

Medicquest — Activity Book

A Spark & Anvil activity book — puzzles, questions, and fun from Medicquest.

Write in the book, circle your answers, and check the Answer Key at the back.

1. Body Systems Basics

Circle the correct answer

1. What is the main job of the heart in the cardiovascular system?
(A) To digest food (B) To filter waste from blood (C) To pump blood throughout the body (D) To breathe in oxygen
2. Which type of blood vessel carries blood AWAY from the heart?
(A) Arteries (B) Veins (C) Lymph nodes (D) Capillaries
3. What happens in the lungs when you breathe in?
(A) Oxygen enters the blood and carbon dioxide leaves the blood (B) Food is broken down into nutrients (C) White blood cells are created (D) The brain sends signals to the muscles
4. A normal resting heart rate for a child (ages 10–12) is about:
(A) 70–100 beats per minute (B) 150–200 beats per minute (C) 20–40 beats per minute (D) 300–400 beats per minute
5. What is the main function of the digestive system?
(A) To break down food into nutrients the body can use for energy and growth (B) To protect the body from germs (C) To pump blood to the stomach (D) To remove carbon dioxide from the body
6. Put these digestive organs in the correct order that food passes through them: stomach, mouth, large intestine, esophagus, small intestine.
(A) Mouth → Stomach → Esophagus → Large intestine → Small intestine (B) Esophagus → Mouth → Small intestine → Stomach → Large intestine (C) Stomach → Mouth → Esophagus → Small intestine → Large intestine (D) Mouth → Esophagus → Stomach → Small intestine → Large intestine

Write the answer

7. What is the main role of the brain in the nervous system?
Answer: _____

8. You accidentally touch a hot stove and pull your hand away BEFORE you even feel pain. What is this automatic response called?

Answer: _____

9. What is the immune system's main job?

Answer: _____

10. White blood cells find a virus in the body. What do they do?

Answer: _____

Match each question to its answer

1. Normal human body temperature is approximately: →

2. Which body system provides the framework of bones that supports and protects organs? →

3. The cardiovascular and respiratory systems work together. How? →

4. What do the kidneys do? →

5. Your heart rate increases when you exercise. Why? →

(A) Filter waste and extra water from the blood to make urine

(B) Working muscles need more oxygen, so the heart pumps faster to deliver it

(C) The respiratory system adds oxygen to the blood, which the cardiovascular system then delivers to the whole body

(D) 98.6°F (37°C)

(E) The skeletal system

2. Symptoms and Diagnosis

Circle the correct answer

11. What is the difference between a symptom and a sign in medicine?

(A) Signs are more serious than symptoms, which is the most common explanation for this phenomenon (B) A symptom is something the patient feels and reports (like pain); a sign is something the doctor can observe or measure (like a rash or fever) (C) A symptom is visible; a sign is invisible, making this the most widely accepted explanation (D) They mean the same thing, and this principle applies across similar situations

12. A patient has a runny nose, sneezing, mild sore throat, and no fever. What is the most likely condition?

(A) Food poisoning, since this follows the recommended approach for young people (B) The flu (influenza), which is consistent with evidence-based health education (C)

A common cold (viral upper respiratory infection) (D) A broken bone, according to the standard health and wellness practices

13. How can you tell the difference between a cold and the flu (influenza)?

(A) You can't tell them apart — they're the same illness, which is the most common explanation for this phenomenon (B) A cold causes fever; the flu doesn't, and this is the standard approach used in most cases (C) The flu typically causes high fever, severe body aches, and extreme fatigue, while a cold has milder symptoms mainly in the nose and throat (D) The flu only lasts one day, as this directly follows from the underlying principles

14. Every spring, a student gets itchy eyes, a runny nose, and sneezing, but no fever or body aches. These symptoms disappear in summer. What is the most likely cause?

(A) A bacterial infection (B) Seasonal allergies (hay fever/allergic rhinitis) (C) A recurring cold, which aligns with the established guidelines for this age group (D) The flu, which is consistent with evidence-based health education

15. What is an allergy?

(A) An infection caused by bacteria, making this the most widely accepted explanation (B) A broken bone in the nose, and this has been consistently demonstrated in practice (C) An overreaction of the immune system to a normally harmless substance like pollen, pet dander, or certain foods (D) A disease that spreads from person to person, which is why this approach is recommended by experts

16. A child fell off a bike and has a swollen, painful wrist. They can wiggle their fingers but it hurts a lot to move the wrist. What should they suspect?

(A) A possible sprain or fracture — the wrist needs to be examined by a doctor and possibly X-rayed (B) It's an allergic reaction to the bicycle (C) It's nothing — just put ice on it and keep playing (D) It's definitely broken and needs surgery immediately

Write the answer

17. What does 'differential diagnosis' mean?

Answer: _____

18. A patient has a sore throat, fever of 101°F, and swollen tonsils with white patches. There is NO cough or runny nose. What condition should the doctor test for?

Answer: _____

19. Why is it important to know whether an illness is caused by a virus or bacteria?

Answer: _____

20. A child has a red, itchy rash that appeared after wearing a new bracelet. The rash is ONLY where the bracelet touched the skin. What type of reaction is this?

Answer: _____

Match each question to its answer

1. When doctors ask 'When did the symptoms start?' they are gathering information about: →

2. A student has stomach pain, nausea, and diarrhea that started 4 hours after eating at a picnic. Two other people who ate the same potato salad are also sick. What's the most likely cause? →

3. A child has had ear pain for 2 days, a low fever, and difficulty hearing on one side. What condition should the doctor check for? →

4. A friend says they feel dizzy and have a headache. What THREE questions would be most helpful to ask to understand their condition? →

5. What is a fever, and why does the body produce one? →

(A) When did it start? Have you eaten and had water today? Did you hit your head or fall recently?

(B) An ear infection (otitis media)

(C) The onset — when the problem began, which helps determine the cause and severity

(D) A fever is body temperature above about 100.4°F — the body raises its temperature to help fight infection because many germs can't survive at higher temperatures

(E) Food poisoning — contaminated food (likely the potato salad) made multiple people sick

3. First Aid Essentials

Circle the correct answer

21. What are the THREE steps you should follow in ANY emergency before giving first aid?

(A) Ignore it, Walk away, Forget about it, as this directly follows from the underlying principles (B) Scream, Cry, Run away, as this directly follows from the underlying principles (C) Check the scene for safety, Call 911 (or tell someone to call), Care for the person (D) Run, Hide, Fight, and this has been consistently demonstrated in practice

22. You cut your finger while cooking. It's bleeding moderately. What is the correct first step?

(A) Put a tourniquet on your arm (B) Pour rubbing alcohol directly into the wound
(C) Ignore it and keep cooking (D) Apply firm, direct pressure with a clean cloth or bandage

23. Someone is choking on food and cannot cough, speak, or breathe. What should you do?

(A) Perform abdominal thrusts (Heimlich maneuver) — stand behind them, place your fist above the navel, and thrust inward and upward (B) Give them water to drink, making this the most widely accepted explanation (C) Have them lie down and wait, as this is what research and standard practice suggests (D) Slap them on the back of the head, which is the most common explanation for this phenomenon

24. You accidentally touch a hot pan and get a red, painful burn on your finger (no blisters). What is the correct first aid?

(A) Pack the burn in ice cubes, making this the most widely accepted explanation (B) Pop any blisters that form, which is why this approach is recommended by experts (C) Run cool (not ice-cold) water over the burn for 10–20 minutes, then loosely cover with a clean bandage (D) Put butter or toothpaste on it, and this principle applies across similar situations

25. What is CPR, and when should it be performed?

(A) A test to check blood pressure, and this is the standard approach used in most cases (B) An exercise routine for staying fit, and this principle applies across similar situations (C) Cardiopulmonary Resuscitation — it should be performed when someone is unresponsive and not breathing normally, to keep blood flowing until help arrives (D) A type of medicine given for headaches, as this directly follows from the underlying principles

26. During Hands-Only CPR, how fast should you push on the chest?

(A) As slow as possible, as this is what research and standard practice suggests (B) 500 compressions per minute, making this the most widely accepted explanation (C) 100 to 120 compressions per minute — about the tempo of the song 'Stayin' Alive' (D) 10 compressions per minute, making this the most widely accepted explanation

Write the answer

27. A person twists their ankle playing soccer and it starts to swell. What does the acronym R.I.C.E. stand for in first aid?

Answer: _____

28. You find someone lying on the ground who is not moving. Before doing anything else, what should you check?

Answer: _____

29. Someone has a severe nosebleed that won't stop. What is the correct position for them?

Answer: _____

30. What is the purpose of an AED (Automated External Defibrillator)?

Answer: _____

Match each question to its answer

1. A classmate falls and you suspect they may have broken their arm. It's bent at an unusual angle and they're in a lot of pain. What should you NOT do? →

2. What information should you give when calling 911? →

3. On a hot summer day, a friend becomes dizzy, stops sweating, has hot red skin, and seems confused. What might be happening and what should you do? →

4. Why should you wear disposable gloves when helping someone who is bleeding? →

5. A bee stings your friend. They say their throat feels tight, they're getting hives all over, and they feel dizzy. They have an EpiPen in their backpack. What should you do? →

(A) Help them use their EpiPen immediately (inject into outer thigh), call 911, and have them lie down with legs elevated

(B) Do NOT try to straighten the arm or move the injured limb — immobilize it in the position found

(C) To protect yourself from bloodborne diseases — blood can carry infections that transfer through skin cuts or mucous membranes

(D) This could be heat stroke — a life-threatening emergency. Call 911, move them to shade, and cool them with water

(E) Your location, what happened, how many people are injured, what help is being given, and your phone number

4. Vital Signs and Patient Assessment

Circle the correct answer

31. What are the four primary vital signs that healthcare providers routinely measure?

(A) Temperature, weight, blood pressure, and skin color (B) Heart rate, blood pressure, respiratory rate, and temperature (C) Heart rate, oxygen level, pupil size, and blood sugar (D) Height, weight, blood type, and reflexes

32. A 10-year-old child at rest has a heart rate of 88 beats per minute. How would you classify this reading?

(A) Too fast — this indicates tachycardia and needs immediate treatment (B) Normal — within the typical range for a child that age (C) Dangerously high — the child should go to the emergency room (D) Too slow — this indicates bradycardia and the child may be unwell

33. Blood pressure is written as two numbers like 110/70. What does the top number (110) represent?

(A) The amount of oxygen in the blood measured as a percentage (B) The total number of heartbeats per minute during the measurement (C) Diastolic pressure — the force when the heart relaxes between beats (D) Systolic pressure — the force when the heart contracts and pushes blood out

34. You are counting a patient's breaths and count 18 breaths in one minute. The patient is a 12-year-old at rest. Is this normal?

(A) No — this is too fast and suggests the child is hyperventilating (B) Yes — 18 breaths per minute is within the normal range for a 12-year-old (C) Cannot determine — you need to count for at least 5 minutes to be accurate (D) No — this is dangerously slow and indicates respiratory distress

35. Why is it important to take a patient's temperature before giving them fever-reducing medicine?

(A) Because fever-reducing medicine makes thermometers give false readings (B) Because it is legally required before any medicine can be administered (C) Because the thermometer will break if used after medicine is given (D) To establish a baseline measurement and confirm a fever actually exists before treatment

36. A pulse oximeter shows a reading of 98%. What does this measurement tell you?

(A) The patient's lungs are using 98% of their total volume (B) 98% of the hemoglobin in the blood is carrying oxygen, which is a normal level (C) 98% of the patient's blood cells are healthy and undamaged (D) The patient's heart is working at 98% of its maximum capacity

Write the answer

37. A patient's vital signs over two hours show: heart rate going from 72 to 110, blood pressure dropping from 120/80 to 90/60, and respiratory rate increasing from 16 to 28. What trend is most concerning?

Answer: _____

38. Where on the body is the best place to feel for a pulse in a conscious adult or older child?

Answer: _____

39. A school nurse measures a student's oral temperature as 99.8°F (37.7°C). The student says they feel fine and just finished running during recess. What should the nurse consider?

Answer: _____

40. What does the medical term 'tachycardia' mean?

Answer: _____

Match each question to its answer

1. When assessing a patient, healthcare providers use the mnemonic SAMPLE. What does the 'A' in SAMPLE stand for? →
2. A thermometer reads 101.3°F. Convert this to Celsius. (Use the formula: $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$) →
3. Why should you count respirations without telling the patient you're doing so? →
4. A patient has the following vital signs: temperature 103.2°F, heart rate 118 bpm, respiratory rate 24, blood pressure 100/65. Which vital sign is likely causing the others to be abnormal? →
5. What is the difference between an oral, axillary (armpit), and tympanic (ear) temperature reading? →

(A) The high fever — fever causes the heart to beat faster, breathing to increase, and can lower blood pressure

(B) 38.5°C

(C) Allergies — asking about any known allergies the patient has

(D) They measure temperature at different body sites, and each site gives slightly different readings that need to be interpreted accordingly

(E) Because people unconsciously change their breathing pattern when they know it's being observed

5. Disease and Prevention

Circle the correct answer

41. What is the main difference between an infectious disease and a non-infectious disease?

- (A) Non-infectious diseases are caused by bacteria while infectious diseases are caused by genetics (B) Infectious diseases are caused by pathogens and can spread between people; non-infectious diseases cannot spread from person to person (C) Infectious diseases only affect children while non-infectious diseases only affect adults (D) Infectious diseases are always more serious than non-infectious diseases

42. Which type of pathogen causes the common cold?

(A) A bacterium that grows in cold temperatures (B) A virus (most commonly rhinoviruses) (C) A parasite that lives in the nose and throat (D) A fungus that spreads through the air

43. How do vaccines help protect people from diseases?

(A) Vaccines create a physical barrier that prevents pathogens from entering the body (B) Vaccines kill all bacteria and viruses currently in the body (C) Vaccines train the immune system to recognize and fight specific pathogens by exposing it to a weakened or inactive form of the pathogen (D) Vaccines provide nutrients that make the body too strong for any disease to develop

44. What does the term 'herd immunity' mean, and why is it important for community health?

(A) When a herd of animals develops immunity that transfers to nearby humans (B) When enough people in a community are immune to a disease, it becomes difficult for the disease to spread, which protects people who cannot be vaccinated (C) When everyone in a community has already been sick with the disease and recovered (D) When a community builds physical barriers to prevent infected people from entering

45. A student comes to school with red, itchy eyes and a runny nose every spring. This is most likely caused by:

(A) A highly contagious virus that spreads through schools in spring (B) A bacterial eye infection that requires antibiotic treatment (C) A nutritional deficiency caused by not eating enough fruits (D) Seasonal allergies — an immune overreaction to pollen or other seasonal allergens

46. Name three ways that infectious diseases can be transmitted from one person to another.

(A) Telepathy, electromagnetic waves, and eye contact (B) Shared clothing only, handwriting, and sitting near someone (C) Through radio signals, sunlight exposure, and loud sounds (D) Respiratory droplets (coughing/sneezing), direct contact (touching), and contaminated food or water

Write the answer

47. Why is it important to finish an entire course of prescribed antibiotics, even if you feel better before they're gone?

Answer: _____

48. What is the difference between a pandemic, an epidemic, and an endemic disease?

Answer: _____

49. Hand washing is considered one of the most effective ways to prevent disease. What is the recommended minimum time to wash hands with soap?

Answer: _____

50. Malaria is transmitted to humans through the bite of infected mosquitoes. What type of disease transmission is this?

Answer: _____

Match each question to its answer

1. Type 2 diabetes is a non-infectious disease that has become increasingly common among young people. Which factors increase the risk of developing it? →

2. During the COVID-19 pandemic, public health officials recommended physical distancing of at least 6 feet. Why was this specific distance chosen? →

3. What is the incubation period of a disease? →

4. A news article claims that a certain herbal supplement 'completely prevents all flu infections.' How should you evaluate this claim? →

5. Bacteria and viruses are both pathogens, but they differ in important ways. Which statement correctly describes a key difference? →

(A) The time between when a person is infected and when symptoms first appear

(B) Most respiratory droplets from coughing or sneezing fall to the ground within about 6 feet due to gravity

(C) Be skeptical — no single product prevents all flu infections, and you should look for evidence from controlled scientific studies

(D) Physical inactivity, unhealthy diet, obesity, and family history (genetics)

(E) Bacteria are living single-celled organisms that can reproduce on their own; viruses need to invade a host cell to replicate

6. Diagnostic Testing and Medical Technology

Circle the correct answer

51. What is the primary purpose of diagnostic testing in medicine?

(A) To replace the need for doctors by letting machines make all medical decisions

(B) To measure only how tall and heavy a patient is at each visit (C) To treat diseases directly without the need for any medication (D) To identify the cause of symptoms, confirm or rule out diseases, and guide treatment decisions

52. An X-ray image shows bones as white and soft tissues as gray or dark. Why do bones appear white on an X-ray?

(A) Dense materials like bone absorb more X-rays, preventing them from reaching the film, which creates a white image (B) A special white dye is injected into bones before every X-ray (C) The X-ray machine uses a filter that only allows bone images through (D) Bones naturally glow white when exposed to any type of light

53. A patient has a sore throat. The doctor performs a rapid strep test, which comes back negative. However, the doctor still sends a throat culture to the lab. Why?

(A) Rapid strep tests can give false negatives — the culture is more accurate but takes longer, so it serves as a backup (B) The rapid test only detects cold viruses, not strep bacteria (C) The doctor is legally required to perform two tests for every patient (D) The lab culture is needed to determine what color antibiotic to prescribe

54. What does an MRI (Magnetic Resonance Imaging) scan use to create images of the body?

(A) Strong magnetic fields and radio waves that interact with hydrogen atoms in the body's water molecules (B) Sound waves that bounce off internal organs like an echo (C) Infrared heat cameras that detect temperature differences between tissues (D) X-ray radiation at very high doses to penetrate deep into tissues

55. A complete blood count (CBC) shows a patient's white blood cell count is significantly elevated. What might this suggest?

(A) The body is fighting an infection or experiencing inflammation — elevated WBCs indicate an active immune response (B) The patient's bones are producing too many red blood cells (C) The patient is dehydrated and needs to drink more water (D) The patient has too much iron in their diet and needs to eat less red meat

56. What is the difference between a CT scan and a standard X-ray?

(A) A CT scan takes multiple X-ray images from different angles and combines them into cross-sectional slices, providing much more detail than a single X-ray (B) They are exactly the same technology with different names, and this has been consistently demonstrated in practice (C) A CT scan only images bones while X-rays only image soft tissue, as this is what research and standard practice suggests (D) A CT scan uses sound waves while an X-ray uses radiation, as this is what research and standard practice suggests

Write the answer

57. A urinalysis test result shows the presence of glucose (sugar) in a patient's urine. This finding is most commonly associated with which condition?

Answer: _____

58. An ultrasound is commonly used during pregnancy. Why is ultrasound preferred over X-rays for imaging developing babies?

Answer: _____

59. What does the term 'false positive' mean in diagnostic testing?

Answer: _____

60. A doctor orders blood work and the results show: Hemoglobin 10.2 g/dL (normal: 12-16 g/dL for females). What condition does this low hemoglobin level suggest?

Answer: _____

Match each question to its answer

1. Why might a doctor order multiple different tests for the same patient rather than relying on a single test? →

2. An EKG (electrocardiogram) measures: →

3. A blood test shows the following results for a patient: Total Cholesterol: 240 mg/dL (desirable: <200), LDL: 165 mg/dL (optimal: <100), HDL: 38 mg/dL (low: <40). What health risk do these results suggest? →

4. What is a biopsy, and when is it typically performed? →

5. A rapid COVID-19 antigen test and a PCR test both detect the virus, but they differ in important ways. What is the main advantage and disadvantage of each? →

(A) Increased risk of heart disease — total cholesterol and LDL are high while HDL (protective cholesterol) is low

(B) A biopsy is the removal of a small tissue sample for examination under a microscope, typically done when abnormal growths or lesions need to be evaluated for cancer or other conditions

(C) The electrical activity of the heart, showing the timing and pattern of heartbeats

(D) Rapid antigen tests are fast (15 minutes) but less sensitive; PCR tests are highly accurate but take hours to days for results

(E) Different tests provide different types of information, and combining results creates a more complete and accurate picture of the patient's condition

7. Outbreak Investigation and Epidemiology

Circle the correct answer

61. What is epidemiology?

(A) The study of how diseases spread, their patterns, causes, and effects in populations, used to guide public health decisions (B) A type of surgery performed on the epidermis (outer skin layer) (C) The branch of medicine that only treats

patients in hospitals (D) The study of skin diseases and how to treat rashes

62. During an outbreak investigation, what is the first step epidemiologists take after confirming that an outbreak exists?

(A) Announce the outbreak on television before gathering any data (B) Close all businesses and schools in the region permanently (C) Immediately vaccinate everyone in the affected area (D) Establish a case definition — a set of criteria that defines who counts as a confirmed case of the disease

63. An epidemiologist creates an 'epidemic curve' (epi curve) showing the number of new cases by date of onset. The curve shows a sharp spike of cases all occurring within 2 days. What type of outbreak does this pattern suggest?

(A) A propagated outbreak spreading from person to person over weeks (B) A random occurrence with no identifiable outbreak pattern (C) A continuous-source outbreak that has been ongoing for months (D) A point-source outbreak — all cases were exposed to the same source at roughly the same time

64. What is contact tracing, and why is it a critical tool during an outbreak?

(A) It involves tracing the outline of a patient's body to measure their size (B) Contact tracing means contacting a patient's insurance company to arrange payment (C) It means finding the first person ever infected with a disease in human history (D) Contact tracing identifies everyone an infected person has been in close contact with, so those people can be monitored, tested, or quarantined to prevent further spread

65. In an outbreak at a school cafeteria, 80 students ate chicken salad and 20 of them got sick. 120 students did not eat chicken salad and 5 of them got sick. Calculate the attack rate for each group.

(A) Chicken salad group: 80% (80/100); Non-chicken salad group: 60% (120/200) (B) Chicken salad group: 25% (20/80); Non-chicken salad group: 4.2% (5/120). The much higher attack rate in the chicken salad group suggests it as the likely source. (C) Both groups: 12.5% (25/200) — the rates are the same (D) Chicken salad group: 20% (20/100); Non-chicken salad group: 5% (5/100)

66. What is the 'index case' (also called 'patient zero') in an outbreak?

(A) The first identified case of a disease in an outbreak, which helps epidemiologists trace the origin and timeline of the spread (B) The first person to be cured of the disease during the outbreak (C) The patient who is assigned the number zero in the hospital's filing system (D) The most severe case of the disease that requires the most treatment

Write the answer

67. The basic reproduction number (R_0) of measles is approximately 12-18. What does this mean?

Answer: _____

68. An epidemiologist notices that a disease outbreak is concentrated among residents living near a specific water source. What type of epidemiological study would best investigate whether the water is the cause?

Answer: _____

69. During the COVID-19 pandemic, what role did wastewater surveillance play in outbreak detection?

Answer: _____

70. What is the difference between mortality rate and morbidity rate?

Answer: _____

Match each question to its answer

1. In 1854, Dr. John Snow mapped cholera cases in London and discovered they clustered around the Broad Street water pump. Why was this investigation groundbreaking? →

2. What is a 'superspreader event' and why do some individuals or gatherings lead to disproportionately large numbers of new infections? →

3. A disease has an incubation period of 7-14 days. If a person was exposed on March 1, what is the window during which they would be expected to develop symptoms? →

4. Why is antimicrobial resistance (AMR) considered one of the top global health threats? →

5. An epidemiologist finds that 95% of measles cases in an outbreak occurred in unvaccinated individuals. What does this data demonstrate about the relationship between vaccination and disease prevention? →

(A) As bacteria evolve resistance to antibiotics, previously treatable infections become difficult or impossible to cure, potentially returning medicine to a pre-antibiotic era

(B) The strong correlation between unvaccinated status and disease supports that vaccination is highly effective at preventing measles infection

(C) It demonstrated that disease could be traced to a specific environmental source using data and mapping — before the germ theory of disease was even established

(D) An event where one person or gathering transmits the disease to many more people than average, often due to indoor crowding, poor ventilation, extended contact time, and high viral shedding

(E) Between March 8 and March 15 — 7 to 14 days after the March 1 exposure

8. Complex Medical Cases Capstone

Circle the correct answer

71. A 13-year-old athlete collapses during a soccer game on a hot day. Vital signs show: HR 130, RR 28, BP 88/52, T 104.2°F. Skin is hot, red, and DRY (not sweating). What is the most likely condition, and what makes it life-threatening?

- (A) Mild dehydration — just give the patient water and they'll recover in minutes (B) Heat stroke — the body has lost its ability to cool itself through sweating, and the extremely high core temperature can cause organ damage and death without rapid cooling (C) Seasonal allergies — the redness indicates an allergic reaction to grass (D) A broken bone from a fall — the high heart rate is just from the pain

72. A patient's lab results show: WBC 15,000 (elevated), Neutrophils 80% (elevated), CRP 45 mg/L (elevated, normal <10), Temperature 102.4°F. Based on these combined findings, what type of infection is most likely?

- (A) An allergic reaction — because elevated WBC always indicates allergies (B) A fungal infection — because CRP only rises with fungal diseases (C) A viral infection — because all viral infections cause these exact lab patterns (D) A bacterial infection — elevated neutrophils (the first responders against bacteria), high CRP (an inflammation marker), and fever together strongly suggest a bacterial cause

73. A 12-year-old with Type 1 diabetes feels dizzy, confused, and nauseous at school. Their blood glucose reads 48 mg/dL (normal fasting: 70-100). What is happening and what should be done immediately?

- (A) Hyperglycemia (high blood sugar) — give insulin immediately to lower the sugar (B) Food poisoning — the student probably ate something bad at lunch (C) A panic attack — the student should breathe into a paper bag to calm down (D) Hypoglycemia (dangerously low blood sugar) — the student needs fast-acting sugar immediately (juice, glucose tablets, or regular soda) and should not be left alone

74. A family brings their child to the doctor after a tick bite 2 weeks ago. The child now has a circular red rash that looks like a bullseye target, along with fatigue, headache, and joint pain. What disease should the doctor suspect, and what test and treatment are appropriate?

- (A) Ringworm — treat with antifungal cream applied to the rash only, as this is what research and standard practice suggests (B) Lyme disease (from a deer tick carrying *Borrelia burgdorferi* bacteria) — treat with antibiotics (doxycycline or amoxicillin) and confirm with blood antibody testing (C) A simple allergic reaction to the tick bite — no treatment needed, and this has been consistently demonstrated in practice (D) Chickenpox — quarantine the child and let the virus run its course, and this principle applies across similar situations

75. A patient undergoes surgery and receives antibiotics to prevent infection. Five days later, they develop severe diarrhea and abdominal cramping. The doctor suspects *Clostridioides difficile* (C. diff) infection. How does antibiotic use paradoxically lead to this new infection?

(A) The antibiotics mutated into C. diff bacteria inside the patient's body (B) The surgery damaged the intestines, allowing C. diff to enter from outside the body (C) Antibiotics killed beneficial gut bacteria that normally keep C. diff in check, allowing the C. diff bacteria to overgrow and produce toxins that cause severe diarrhea (D) The patient was allergic to the antibiotic, causing diarrhea as a side effect

76. Two siblings present with the same illness: sore throat, fever, and swollen lymph nodes. The 7-year-old tests positive for strep throat. The doctor wants to test the 14-year-old but the rapid strep test is negative. Should the 14-year-old receive antibiotics?

(A) Not yet — send a throat culture for confirmation since rapid strep tests can give false negatives, but the clinical presentation and household contact are concerning enough to warrant the backup test (B) No — the negative test is 100% accurate and the 14-year-old definitely doesn't have strep (C) Yes — automatically prescribe antibiotics based on the sibling's positive test alone (D) Yes — prescribe antiviral medication instead since the rapid test ruled out bacteria

Write the answer

77. A community health assessment reveals that a low-income neighborhood has significantly higher rates of childhood asthma than wealthier neighborhoods in the same city. What social determinants of health might explain this disparity?

Answer: _____

78. A patient's CBC shows: RBC count normal, WBC count normal, but platelet count is 45,000/ μ L (normal: 150,000-400,000). What clinical concern does this raise, and what symptom should the healthcare provider watch for?

Answer: _____

79. During a pandemic, public health officials must balance disease containment with economic and social impacts. A city considers a complete lockdown versus targeted restrictions (closing bars/gyms but keeping schools/essential businesses open). What factors should inform this decision?

Answer: _____

80. A patient has been taking ibuprofen (an NSAID) daily for chronic knee pain. They now have stomach pain and dark, tarry stools. What complication has likely developed?

Answer: _____

Match each question to its answer

1. A school reports 12 cases of pertussis (whooping cough) in one month. Eight of the infected students were fully vaccinated. Does this mean the vaccine doesn't work? →
2. A patient presents with sudden severe headache ('the worst headache of my life'), stiff neck, and sensitivity to light. Vital signs are: HR 95, BP 168/96, T 101.1°F. What two conditions should be urgently considered, and what diagnostic test would help distinguish them? →
3. An epidemiological study finds that children who eat breakfast daily have better school performance. A news headline declares: 'Eating breakfast makes kids smarter!' What is the logical flaw in this headline? →
4. A patient with known asthma develops pneumonia. How does having asthma complicate the treatment and recovery from pneumonia? →
5. A new medication for high blood pressure is tested in a clinical trial. Group A (500 patients) receives the new drug. Group B (500 patients) receives a sugar pill. Neither the patients nor the doctors know who gets which. What type of study is this, and why is this design important? →

(A) Asthma's inflamed, narrowed airways make it harder to clear the infection; pneumonia's additional mucus and inflammation in already compromised lungs can trigger severe asthma exacerbations, potentially requiring hospitalization

(B) Not necessarily — if 95% of students are vaccinated, you'd expect most cases to be among vaccinated individuals simply because they're the vast majority; the attack rate among unvaccinated is likely much higher

(C) A double-blind, randomized controlled trial (RCT) — considered the gold standard because blinding prevents bias from both patients (placebo effect) and doctors (treatment expectations) from influencing results

(D) Bacterial meningitis and subarachnoid hemorrhage — a CT scan (to rule out bleeding) followed by lumbar puncture (to analyze cerebrospinal fluid for infection or blood) would help distinguish them

(E) Correlation does not equal causation — children who eat breakfast may also have more stable home environments, better sleep, and other factors that independently contribute to academic performance

9. Medical Science & Health

Circle the correct answer

81. What is the term for a substance used to treat, cure, or prevent a disease?
(A) Vitamin (B) Drug (medication) (C) Mineral (D) Enzyme

82. What type of medication is specifically designed to kill or stop the growth of bacteria?

- (A) Antiviral (B) Antifungal (C) Antihistamine (D) Antibiotic

83. What is a vaccine?

- (A) A vitamin supplement given to babies (B) A preparation that trains the immune system to recognize and fight a specific pathogen (C) A painkiller used after surgery (D) A type of antibiotic taken by injection

84. What is the name for the study of how drugs affect the body?

- (A) Cardiology (B) Radiology (C) Pharmacology (D) Pathology

85. What term describes an unwanted or unexpected effect caused by a medication?

- (A) Side effect (B) Booster effect (C) Placebo effect (D) Immune response

86. What is the correct term for a medication you can buy without a doctor's prescription?

- (A) Over-the-counter (OTC) drug (B) Controlled substance (C) Prescription drug (D) Experimental drug

Write the answer

87. Why don't antibiotics work against viruses like the common cold or flu?

Answer: _____

88. Explain why a doctor might ask about your other medications before prescribing a new one.

Answer: _____

89. What does it mean when a disease becomes 'antibiotic resistant'?

Answer: _____

90. Why do clinical trials test new drugs on a small group of volunteers before making them available to everyone?

Answer: _____

Match each question to its answer

1. What is the placebo effect and why is it important in drug testing? →

2. A patient has a bacterial ear infection. Their doctor prescribes a 10-day course of antibiotics, but the patient feels better after 3 days. What should the patient do? →

3. A child has a fever of 101°F. Their parent gives them the correct dose of children's acetaminophen. After 2 hours, the fever has not gone down. What should the parent do? →

4. A pharmacy label says 'Take 1 tablet by mouth twice daily with food.' If the

prescription is for 30 tablets, how many days will the medication last? →

5. A nurse notices that a patient who is allergic to penicillin has been prescribed amoxicillin. What should the nurse do? →

- (A) 15 days
 - (B) Complete the full 10-day course as prescribed
 - (C) Alert the prescribing doctor immediately because amoxicillin is in the same drug family as penicillin
 - (D) Wait, because the medication may take up to 4 hours for full effect, and contact a doctor if the fever persists or worsens
 - (E) When patients improve after receiving an inactive treatment, showing the mind can influence health outcomes
-

10. Medical Science & Health

Circle the correct answer

91. What type of medical imaging uses electromagnetic radiation to create pictures of bones and dense tissues?

- (A) Ultrasound (B) X-ray (C) CT scan (D) MRI

92. What does MRI stand for?

- (A) Micro Radiology Instrument (B) Medical Radiation Imaging (C) Magnetic Radio Inspection (D) Magnetic Resonance Imaging

93. What medical tool is used to listen to a patient's heart and lung sounds?

- (A) Stethoscope (B) Sphygmomanometer (C) Ophthalmoscope (D) Otoscope

94. What type of medical imaging uses sound waves to create pictures of structures inside the body?

- (A) MRI (B) Ultrasound (C) PET scan (D) X-ray

95. What is the medical term for a blood test that measures the number and types of cells in your blood?

- (A) Blood type test (B) Complete blood count (CBC) (C) Blood pressure test (D) Blood sugar test

96. What is telemedicine?

- (A) The practice of providing medical care remotely using telecommunications technology like video calls (B) A type of surgery performed by robots (C) A medical school that teaches online only (D) Medicine practiced only by telephone operators

Write the answer

97. Why would a doctor order an MRI instead of an X-ray to examine a patient's knee injury?

Answer: _____

98. Explain why a patient might need to fast (not eat) for 8-12 hours before certain blood tests.

Answer: _____

99. How does a CT (computed tomography) scan differ from a regular X-ray?

Answer: _____

100. Why is it important that medical devices like thermometers and blood pressure monitors are regularly calibrated?

Answer: _____

Match each question to its answer

- 1.** Explain how telemedicine can help patients in rural areas who live far from hospitals. →
- 2.** A 12-year-old falls off a bike and complains of severe wrist pain. The wrist is swollen but the skin is not broken. What imaging test would the emergency room doctor most likely order first? →
- 3.** A doctor wants to monitor a developing baby during pregnancy without exposing it to radiation. Which imaging technology should she use? →
- 4.** A patient's CBC shows a very high white blood cell count. What might this indicate, and what should the doctor do next? →
- 5.** A diabetic patient needs to monitor their blood sugar levels at home. What medical device would they use? →

- (A) An X-ray to check for a bone fracture
 - (B) Ultrasound
 - (C) A glucose meter (glucometer)
 - (D) A high white blood cell count may indicate an infection or inflammation, and the doctor should investigate the cause with further tests and a physical examination
 - (E) It allows patients to consult with specialists remotely via video, reducing travel time and costs while providing timely medical advice
-

11. Medical Science & Health

Circle the correct answer

101. What is the term for the study of how diseases spread and can be controlled in populations?

(A) Pharmacology (B) Oncology (C) Epidemiology (D) Dermatology

102. What international organization is primarily responsible for directing global health efforts and monitoring disease outbreaks?

(A) Centers for Disease Control (CDC) (B) Red Cross (C) World Health Organization (WHO) (D) United Nations Children's Fund (UNICEF)

103. What is a pandemic?

(A) A disease that only affects animals, and this principle applies across similar situations (B) A disease that has been completely eliminated, making this the most widely accepted explanation (C) A disease found in one city, as this is what research and standard practice suggests (D) A disease outbreak that spreads across multiple countries or continents, affecting a large number of people

104. What does 'herd immunity' mean?

(A) When animals protect humans from diseases (B) When antibiotics are given to an entire community (C) When enough people in a population are immune to a disease that it cannot spread easily, protecting those who are not immune (D) When one person's immune system protects their whole family

105. What is the name for a disease that is constantly present at low levels in a specific geographic area?

(A) Acute disease (B) Epidemic disease (C) Pandemic disease (D) Endemic disease

106. What is the primary purpose of quarantine during a disease outbreak?

(A) To separate and restrict the movement of people who may have been exposed to a contagious disease to prevent further spread (B) To punish people who are sick, which is why this approach is recommended by experts (C) To test new medicines on exposed individuals, and this has been consistently demonstrated in practice (D) To collect data about how fast people get sick, and this principle applies across similar situations

Write the answer

107. Explain why access to clean drinking water is considered one of the most important public health measures.

Answer: _____

108. Why is it important to track and report disease cases to public health authorities?

Answer: _____

109. How did the development of vaccines change public health outcomes for diseases like smallpox and polio?

Answer: _____

110. Explain the concept of 'contact tracing' and why it is used during disease outbreaks.

Answer: _____

Match each question to its answer

1. Why are children in many countries required to receive certain vaccinations before starting school? →

2. A new respiratory illness is spreading in a city. In the first week, 10 people are infected. By the second week, 40 people are infected. What type of growth pattern does this suggest, and what should public health officials do? →

3. An epidemiologist discovers that a cluster of food poisoning cases all ate at the same restaurant on the same day. What steps should they take to investigate? →

4. A country with low vaccination rates experiences a measles outbreak. What public health strategies should be implemented? →

5. During a flood, many residents lose access to clean water. What public health measures should be taken to prevent waterborne disease outbreaks? →

(A) Interview all affected and unaffected diners about what they ate, inspect the restaurant's food handling practices, test food samples and kitchen surfaces, and identify the common food item

(B) Exponential growth, suggesting rapid person-to-person transmission; officials should implement contact tracing, testing, and isolation measures immediately

(C) Distribute clean bottled water, set up water purification stations, issue boil-water advisories, provide water purification tablets, and monitor for waterborne illness cases

(D) Because schools bring large groups of children together, making disease spread easy, and mandatory vaccination protects both individual children and the entire school community through herd immunity

(E) Launch an emergency vaccination campaign, isolate confirmed cases, conduct contact tracing, educate the public about vaccine safety, and provide free vaccines to underserved communities

12. Medical Science & Health

Circle the correct answer

111. What is the name of the ancient oath traditionally taken by doctors, pledging to

practice medicine ethically?

(A) Hippocratic Oath (B) Physician's Promise (C) Nightingale Pledge (D) Geneva Declaration

112. What is the medical term for a healthcare professional who provides emergency medical care outside of a hospital, often in an ambulance?

(A) Phlebotomist (B) Paramedic (C) Physical therapist (D) Pharmacist

113. What is informed consent in medicine?

(A) A contract to pay for medical services, which is the most common explanation for this phenomenon (B) A form that protects the doctor from lawsuits, as this is what research and standard practice suggests (C) The process by which a patient learns about and understands the purpose, benefits, and risks of a medical treatment before agreeing to receive it (D) Permission to share a patient's medical records publicly, which is why this approach is recommended by experts

114. What type of medical professional specializes in preparing and dispensing medications prescribed by doctors?

(A) Pathologist (B) Paramedic (C) Pediatrician (D) Pharmacist

115. What is the term for keeping a patient's medical information private and secure?

(A) Medical confidentiality (patient privacy) (B) Medical transparency (C) Medical disclosure (D) Medical publication

116. What medical professional is responsible for assisting doctors during surgical procedures, monitoring patients, and providing direct patient care in hospitals?

(A) Registered Nurse (RN) (B) Health insurance agent (C) Hospital administrator (D) Medical receptionist

Write the answer

117. Explain why medical confidentiality is important for patient care, not just patient privacy.

Answer: _____

118. Why do surgeons ask patients to sign a consent form before an operation?

Answer: _____

119. How does the role of a nurse practitioner differ from that of a registered nurse?

Answer: _____

120. Explain why medical professionals must complete continuing education even after earning their degrees.

Answer: _____

Match each question to its answer

1. What does 'do no harm' mean in medical ethics, and why might it sometimes be complicated? →
2. A 13-year-old patient tells their doctor they have been feeling very sad and anxious but begs the doctor not to tell their parents. How should the doctor handle this situation? →
3. A patient in the emergency room needs a blood transfusion to survive, but their religious beliefs prohibit receiving blood products. What ethical principles come into conflict? →
4. A medical student witnesses a senior surgeon making a mistake during a procedure but is afraid to speak up because of the surgeon's authority. What should the student do? →
5. A family cannot afford an expensive medication their child needs. What resources or solutions might be available to help them? →

(A) Speak up about the concern through the appropriate channel — patient safety must always take priority over hierarchy, and most hospitals have reporting systems designed to protect those who raise safety concerns

(B) Patient assistance programs from drug companies, generic medication alternatives, community health centers with sliding-scale fees, government programs like Medicaid, and charitable organizations that help with medication costs

(C) The patient's autonomy (right to refuse treatment based on beliefs) conflicts with the medical team's duty of beneficence (obligation to save life) and non-maleficence (do no harm by letting the patient die)

(D) Take the concern seriously, provide support, explain that involving a trusted adult can help, and follow legal and ethical guidelines about minor confidentiality — which may require parental involvement for safety while being sensitive to the teen's trust

(E) It means doctors should not cause unnecessary harm to patients, but it is complicated because some beneficial treatments (like surgery or chemotherapy) inevitably cause some harm in order to achieve a greater good

13. Allergies

Circle the correct answer

121. Blood carries oxygen to cells. What does it carry AWAY from cells?

(A) White blood cells (B) More oxygen, which is consistent with evidence-based health education (C) Carbon dioxide and other waste products (D) Nutrients, since this follows the recommended approach for young people

122. What happens in the lungs when you breathe in?

(A) The brain sends signals to the muscles (B) Oxygen enters the blood and carbon dioxide leaves the blood (C) Food is broken down into nutrients (D) White blood cells are created

123. A 10-year-old child at rest has a heart rate of 88 beats per minute. How would you classify this reading?

(A) Too slow — this indicates bradycardia and the child may be unwell (B) Dangerously high — the child should go to the emergency room (C) Normal — within the typical range for a child that age (D) Too fast — this indicates tachycardia and needs immediate treatment

124. What is the main function of the digestive system?

(A) To pump blood to the stomach (B) To protect the body from germs (C) To remove carbon dioxide from the body (D) To break down food into nutrients the body can use for energy and growth

125. What is the main role of the brain in the nervous system?

(A) To pump blood to the organs, as this directly follows from the underlying principles (B) To store fat for energy, and this has been consistently demonstrated in practice (C) To process information and send signals that control the entire body (D) To produce white blood cells, which is the most common explanation for this phenomenon

126. What role do white blood cells play when you get a cut that becomes infected?

(A) White blood cells travel to the infection site, engulf and destroy invading bacteria, and help produce antibodies (B) White blood cells carry oxygen to the wound to speed up healing (C) White blood cells turn red at the wound site to help form new skin cells (D) White blood cells form the scab that covers the wound to prevent further infection

Write the answer

127. Which body system provides the framework of bones that supports and protects organs?

Answer: _____

128. The cardiovascular and respiratory systems work together. How?

Answer: _____

129. What do the kidneys do?

Answer: _____

130. Muscles can only pull (contract), not push. How does the body create pushing and pulling movements?

Answer: _____

Match each question to its answer

1. The skin is actually the body's largest organ. Which body system does it primarily belong to? →

2. A friend says they feel dizzy and have a headache. What THREE questions would be most helpful to ask to understand their condition? →

3. A patient has a runny nose, sneezing, mild sore throat, and no fever. What is the most likely condition? →

4. Every spring, a student gets itchy eyes, a runny nose, and sneezing, but no fever or body aches. These symptoms disappear in summer. What is the most likely cause? →

5. A child fell off a bike and has a swollen, painful wrist. They can wiggle their fingers but it hurts a lot to move the wrist. What should they suspect? →

(A) The integumentary system

(B) When did it start? Have you eaten and had water today? Did you hit your head or fall recently?

(C) A common cold (viral upper respiratory infection)

(D) A possible sprain or fracture — the wrist needs to be examined by a doctor and possibly X-rayed

(E) Seasonal allergies (hay fever/allergic rhinitis)

14. Allergies

Circle the correct answer

131. Two patients have the same blood pressure reading of 118/76. Patient A is a 10-year-old child. Patient B is a 35-year-old adult. How should these identical readings be interpreted?

(A) Normal for both patients since the reading is the same (B) Normal for the adult but potentially elevated for the child, because normal ranges differ by age (C) Elevated for both patients because 118 is close to the hypertension threshold (D) Low for the child and high for the adult due to size differences

132. White blood cells find a virus in the body. What do they do?

(A) They send the virus to the stomach for digestion (B) They feed the virus to make it harmless (C) They attack and destroy the virus to protect the body (D) They carry the virus to the lungs to be exhaled

133. Two patients both have a headache. Patient A also has a stiff neck, high fever, and sensitivity to light. Patient B has a headache only, which started after staring at a screen for 4 hours. How should the urgency differ?

(A) Neither needs to see a doctor, and this is the standard approach used in most cases (B) Patient B is more urgent because screens are dangerous (C) Patient A needs urgent/emergency care (possible meningitis), while Patient B likely has a tension headache that will resolve with rest and screen breaks (D) Both need emergency care, and this is the standard approach used in most cases

134. A child has had ear pain for 2 days, a low fever, and difficulty hearing on one side. What condition should the doctor check for?

(A) An allergic reaction (B) An ear infection (otitis media) (C) A broken eardrum from loud music (D) A common cold

135. A child eats peanuts and within minutes develops hives (red, itchy welts), throat tightness, and difficulty breathing. What is happening and what should be done immediately?

(A) Have the child drink water and rest, which is why this approach is recommended by experts (B) Wait to see if it goes away on its own, as this is what research and standard practice suggests (C) Give the child more peanuts to build tolerance, making this the most widely accepted explanation (D) This is anaphylaxis — a severe, life-threatening allergic reaction. Use an epinephrine auto-injector (EpiPen) if available and call 911 immediately

136. What is a 'superspreader event' and why do some individuals or gatherings lead to disproportionately large numbers of new infections?

(A) An event where one person or gathering transmits the disease to many more people than average, often due to indoor crowding, poor ventilation, extended contact time, and high viral shedding (B) A gathering where doctors distribute vaccines to large numbers of people, which is the most common explanation for this phenomenon (C) An event where a person intentionally tries to infect as many people as possible, which is why this approach is recommended by experts (D) A medical term for the moment a new disease first appears in humans, and this has been consistently demonstrated in practice

Write the answer

137. A classmate says: 'I read online that drinking orange juice cures the flu in one day.' How would you evaluate this claim?

Answer: _____

138. You find someone lying on the ground who is not moving. Before doing anything else, what should you check?

Answer: _____

139. A wound has dirt and small pebbles embedded in it. After controlling the bleeding, what should you do about the debris?

Answer: _____

140. What is the difference between a first-degree burn and a second-degree burn?

Answer: _____

Match each question to its answer

1. What does an MRI (Magnetic Resonance Imaging) scan use to create images of the body? →

2. What is a 'reservoir' in infectious disease terminology? →

3. A student's resting heart rate is 80 bpm. After running for 5 minutes, it rises to 140 bpm. After resting for 10 minutes, it's back to 85 bpm. What does this tell you about the student's cardiovascular health? →

4. Why is antimicrobial resistance (AMR) considered one of the top global health threats? →

5. What is the role of contrast dye (also called contrast medium) in certain imaging studies like CT scans? →

(A) As bacteria evolve resistance to antibiotics, previously treatable infections become difficult or impossible to cure, potentially returning medicine to a pre-antibiotic era

(B) The habitat where a pathogen naturally lives and reproduces — it can be humans, animals, or the environment (soil, water)

(C) Strong magnetic fields and radio waves that interact with hydrogen atoms in the body's water molecules

(D) Contrast dye makes specific structures like blood vessels and organs more visible by changing how they absorb radiation or reflect signals

(E) The student appears healthy — the heart rate increased appropriately with exercise and recovered quickly

15. Allergies

Circle the correct answer

141. Your heart rate increases when you exercise. Why?

(A) The brain tells the heart to practice beating (B) Exercise makes the heart weaker
(C) The lungs push the heart to beat faster (D) Working muscles need more oxygen, so the heart pumps faster to deliver it

142. A pulse oximeter shows a reading of 98%. What does this measurement tell you?

- (A) 98% of the hemoglobin in the blood is carrying oxygen, which is a normal level
(B) 98% of the patient's blood cells are healthy and undamaged (C) The patient's heart is working at 98% of its maximum capacity (D) The patient's lungs are using 98% of their total volume

143. Put these digestive organs in the correct order that food passes through them: stomach, mouth, large intestine, esophagus, small intestine.

- (A) Mouth → Stomach → Esophagus → Large intestine → Small intestine (B) Mouth → Esophagus → Stomach → Small intestine → Large intestine (C) Esophagus → Mouth → Small intestine → Stomach → Large intestine (D) Stomach → Mouth → Esophagus → Small intestine → Large intestine

144. Which of these is NOT a symptom that should make you seek emergency medical help immediately?

- (A) Severe allergic reaction with throat swelling (B) Difficulty breathing or severe shortness of breath (C) A mild headache that goes away after drinking water (D) Sudden numbness or weakness on one side of the body

145. How can you tell the difference between a cold and the flu (influenza)?

- (A) A cold causes fever; the flu doesn't, and this is the standard approach used in most cases (B) The flu typically causes high fever, severe body aches, and extreme fatigue, while a cold has milder symptoms mainly in the nose and throat (C) The flu only lasts one day, as this directly follows from the underlying principles (D) You can't tell them apart — they're the same illness, which is the most common explanation for this phenomenon

146. A child has a red, itchy rash that appeared after wearing a new bracelet. The rash is ONLY where the bracelet touched the skin. What type of reaction is this?

- (A) Contact dermatitis — an allergic reaction to a material in the bracelet (likely nickel) (B) A sunburn (C) A broken bone, and this is the standard approach used in most cases (D) Chickenpox, and this has been consistently demonstrated in practice

Write the answer

147. Athlete's foot is a common fungal infection. How does it typically spread in places like locker rooms and swimming pools?

Answer: _____

148. An epidemiological study finds that children who eat breakfast daily have better school performance. A news headline declares: 'Eating breakfast makes kids smarter!' What is the logical flaw in this headline?

Answer: _____

149. What are the THREE steps you should follow in ANY emergency before giving first aid?

Answer: _____

150. During Hands-Only CPR, how fast should you push on the chest?

Answer: _____

Match each question to its answer

- 1.** A hospital reports that MRSA (methicillin-resistant *Staphylococcus aureus*) infections have increased 40% over the past quarter. As a hospital infection control specialist, what evidence-based interventions would you recommend? →
- 2.** An outbreak investigation reveals 50 cases of a respiratory illness. The epi curve shows three progressively larger waves, each separated by about 5 days. What type of outbreak pattern does this represent, and what does the 5-day interval tell you? →
- 3.** What does AVPU stand for in a rapid assessment of a patient's level of consciousness? →
- 4.** Which of the following is an example of a preventive health behavior rather than a treatment? →
- 5.** A urinalysis test result shows the presence of glucose (sugar) in a patient's urine. This finding is most commonly associated with which condition? →

(A) Enhanced hand hygiene compliance monitoring, contact precautions for MRSA patients (gowns/gloves), active screening of high-risk admissions, environmental cleaning protocols, and antibiotic stewardship to reduce selection pressure

(B) Alert, Verbal (responds to voice), Pain (responds to pain), Unresponsive

(C) Getting a recommended vaccination before flu season begins

(D) Diabetes — when blood sugar is too high, the kidneys can't reabsorb all the glucose, and some spills into the urine

(E) A propagated (person-to-person) outbreak — the 5-day interval between waves represents the disease's incubation period, with each wave infecting the next generation of cases

16. Allergies

Circle the correct answer

151. Which type of blood vessel carries blood AWAY from the heart?

(A) Capillaries (B) Arteries (C) Veins (D) Lymph nodes

152. You accidentally touch a hot stove and pull your hand away BEFORE you even feel pain. What is this automatic response called?

(A) Digestion (B) A heartbeat (C) A reflex (D) An allergy

153. If you were designing a poster to teach younger kids about one body system, which system would you choose, what are the 3 most important facts you would include, and why?

(A) Pick whichever system has the most organs to draw, and this has been consistently demonstrated in practice (B) Choose a system that has nothing to do with staying healthy, which is why this approach is recommended by experts (C) Any system with 3 accurate, age-appropriate facts and a clear reason for choosing it (e.g., cardiovascular: 1) heart pumps blood, 2) blood carries oxygen, 3) exercise strengthens the heart — chosen because kids can feel their heartbeat) (D) Only include one fact to keep it simple, and this principle applies across similar situations

154. A patient has been taking ibuprofen (an NSAID) daily for chronic knee pain. They now have stomach pain and dark, tarry stools. What complication has likely developed?

(A) A gastrointestinal (GI) bleed — long-term NSAID use can erode the stomach lining, causing ulcers that bleed; dark tarry stools (melena) indicate blood digested in the GI tract (B) Appendicitis triggered by the pain medication, and this has been consistently demonstrated in practice (C) Normal side effects that always occur with any pain medication, as this is what research and standard practice suggests (D) An allergic reaction to ibuprofen causing skin discoloration, making this the most widely accepted explanation

155. A patient has a sore throat, fever of 101°F, and swollen tonsils with white patches. There is NO cough or runny nose. What condition should the doctor test for?

(A) Seasonal allergies (B) A common cold (C) Strep throat (streptococcal pharyngitis) (D) A sprained neck

156. Name three ways that infectious diseases can be transmitted from one person to another.

(A) Through radio signals, sunlight exposure, and loud sounds (B) Respiratory droplets (coughing/sneezing), direct contact (touching), and contaminated food or water (C) Shared clothing only, handwriting, and sitting near someone (D) Telepathy, electromagnetic waves, and eye contact

Write the answer

157. What information should you give when calling 911?

Answer: _____

158. What is the purpose of an AED (Automated External Defibrillator)?

Answer: _____

159. A patient presents with sudden severe headache ('the worst headache of my life'), stiff neck, and sensitivity to light. Vital signs are: HR 95, BP 168/96, T 101.1°F. What two conditions should be urgently considered, and what diagnostic test would help distinguish them?

Answer: _____

160. A patient arrives at the clinic. The doctor measures four things: heart rate, temperature, blood pressure, and breathing rate. Together, these are called:

Answer: _____

Match each question to its answer

1. A child has been coughing for 3 weeks, especially at night and during exercise, but has no fever. What condition should the doctor consider? →

2. What is epidemiology? →

3. A new medication for high blood pressure is tested in a clinical trial. Group A (500 patients) receives the new drug. Group B (500 patients) receives a sugar pill. Neither the patients nor the doctors know who gets which. What type of study is this, and why is this design important? →

4. A blood culture grows *Escherichia coli* (*E. coli*) from a patient with a urinary tract infection. The antibiotic sensitivity report shows the bacteria is resistant to amoxicillin and trimethoprim but sensitive to ciprofloxacin and nitrofurantoin. What does this information tell the treating physician? →

5. What is an allergy? →

(A) An overreaction of the immune system to a normally harmless substance like pollen, pet dander, or certain foods

(B) The study of how diseases spread, their patterns, causes, and effects in populations, used to guide public health decisions

(C) A double-blind, randomized controlled trial (RCT) — considered the gold standard because blinding prevents bias from both patients (placebo effect) and doctors (treatment expectations) from influencing results

(D) The *E. coli* strain will not respond to amoxicillin or trimethoprim (resistant), so the physician should prescribe ciprofloxacin or nitrofurantoin (sensitive) for effective treatment

(E) Asthma — a chronic condition where airways narrow, especially during exercise or at night

Riddle & Joke Break

Guess the answer, then check the key!

- 161. Why did the doctor carry a red pen?
 - 162. Why did the germ cross the microscope?
 - 163. Why did the skeleton refuse to diagnose patients?
 - 164. Why was the stethoscope such a good listener?
 - 165. Why did the patient bring a ladder to the clinic?
 - 166. What did the doctor say to the tonsils?
-

Answer Key

- 1. C — To pump blood throughout the body
- 2. A — Arteries
- 3. A — Oxygen enters the blood and carbon dioxide leaves the blood
- 4. A — 70–100 beats per minute
- 5. A — To break down food into nutrients the body can use for energy and growth
- 6. D — Mouth → Esophagus → Stomach → Small intestine → Large intestine
- 7. To process information and send signals that control the entire body
- 8. A reflex
- 9. To defend the body against germs, infections, and diseases
- 10. They attack and destroy the virus to protect the body
Matching (Body Systems Basics): 1→D, 2→E, 3→C, 4→A, 5→B
- 11. B — A symptom is something the patient feels and reports (like pain); a sign is something the doctor can observe or measure (like a rash or fever)
- 12. C — A common cold (viral upper respiratory infection)
- 13. C — The flu typically causes high fever, severe body aches, and extreme fatigue, while a cold has milder symptoms mainly in the nose and throat
- 14. B — Seasonal allergies (hay fever/allergic rhinitis)
- 15. C — An overreaction of the immune system to a normally harmless substance like pollen, pet dander, or certain foods

16. A — A possible sprain or fracture — the wrist needs to be examined by a doctor and possibly X-rayed
17. A list of possible conditions that could explain a patient's symptoms, which the doctor then narrows down through testing and examination
18. Strep throat (streptococcal pharyngitis)
19. Because antibiotics only work against bacteria, not viruses — using them incorrectly contributes to antibiotic resistance
20. Contact dermatitis — an allergic reaction to a material in the bracelet (likely nickel)
Matching (Symptoms and Diagnosis): 1→C, 2→E, 3→B, 4→A, 5→D
21. C — Check the scene for safety, Call 911 (or tell someone to call), Care for the person
22. D — Apply firm, direct pressure with a clean cloth or bandage
23. A — Perform abdominal thrusts (Heimlich maneuver) — stand behind them, place your fist above the navel, and thrust inward and upward
24. C — Run cool (not ice-cold) water over the burn for 10–20 minutes, then loosely cover with a clean bandage
25. C — Cardiopulmonary Resuscitation — it should be performed when someone is unresponsive and not breathing normally, to keep blood flowing until help arrives
26. C — 100 to 120 compressions per minute — about the tempo of the song 'Stayin' Alive'
27. Rest, Ice, Compression, Elevation
28. Check if the scene is safe, then tap the person's shoulder and shout 'Are you okay?' to check responsiveness
29. Sit upright and lean FORWARD slightly while pinching the soft part of the nose for 10–15 minutes
30. To deliver an electric shock that can restart a normal heart rhythm when the heart is in cardiac arrest
Matching (First Aid Essentials): 1→B, 2→E, 3→D, 4→C, 5→A
31. B — Heart rate, blood pressure, respiratory rate, and temperature
32. B — Normal — within the typical range for a child that age

33. D — Systolic pressure — the force when the heart contracts and pushes blood out
34. B — Yes — 18 breaths per minute is within the normal range for a 12-year-old
35. D — To establish a baseline measurement and confirm a fever actually exists before treatment
36. B — 98% of the hemoglobin in the blood is carrying oxygen, which is a normal level
37. All three changes together suggest the body is compensating for a serious problem like internal bleeding or shock
38. The radial artery on the inside of the wrist, below the thumb
39. Exercise temporarily raises body temperature, so the reading may not indicate a true fever
40. An abnormally fast heart rate, typically over 100 beats per minute in adults
Matching (Vital Signs and Patient Assessment): 1→C, 2→B, 3→E, 4→A, 5→D
41. B — Infectious diseases are caused by pathogens and can spread between people; non-infectious diseases cannot spread from person to person
42. B — A virus (most commonly rhinoviruses)
43. C — Vaccines train the immune system to recognize and fight specific pathogens by exposing it to a weakened or inactive form of the pathogen
44. B — When enough people in a community are immune to a disease, it becomes difficult for the disease to spread, which protects people who cannot be vaccinated
45. D — Seasonal allergies — an immune overreaction to pollen or other seasonal allergens
46. D — Respiratory droplets (coughing/sneezing), direct contact (touching), and contaminated food or water
47. Stopping early may leave some bacteria alive, which can multiply and potentially develop antibiotic resistance
48. Endemic is constantly present in a region; epidemic is a sudden increase in cases in an area; pandemic is an epidemic that has spread across multiple countries or continents
49. 20 seconds — about the time it takes to sing 'Happy Birthday' twice

50. Vector-borne transmission — an organism (the mosquito) carries the pathogen between hosts

Matching (Disease and Prevention): 1→D, 2→B, 3→A, 4→C, 5→E

51. D — To identify the cause of symptoms, confirm or rule out diseases, and guide treatment decisions

52. A — Dense materials like bone absorb more X-rays, preventing them from reaching the film, which creates a white image

53. A — Rapid strep tests can give false negatives — the culture is more accurate but takes longer, so it serves as a backup

54. A — Strong magnetic fields and radio waves that interact with hydrogen atoms in the body's water molecules

55. A — The body is fighting an infection or experiencing inflammation — elevated WBCs indicate an active immune response

56. A — A CT scan takes multiple X-ray images from different angles and combines them into cross-sectional slices, providing much more detail than a single X-ray

57. Diabetes — when blood sugar is too high, the kidneys can't reabsorb all the glucose, and some spills into the urine

58. Ultrasound uses sound waves, which are safe for the developing baby, while X-ray radiation could potentially harm fetal development

59. A test result that incorrectly indicates a disease is present when the patient actually does not have it

60. Anemia — a condition where the blood doesn't have enough healthy red blood cells or hemoglobin to carry adequate oxygen

Matching (Diagnostic Testing and Medical Technology): 1→E, 2→C, 3→A, 4→B, 5→D

61. A — The study of how diseases spread, their patterns, causes, and effects in populations, used to guide public health decisions

62. D — Establish a case definition — a set of criteria that defines who counts as a confirmed case of the disease

63. D — A point-source outbreak — all cases were exposed to the same source at roughly the same time

64. D — Contact tracing identifies everyone an infected person has been in close contact with, so those people can be monitored, tested, or quarantined to prevent further spread

65. B — Chicken salad group: 25% (20/80); Non-chicken salad group: 4.2% (5/120).
The much higher attack rate in the chicken salad group suggests it as the likely source.
66. A — The first identified case of a disease in an outbreak, which helps epidemiologists trace the origin and timeline of the spread
67. On average, one person with measles will infect 12-18 other people in a fully susceptible population with no immunity or interventions
68. A cohort study comparing illness rates between people who use the water source and people who don't
69. Testing sewage water for viral genetic material provided early warning of outbreaks in communities, often days before clinical cases were reported
70. Mortality rate measures deaths from a disease in a population; morbidity rate measures the number of people who become ill with the disease
Matching (Outbreak Investigation and Epidemiology): 1→C, 2→D, 3→E, 4→A, 5→B
71. B — Heat stroke — the body has lost its ability to cool itself through sweating, and the extremely high core temperature can cause organ damage and death without rapid cooling
72. D — A bacterial infection — elevated neutrophils (the first responders against bacteria), high CRP (an inflammation marker), and fever together strongly suggest a bacterial cause
73. D — Hypoglycemia (dangerously low blood sugar) — the student needs fast-acting sugar immediately (juice, glucose tablets, or regular soda) and should not be left alone
74. B — Lyme disease (from a deer tick carrying *Borrelia burgdorferi* bacteria) — treat with antibiotics (doxycycline or amoxicillin) and confirm with blood antibody testing
75. C — Antibiotics killed beneficial gut bacteria that normally keep *C. diff* in check, allowing the *C. diff* bacteria to overgrow and produce toxins that cause severe diarrhea
76. A — Not yet — send a throat culture for confirmation since rapid strep tests can give false negatives, but the clinical presentation and household contact are concerning enough to warrant the backup test
77. Environmental factors (older housing with mold, proximity to industrial pollution, highway exhaust), limited access to preventive healthcare, inability to afford medications, and higher rates of indoor allergens from crowded housing

78. Thrombocytopenia (low platelets) — the patient is at increased risk for bleeding because platelets are essential for blood clotting; watch for easy bruising, prolonged bleeding, and petechiae (tiny red dots on skin)
79. Disease severity and transmission data, hospital capacity, vulnerable population distribution, economic impact on workers, effectiveness of targeted measures, community compliance, and available alternative interventions like vaccination
80. A gastrointestinal (GI) bleed — long-term NSAID use can erode the stomach lining, causing ulcers that bleed; dark tarry stools (melena) indicate blood digested in the GI tract
Matching (Complex Medical Cases Capstone): 1→B, 2→D, 3→E, 4→A, 5→C
81. B — Drug (medication)
82. D — Antibiotic
83. B — A preparation that trains the immune system to recognize and fight a specific pathogen
84. C — Pharmacology
85. A — Side effect
86. A — Over-the-counter (OTC) drug
87. Because viruses are structurally different from bacteria and antibiotics target bacterial processes
88. To check for drug interactions where one medication could change how another works
89. The bacteria causing the disease have evolved so that the antibiotic can no longer kill or stop them
90. To determine if the drug is safe and effective before widespread use
Matching (Medical Science & Health): 1→E, 2→B, 3→D, 4→A, 5→C
91. B — X-ray
92. D — Magnetic Resonance Imaging
93. A — Stethoscope
94. B — Ultrasound
95. B — Complete blood count (CBC)
96. A — The practice of providing medical care remotely using telecommunications technology like video calls

97. Because MRI provides detailed images of soft tissues like ligaments, cartilage, and tendons that X-rays cannot show well
98. Because food affects blood sugar and fat levels, which could give inaccurate test results
99. A CT scan takes multiple X-ray images from different angles and uses a computer to combine them into detailed cross-sectional images
100. To ensure they provide accurate measurements, since inaccurate readings could lead to incorrect diagnoses or missed conditions
Matching (Medical Science & Health): 1→E, 2→A, 3→B, 4→D, 5→C
101. C — Epidemiology
102. C — World Health Organization (WHO)
103. D — A disease outbreak that spreads across multiple countries or continents, affecting a large number of people
104. C — When enough people in a population are immune to a disease that it cannot spread easily, protecting those who are not immune
105. D — Endemic disease
106. A — To separate and restrict the movement of people who may have been exposed to a contagious disease to prevent further spread
107. Because contaminated water spreads deadly waterborne diseases like cholera, dysentery, and typhoid, which kill millions — especially children — in areas without clean water infrastructure
108. So epidemiologists can identify outbreaks early, track disease patterns, determine causes, and implement control measures before the disease spreads widely
109. Vaccines enabled mass immunization programs that dramatically reduced or eliminated these diseases — smallpox was eradicated in 1980 and polio cases dropped by over 99%
110. Contact tracing identifies and notifies people who have been in close contact with an infected person, allowing them to quarantine, get tested, and prevent further spread
Matching (Medical Science & Health): 1→D, 2→B, 3→A, 4→E, 5→C
111. A — Hippocratic Oath
112. B — Paramedic

113. C — The process by which a patient learns about and understands the purpose, benefits, and risks of a medical treatment before agreeing to receive it
114. D — Pharmacist
115. A — Medical confidentiality (patient privacy)
116. A — Registered Nurse (RN)
117. Because patients who fear their information will be shared may withhold important symptoms, medical history, or lifestyle details that doctors need for accurate diagnosis and effective treatment
118. To ensure the patient understands the procedure, its risks and benefits, and alternatives, and has voluntarily agreed — respecting their right to make informed decisions about their own body
119. A nurse practitioner has advanced training (master's or doctoral degree) and can independently diagnose conditions, prescribe medications, and manage patient care, while a registered nurse provides care under a doctor's or NP's direction
120. Because medical knowledge constantly evolves with new research, treatments, technologies, and guidelines, and professionals must stay current to provide the best possible care
Matching (Medical Science & Health): 1→E, 2→D, 3→C, 4→A, 5→B
121. C — Carbon dioxide and other waste products
122. B — Oxygen enters the blood and carbon dioxide leaves the blood
123. C — Normal — within the typical range for a child that age
124. D — To break down food into nutrients the body can use for energy and growth
125. C — To process information and send signals that control the entire body
126. A — White blood cells travel to the infection site, engulf and destroy invading bacteria, and help produce antibodies
127. The skeletal system
128. The respiratory system adds oxygen to the blood, which the cardiovascular system then delivers to the whole body
129. Filter waste and extra water from the blood to make urine
130. Muscles work in pairs — when one contracts (pulls), the opposite muscle relaxes, allowing movement in both directions
Matching (Allergies): 1→A, 2→B, 3→C, 4→E, 5→D

131. B — Normal for the adult but potentially elevated for the child, because normal ranges differ by age
132. C — They attack and destroy the virus to protect the body
133. C — Patient A needs urgent/emergency care (possible meningitis), while Patient B likely has a tension headache that will resolve with rest and screen breaks
134. B — An ear infection (otitis media)
135. D — This is anaphylaxis — a severe, life-threatening allergic reaction. Use an epinephrine auto-injector (EpiPen) if available and call 911 immediately
136. A — An event where one person or gathering transmits the disease to many more people than average, often due to indoor crowding, poor ventilation, extended contact time, and high viral shedding
137. This is likely false — while vitamin C in orange juice supports immune health, no food cures the flu; recovery takes about a week and may need antiviral medication
138. Check if the scene is safe, then tap the person's shoulder and shout 'Are you okay?' to check responsiveness
139. Gently rinse the wound under clean running water to flush out loose debris, but do NOT remove deeply embedded objects
140. First-degree affects only the outer skin layer (red, painful) while second-degree goes deeper, causing blisters and more severe pain
Matching (Allergies): 1→C, 2→B, 3→E, 4→A, 5→D
141. D — Working muscles need more oxygen, so the heart pumps faster to deliver it
142. A — 98% of the hemoglobin in the blood is carrying oxygen, which is a normal level
143. B — Mouth → Esophagus → Stomach → Small intestine → Large intestine
144. C — A mild headache that goes away after drinking water
145. B — The flu typically causes high fever, severe body aches, and extreme fatigue, while a cold has milder symptoms mainly in the nose and throat
146. A — Contact dermatitis — an allergic reaction to a material in the bracelet (likely nickel)
147. Through indirect contact — walking barefoot on wet surfaces contaminated with the fungus

148. Correlation does not equal causation — children who eat breakfast may also have more stable home environments, better sleep, and other factors that independently contribute to academic performance
149. Check the scene for safety, Call 911 (or tell someone to call), Care for the person
150. 100 to 120 compressions per minute — about the tempo of the song 'Stayin' Alive'
Matching (Allergies): 1→A, 2→E, 3→B, 4→C, 5→D
151. B — Arteries
152. C — A reflex
153. C — Any system with 3 accurate, age-appropriate facts and a clear reason for choosing it (e.g., cardiovascular: 1) heart pumps blood, 2) blood carries oxygen, 3) exercise strengthens the heart — chosen because kids can feel their heartbeat)
154. A — A gastrointestinal (GI) bleed — long-term NSAID use can erode the stomach lining, causing ulcers that bleed; dark tarry stools (melena) indicate blood digested in the GI tract
155. C — Strep throat (streptococcal pharyngitis)
156. B — Respiratory droplets (coughing/sneezing), direct contact (touching), and contaminated food or water
157. Your location, what happened, how many people are injured, what help is being given, and your phone number
158. To deliver an electric shock that can restart a normal heart rhythm when the heart is in cardiac arrest
159. Bacterial meningitis and subarachnoid hemorrhage — a CT scan (to rule out bleeding) followed by lumbar puncture (to analyze cerebrospinal fluid for infection or blood) would help distinguish them
160. Vital signs
Matching (Allergies): 1→E, 2→B, 3→C, 4→D, 5→A
161. In case they needed to draw blood!
162. To get to the other slide!
163. It didn't have the guts for it!
164. Because it always got to the heart of the matter!
165. Because the doctor said their health was looking up!
166. "You two better shape up or you're getting removed from the team!"

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