the data first, timeframe , formulate hypothesis and implement control measures.

DHW – Ch. 15	Emerging Infectious Diseases	ATI Ch. 3 pp 23-25

1. **What are Primary prevention strategies for infectious/communicable diseases?**

ATI page 26 Prevent the occurrence of infectious disease (immunizations).

Educate the public regarding the need for immunizations and about federal and state immunization programs,

counsel clients traveling to other countries about protection from infectious diseases and refer to health departments for information about mandatory immunizations

Educate the public regarding prevention of disease and ways to eliminate risk factors and exposure (Hand hygiene, universal precautions, proper food handling and storage, use of insecticides, and the use of condoms)

2. **What are Secondary prevention strategies for infectious/communicable diseases?**

ATI pg 26 **Increase early detection through screening and case finding.**

Refer suspected cases of communicable disease for diagnostic confirmation and epidemiologic reporting

Provide post exposure prophylaxis (Hep A, **Rabies) (only one vaccine) page 75 , prevention - vaccine can be given within three days of exposure.**

Quarantine clients when necessary

Use partner notification and contact tracing to identify and screen individuals who have been exposed to a communicable disease.

3. **What are the nationally notifiable diseases?**

ATI Pg 26

Anthrax

Botulism

Cholera

Congenital Rubella Syndrome

Diphtheria

Giardiasis

Gonorrhea

Hep A, B ,C

HIV

Influenza/associated pediatric mortality

Legionellosis/Legionnaires disease

Lyme Disease

Malaria

Meningococcal disease

Mumps

Pertussis

Poliomyelitis, paralytic

Rabies (human or animal)

Rubella (German Measles)

Salmonellosis

Severe Acute Respiratory Syndrome- Associated coronavirus disease (Sars-CoV)

Shigellosis

Smallpox

Syphilis

Tetanus/C. Tetani

Toxic Shock Syndrome (TSS) other than Streptococcal

Tuberculosis

Typhoid Fever

TB

Vancomycin-intermediate and vancomycin-resistant

Viral Hemorrhagic Fever

Staphylococcus aureus (VISA/VRSA)

Page 26 ATI list and PP slide 14 (SATA)

Herpes and C. difficile are not notifiable

4. **What is herd immunity?**

Textbook pg 330 Type of immunity in which a **large proportion of people in a population are not susceptible to a communicable disease and the few people who are susceptible will not likely be exposed and contract the illness**

Book pg 106 Herd immunity is a type of passive immunity Book pg 106

5. **Compare and contrast active vs. passive immunity? How do you get them?**

ATI

Book pg 106 Active immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Exposure to the disease organism can occur through infection with the actual live organism (resulting in natural immunity) or introduction of a dead or weakened form of the disease organism through vaccination (vaccine-induced immunity)

Book pg 106 Passive immunity results when a person is given antibodies to a disease rather than producing them through his or her own immune system. Example is Newborn acquires passive immunity from mom's placenta and thorough breastfeeding or immunoglobulins.

Active immunity protection takes time where as passive immunity is immediate

Passive immunity usually last weeks or months whereas active immunity is longer lasting. From mother or human globulin.

There is a question about active and a question passive

6. Why are some diseases reported?

ATI Pg 25

Communicable Disease surveillance is done by community health nurses by collecting and analyzing data regarding infectious disease.

Descriptive epidemiology is used to investigate disease patterns to identify who is affected, where the issue is located, how it occurs, why or what the cause is, and when the condition started.

Information gained from monitoring disease patterns can help identify an unusual disease outbreak or newly emerging disease (public health assessment). The data is also useful in developing public health policies regarding disease management and to evaluate efficiency of communicable disease programs (assurance).

Disease surveillance can be used to track the point of origin of some diseases. Example from common individual or community (host), or contaminated food or water source (environment)

Management of a disease outbreak

and state notification to CDC is voluntary.

7. What is natural immunity?

Natural immunity is the natural defense mechanisms of the body to resist specific antigens or toxins.

Can be enhanced by good nutrition and affected by other disease

8. What equipment is needed for an outbreak of the avian influenza?

Book pg 340 most cases have resulted from contact with infected domestic poultry or surfaces contaminated with blood and secretions from infected birds.

CDC recommends enhanced isolation precautions for diagnosed or suspected Avian influenza:

Contact precautions

Use gloves and gowns for all patients

Use dedicated equipment for infected patients (Stethoscopes, BP cuffs, disposable thermometers)

Eye protection

Wear goggles or face shield when w/n 3 feet of pt

Airborne precautions:

Place pt in negative pressure airborne isolation room so that air cannot escape through the vent system. (Tuberculosis) also.

Use a fit tested respirator.

9. **What indicates a positive TB-skin test?**

>5 mm induration or more where the fluid was injected.

10. **What factors increase the spread of TB?**

Duration of exposure, immunocompromised, close contact with people. (DIC)

Indoor air pollution (on the concentration of infectious droplet nuclei in the air and the duration of exposure to a person with infectious TB disease).

DHW – Ch. 20	Community Preparedness: Disaster and Terrorism	ATI Ch. 8

1. **What client classifies as a "Black" triage tag?**

Expectant, dead or non-salvageable, given available resources

a. Don't have a pulse, barely breathing, not spontaneously breathing when repositioned.

Victim unlikely to survive given the severity of injuries, level of available care, or both

2. **What client classifies as a "Red" triage tag?**

Critical patient, unstable, requiring immediate intervention. For example a patient with heavy chest pain, heart attack, and pt who is not able to breath.

a. Critical
b. Unstable, requiring immediate intervention
c. Victim can be helped by immediate intervention and transport
d. Requires medical attention within minutes for survival (up to 60)
e. Includes compromises to the patient's ABCs.

***** PREGNANT WOMEN ARE AUTOMATICALLY RED TAGS*****

3. **What client classifies as a "Yellow" triage tag?**

Urgent, stable but may deteriorate. For example a patient with a head injury

a. Urgent
b. Stable, but may have deteriorate
c. Victim's transport can be delayed

Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

4. **What client classifies as a "Green" triage tag?**

Delayed, injured or ill but stable not likely to deteriorate. E.g: walking wounded, 1st degree burns,

a. Delayed
b. Injured or ill but stable and not likely to deteriorate (walking wounded)
c. Victim with relatively minor injuries
d. Status unlikely to deteriorate over days
e. May be able to assist in own care

5. What is the nurse's role in a Risk Assessment during disaster preparedness?

Ask the following questions: (3P DW TED)

· What are the *populations* at risk within the community?
· Have there been *previous* disasters, natural or man-made?
· What size of an area or *population* is likely to be affected in a worse-case scenario?
· What is the community *disaster* plan?
· What kind or *warning* system is in place?
· What type of disaster response *teams* (volunteers, nurses, health care providers, emergency medical technicians, firemen) are in place?
· What type of *evacuation* measures (boat, motor vehicle, train) will be needed?
· What type of environmental *dangers* (chemical plants, sewage displacement) can be

Page 74 ATI.

6. What occurs in the Planning phase of disaster management?

- Develop a disaster response plan based on the most probable disaster threats.
- Identify the community disaster warning system and communication center and learn how to access it.
- Identify the community's first responder's disaster plan.
- Make a list of agencies that are available for the varying levels of disaster management at the local, state and national level.
- *Define the nurses role in first, second and third level triage.*
- *Identify the specific roles of personnel involved in disaster response and chain of command.*
- Locate all equipment and supplies needed for disaster management, including hazmat suits, infectious control items, medical supplies, food and potable (drinkable) water. Detail a plan to replenish these regularly.
- *Check equipment (including evacuation vehicles) regularly to ensure proper operation.*

Evaluate the efficiency, response time, and safety of disaster drills, mass casualty drills and disaster plans.

- Assist community members with personal preparedness by having plan for evacuation and making a disaster kit. Kits should include at least 3 days supply of food, water, medication, clothing, and hygiene items per person, copies of personal documents and first aid supplies. The CDC and American Red Cross have lists of essential items for a disaster kit.
- Talk with medical facilities and governing agencies about crisis standards of care to determine how care standards might be altered to manage a large surge of clients.

Know what your role is as a nurse.

7. **What is the purpose of evaluation and After Action Report?**

Book pg. 499-500

Provides a detailed list of strengths and weaknesses , success and failures, and suggestions for improvement in future responses.

To analyze the data and further actions.

8. **What is included in an epidemiological analysis report (look at the recovery phase)?**

Pg. 149

Individual and community assessments using epidemiologic principles, form the database that provides the evidence and rationale for interventions.

An "after action report"

Numbers, mortality, morbidity and statistics . How is the environment affected by that for example contaminated water.

9. **What are the emergency preparedness steps from the American Red Cross? Handout**

With your family or household members, discuss how to prepare and respond to the types of emergencies that are most likely to happen where you live, learn, work and play.

Identify responsibilities for each member of your household and how you will work together as a team.

Practice as many elements of your plan as possible

Handout in advance

1. Get a kit
2. Make a plan
3. Be informed

10. **What are the nurse's roles in a bioterrorism disaster?**

Participate in planning and preparation for immediate response to a bioterrorism event.- Primary

- Identify potential biological agents for bioterrorism- Primary
- Survey for and report bioterrorism activity (usually to the local health department)- Secondary
- Promptly participate in measures to contain and control the spread of infections resulting from bioterrorism activity- Secondary.

11. **What are the manifestations of smallpox?**

12. High fever, fatigue, head and body aches
13. Rash begins on the face and tongue, quickly spreads to the trunk, arms and legs, then hands

and feet, then turns to pus-filled lesions.

14. Onset is a sudden fever with severe aches and possible vomiting
15. Rash appears 2 to 4 days after fever (more on face and limbs than trunk)
16. Lesions are all in the same stage of development, deep vesicles, and do not collapse when punctured.

17. **Where would the community receive supplies, food, water and possibly medications after a disaster?**

A point of distribution (POD) is a centralized location where the public picks up emergency supplies, including food, water, and medications (if necessary), following a disaster.

18. **What are the nurse's role in field triage in a disaster?**

Public health nurses as first responders

Assess community needs as events unfold

Conduct surveillance for communicable disease

Prevent and control spread of disease

Maintain communication channels

Organize and manage PODs

Provide on-site triage as needed

Manage behavioral responses to stress

Ensure health and safety of self, colleagues, and public

Document events and interventions

<u>DISASTER RESPONSE</u>

Activate the disaster management plan

Perform triage, direct those affected, coordinate evac, quarantine, open shelters

Triage identifies serious vs. minor injuries, prioritization of care, and transferring immediate casualties (red tag) to medical facilities

19. **What are examples of vulnerabilities in communities included in their disaster preparedness plans?**

Populations at risk are those that have fewer resources or less of an ability to withstand and survive a disaster without physical harm.

- These populations tend to be physically isolated, disabled, or unable to assess

disaster services.

- Strategic emergency planning is necessary to prevent the loss of lives in susceptible populations.

20. What are the phases of emergency management response?

20.1 & ATI 73-74 - SATA

- Evaluate the area, effect, and level of the disaster
- Create ongoing assessment and surveillance reports
- Evaluate the efficiency of the disaster response teams
- Estimate the length of time for recovery of community services such as electricity and running portable water.

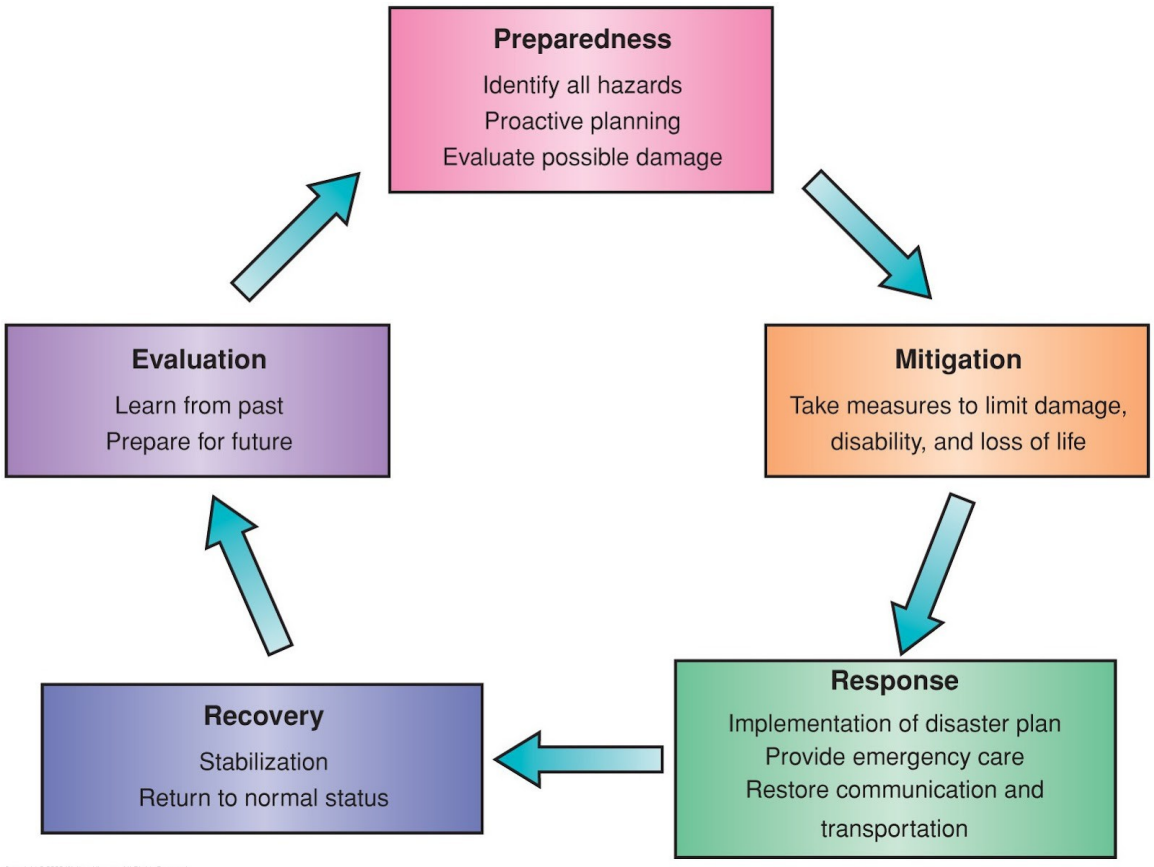
This was a SATA - I created an Acronym (PERRM), you do not need to know the order, just the names.

Preparedness

Mitigation

Response

Recovery (after action)
Evaluation



DHW Ch. 6, 7	Epidemiology-Rates	ATI Ch. 3

1. Calculation of rates related to bioterrorism, and communicable diseases.

2. Review prevalence rate, prevalence proportion, infant mortality rate, case-specific mortality rates, and cause-specific mortality rates.

4. **Review how to calculate R-naught (R-0) and understand what it means.**
   It measures how many new victims a disease carrier is likely to infect. The higher the Ro, the more contagious the disease is.

5. **What are the uses of the principles of epidemiology?**

To provide health interventions to targeted populations

Epidemiological calculations provide information about the impact of the disease and death on populations and health aggregates

Systematic process of targeting a specific health need w/the goal of improving health.

Provides a broad understanding of the spread, transmission, and incidence of disease and injury. (STI)

To find out about communicable disease- chain of infection, incidence of disease. Look at the health department data.