Lecture (1), silicosis, MCQS

1. Which of the following is the most hazardous particle size range for developing silicosis?

A) 0.1 to 0.3 microns
B) 0.5 to 3 microns
C) 5 to 10 microns
D) 10 to 20 microns

2. Which of the following statements about silicosis is true?

A) It results from inhalation of amorphous silica.
B) It commonly affects the lower lung zones.
C) It is characterized by nodular fibrosis in the upper lungs.
D) It is fully reversible with early treatment.

3. Which of the following occupational activities is NOT commonly associated with silicosis?

A) Mining
B) Brick-making
C) Pottery work
D) Farming

4. The characteristic chest X-ray finding in simple silicosis is:

A) Ground-glass opacity
B) Snowstorm appearance in the upper lung zones
C) Bilateral pleural effusion
D) Hyperinflated lung fields

5. Which complication is most commonly associated with silicosis?

A) Pulmonary tuberculosis
B) Lung cancer
C) Chronic liver disease
D) Peripheral neuropathy

A

6. What is the primary pathological hallmark of silicosis?

A) Eggshell calcification
B) Silicotic nodule
C) Alveolar proteinosis
D) Pleural thickening

B

7. Which form of silicosis is most commonly associated with rapid onset and high mortality?

A) Chronic silicosis
B) Accelerated silicosis
C) Acute silicosis
D) Mixed-dust pneumoconiosis

C

8. Which of the following is NOT a preventive measure for silicosis?

A) Rigorous dust control measures
B) Wearing personal protective equipment
C) Routine vaccination against tuberculosis
D) Regular physical examination of workers

C

9. Which of the following statements about accelerated silicosis is true?

A) It occurs within a few months of exposure.
B) It is caused by low concentrations of silica.
C) It often occurs after 5 to 10 years of high silica exposure.
D) It is associated with lung cancer more frequently than chronic silicosis.

C

10. Why are patients with silicosis at an increased risk for tuberculosis?

A) Silica particles enhance the growth of Mycobacterium tuberculosis.
B) Silicosis patients are often malnourished.
C) Silica impairs the immune defense of the lung.
D) The fibrosis caused by silicosis increases blood flow to TB bacilli.

C

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Description	Number
Forms of silica: Crystalline and Amorphous.	2
Diameter of silicotic nodules in the upper lung.	3-4 mm
Particle size most dangerous for reaching deep lung areas.	0.5-3 µm
Years of exposure leading to chronic silicosis.	10-20
Maximum latency period for silicosis development.	≥ 20
Percentage of silicosis patients who may develop pulmonary tuberculosis (TB).	50%
Cases of acute silicosis that occur within a few years or even 1 year.	80%
Size of small round opacities seen in simple silicosis chest X-ray.	1-10 mm
Incidence of pulmonary TB in patients with acute or classic silicosis.	25%
Increased risk of pulmonary and extrapulmonary TB in silicosis patients.	3 times

Lect 2, Asbestosis, MCQ

Which of the following best describes asbestosis?

A) A localized pulmonary fibrosis caused by asbestos inhalation
B) A diffuse interstitial pulmonary fibrosis resulting from asbestos fiber inhalation
C) A localized fibrosis caused by coal dust inhalation
D) A rare genetic lung disease

Answer: B) A diffuse interstitial pulmonary fibrosis resulting from asbestos fiber inhalation

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2. Which of the following properties does asbestos possess?

A) Thermal and chemical resistance, flexibility, high tensile strength
B) High thermal conductivity, low tensile strength
C) Low noise resistance, high water absorption
D) Poor resistance to chemicals and water

Answer: A) Thermal and chemical resistance, flexibility, high tensile strength

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3. Asbestos fibers are typically classified into which two groups?

A) Actinolite and Crocidolite
B) Chrysotile and Amphibole
C) Serpentine and Amphibole
D) Silica and Calcium

Answer: C) Serpentine and Amphibole

4. Which lung disease is characterized by nodular fibrosis in the upper part of the lungs?

A) Silicosis
B) Asbestosis
C) Anthracosis
D) Caplan's syndrome

Answer: A) Silicosis

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6. Which of the following is NOT a typical clinical feature of asbestosis?

A) Dyspnea
B) Clubbing of fingers
C) Bilateral diffuse nodular opacities
D) Productive cough with black sputum

Answer: D) Productive cough with black sputum

What condition is known as "Black Lung Disease"?

A) Asbestosis
B) Silicosis
C) Anthracosis
D) Caplan's syndrome

Answer: C) Anthracosis

8. Which of the following statements about Caplan's syndrome is TRUE?

A) It occurs exclusively in smokers
B) It is a combination of rheumatoid arthritis and pneumoconiosis
C) It manifests as large cavitary nodules filled with fluid
D) It is primarily caused by direct exposure to asbestos

Answer: B) It is a combination of rheumatoid arthritis and pneumoconiosis

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9. What is the main distinguishing radiological feature of Progressive Massive Fibrosis (PMF) in anthracosis?

A) Small nodular opacities in lower lung zones
B) Large opacity (≥1 cm) in the upper lung zone
C) Ground-glass appearance throughout the lungs
D) Basal honeycomb pattern

Answer: B) Large opacity (≥1 cm) in the upper lung zone

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10. Which of the following is an essential preventive measure for workers exposed to asbestos?

A) Avoidance of dust masks
B) Regular smoking to reduce symptoms
C) Use of personal respirators and engineering controls
D) Minimizing ventilation in the workplace

Answer: C) Use of personal respirators and engineering controls

ملخص سريع بسيط ، لأهم

Topic	Details/Numbers
Asbestos Fiber Dimensions	**Length:** 20 to 500 µ, **Diameter:** 0.5 to 50 µ
Asbestos Commercial Use	**Serpentine:** 93%, **Amphibole:** 7%
Types of Asbestos Fibers	Chrysotile (white), Amosite (brown), Crocidolite (blue)
Average Latency (Asbestosis)	20-30 years
Smoking and Cancer Risk	High if combined with asbestos exposure
Mesothelioma Appearance	After 5-10 years of exposure
Pulmonary Function (Asbestosis)	FVC, TLC ↓; FEV1/FVC preserved
Radiological Features	Nodular/oval opacities, mainly in lower lung zones
Diagnosis Requirement	**Exposure duration:** 10–20 years
PEL (Permissible Exposure Limit)	0.1 fiber/CM³ (TWA8)
Man-Made Mineral Fibers (MMF)	TWA8 < 1 fiber/CM³
Simple CWP Development	12 years of exposure
PMF Opacity Size (CWP)	≥ 1 cm
Caplan's Nodule Size	0.5 to 5 cm
Risk of Death (Coal Miners)	Twice that of the general population

Lecture 3
lead poisoning
MCQ

1) Which of the following is NOT considered a major hazardous metal related to occupational exposure?

A) Lead
B) Mercury
C) Zinc
D) Gold

Answer: D) Gold

2) Which of the following blood lead levels is considered extremely dangerous and may cause permanent health damage?

A) 10-25 µg/dL
B) 25-40 µg/dL
C) 40-80 µg/dL
D) Above 80 µg/dL

Answer: D) Above 80 µg/dL

3) Which chelating agent is the oral treatment of choice for lead poisoning due to its tolerability, despite its foul taste?

A) EDTA - Sodium calcium edetate
B) DMSA - Dimercaptosuccinic acid
C) BAL - Dimercaprol
D) Penicillamine

Answer: B) DMSA - Dimercaptosuccinic acid

5) Which clinical feature is most characteristic of chronic inorganic lead poisoning?

A) Insomnia
B) Wrist drop
C) Acute abdominal pain
D) Delirium

Answer: B) Wrist drop

6) Which of the following is the most common non-occupational source of environmental lead exposure?

A) Gasoline
B) Lead-based paints
C) Drinking water from lead pipes
D) Urban dust

Answer: A) Gasoline

6) Lead poisoning in children is most likely to occur due to which of the following factors?

A) Rapid neurological and physical development
B) Higher exposure to lead at workplaces
C) Enhanced renal clearance of lead
D) Decreased lead absorption

Answer: A) Rapid neurological and physical development

7) All of the following are characteristics of lead poisoning EXCEPT:
A) Acute exposure can cause nausea, vomiting, and abdominal pain.
B) Chronic exposure can lead to peripheral neuropathy and anemia.
C) Lead is primarily absorbed through the skin in industrial settings.
D) Lead poisoning can cause blue lines on the gums (lead lines).

Answer: C) Lead is primarily absorbed through the skin in industrial settings.
(Lead is primarily absorbed through inhalation and ingestion, not through the skin, except in the case of organic lead compounds.)

8) All of the following are clinical features of inorganic lead poisoning EXCEPT:

A) Abdominal colic
B) Wrist drop
C) Insomnia
D) Blue lines on gums

Answer: C) Insomnia
(Insomnia is more commonly associated with organic lead poisoning, which primarily affects the CNS.)

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Urinary ALA indicating significant lead absorption.	5 mg/L
Normal urinary coproporphyrin (CPU); higher indicates exposure.	<150 µg/L
Urinary lead level indicating significant exposure.	0.8 mg/L
Permissible lead concentration in workplace air (OSHA limit).	2 mg/10 m^3
Critical blood lead level as per WHO.	70 µg/mL
High urinary ALA level according to WHO.	10 mg/L
Initial period for monthly blood lead testing in workers.	3 months

Key Information	Number/Value
Normal daily lead ingestion in adults (mainly from food and drinks).	0.2 - 0.3 mg/day
Average lead body store in adults.	150 - 400 mg
Normal blood lead level in adults.	25 µg/100 mL
Level associated with clinical symptoms.	70 µg/100 mL
Lead absorption from ingestion in adults.	10%
Lead absorption from ingestion in children (higher than adults).	40-50%
Absorption rate from inhaled dust/fumes (<1 µm).	50-70%
Extremely dangerous blood lead level, causing severe damage.	>80 µg/dL
Seriously elevated level, may cause health damage without symptoms.	40-80 µg/dL
Indicates regular exposure with potential physiological effects.	25-40 µg/dL
Some exposure and accumulation, but no severe symptoms.	10-25 µg/dL
Typical blood lead level in U.S. adults (mean = 3 µg/dL).	<10 µg/dL

Testing interval if blood lead remains consistently low.	**6 months**
Typical DMSA therapy duration for lead poisoning.	**19 days**
Risk of nephrotoxicity with EDTA therapy.	**1%**
Number of industries where lead is commonly used.	**200+ industries**
Lead excreted in feces.	**90%**
Absorbed lead that enters erythrocytes.	**95%**
OSHA's target reduction in lead exposure severity.	**15%**

Lect4,Mercury

Which of the following is the most common source of mercury poisoning in humans?

A) Inhalation of mercury vapors
B) Ingestion of mercury-containing thermometers
C) Consumption of seafood containing methyl mercury
D) Direct skin contact with elemental mercury

Answer: C) Consumption of seafood containing methyl mercury

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2. Which form of mercury is most commonly associated with neurological toxicity due to inhalation exposure?

A) Elemental mercury
B) Inorganic mercury
C) Organic mercury
D) Alkyl mercury

Answer: A) Elemental mercury

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3. Which of the following is NOT a typical symptom of short-term exposure to high concentrations of mercury vapor?

A) Fatigue and fever
B) Cough and chest pain
C) Hair loss and skin rash
D) Metallic taste in the mouth

Answer: C) Hair loss and skin rash

5. Which of the following groups is most vulnerable to the effects of mercury poisoning?

A) Adult males
B) Elderly individuals
C) Pregnant women and unborn babies
D) Athletes

Answer: C) Pregnant women and unborn babies

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6. What is the most reliable biological sample for diagnosing acute inorganic mercury poisoning?

A) Blood
B) Hair
C) Urine
D) Saliva

Answer: C) Urine

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7. Which of the following occupations is at the highest risk of mercury exposure?

A) Software developers
B) Medical and dental workers
C) Construction workers
D) Retail store employees

Answer: B) Medical and dental workers

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8. Which chelating agent is most commonly used in the treatment of mercury poisoning?

A) Calcium gluconate
B) Dimercaprol (BAL)
C) Activated charcoal
D) Naloxone

10. What is the OSHA permissible exposure limit (PEL) for organoalkyl mercury compounds for an 8-hour time-weighted average (TWA8)?

A) 0.01 mg/m^3
B) 0.025 mg/m^3
C) 0.04 mg/m^3
D) 0.10 mg/m^3

Answer: A) 0.01 mg/m^3

All of the following are true regarding the routes of mercury exposure, EXCEPT:

A) Inhalation of mercury vapor is the most hazardous and results in high absorption.
B) Elemental mercury ingestion typically results in minimal absorption and is mostly excreted in feces.
C) Skin contact with elemental mercury can lead to significant systemic absorption.
D) Injection of mercury compounds can result in severe localized toxicity.

Answer: C) Skin contact with elemental mercury can lead to significant systemic absorption.

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Explanation	Number
Density of elemental mercury compared to water (13.6 times heavier).	13.6
Elimination half-life of elemental mercury from the body.	40-60 days
Airborne exposure limit for mercury vapor (OSHA standard).	0.025 mg/m³
Permissible exposure limit (TWA8) for organoalkyl mercury compounds (OSHA standard).	0.01 mg/m³
Ceiling level of organoalkyl mercury compounds (OSHA standard).	0.04 mg/m³
Typical urine mercury level for adults without occupational exposure.	3 µg/g creatinine
Upper limit of low mercury exposure in urine.	35 µg/g creatinine
Threshold for moderately high mercury exposure in urine.	50 µg/g creatinine
Level indicating high mercury exposure in urine.	100 µg/g creatinine
Mercury vapor concentration that may cause respiratory symptoms after 4-8 hours of exposure.	1-44 mg/m³
Conversion factor between airborne mercury level and urine mercury level.	0.01 = 14.8
Conversion factor for higher airborne mercury level to urine mercury level.	0.04 = 59.2

Lect5, biologica l hazard

Which of the following is considered a biological hazard in the workplace?

A) Excessive noise levels
B) Chemical spills
C) Mold and fungi
D) Repetitive motion injuries

Answer: C) Mold and fungi

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2. What is the primary route of entry for most biological hazards in the workplace?

A) Digestive system
B) Respiratory system
C) Musculoskeletal system
D) Cardiovascular system

Answer: B) Respiratory system

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3. Which industry has the highest reported exposure to biological hazards according to Safe Work Australia?

A) Construction
B) Health and community services
C) Retail
D) Information technology

Answer: B) Health and community services

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4. Which of the following is NOT an engineering control to reduce biological hazards?

A) Containment laboratories
B) Proper ventilation systems
C) Safe operating procedures
D) Ultraviolet lamp installation

Answer: C) Safe operating procedures

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5. What type of personal protective equipment (PPE) is most suitable for protecting against airborne biological hazards?

A) Surgical gloves
B) N95 respirators
C) Face shields
D) Safety goggles

Answer: B) N95 respirators

8. Which of the following best describes an administrative control to manage biological hazards?

A) Installing air filtration systems
B) Providing employee training on safe practices
C) Wearing gloves and masks
D) Using disinfectant solutions

Answer: B) Providing employee training on safe practices

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9. What is the most critical step in controlling biological hazards at the workplace?

A) Identifying and eliminating the source of contamination
B) Wearing PPE at all times
C) Increasing staff rotation
D) Conducting periodic fire drills

Answer: A) Identifying and eliminating the source of contamination

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10. What type of biological hazard exposure is most commonly reported among workers according to the lecture?

A) Exposure to chemical residues
B) Inhalation of dust particles
C) Contact with human body fluids
D) Long-term exposure to noise

Answer: C) Contact with human body fluids

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Information	Number
Percentage of workers who reported exposure to biological hazards according to Safe Work Australia.	19%
Fraction of workers who reported exposure to human body fluids among those exposed to biological hazards.	3/4
Number of categories used to classify biological hazards in the workplace.	6
Number of major routes of entry for biological hazards (respiratory system, contact with body fluids, contact with contaminated objects).	3
Number of primary harmful effects on human health caused by biological hazards (infections, allergy, poisoning).	3
Number of primary controls to address biological hazards (engineering and administrative controls).	2
Dilution ratio of bleach solution used for disinfecting safety goggles.	1:49

الجدول الناري مواضع اسئلة ان شاء الله

Examples	Category
Respiratory system, contact with body fluids, contact with contaminated objects.	Routes of Entry
Infections, allergy, poisoning.	Types of Harmful Effects
Fungi, parasites, viruses, bacteria, proteins.	Examples of Biological Hazards
Containment laboratories, proper ventilation, UV lamps, negative pressure systems.	Engineering Controls
Employee training, health awareness, vaccination monitoring.	Administrative Controls
N95 masks, gloves, goggles, shoe covers.	Personal Protective Equipment (PPE)
Brucellosis, influenza, rabies, plague.	Animal-Related Hazards
Anthrax, hemorrhagic fever, brucellosis.	Animal Product-Related Hazards
Murine typhus, plague, scrub typhus.	Tick, Flea, or Mite-Related Hazards
Hepatitis A, leptospirosis, schistosomiasis, echinococcosis.	Human or Animal Waste Hazards
AIDS, hemorrhagic fever, HBV, HCV, Ebola.	Infected Patient/Blood Hazards
Blastomycosis, leptospirosis.	Dust-Related Pathogen Hazards
Hand washing, disinfection, sterilization.	Personal Hygiene Practices
Bleach, rubbing alcohol.	Sterilizing Agents
Proper cleaning, sterilization, replacement if damaged.	PPE Maintenance

Lec6 MCQs

2. What is the primary method of transmission of inhalation anthrax?

A) Direct human-to-human contact
B) Ingestion of contaminated meat
C) Inhalation of anthrax spores from contaminated animal products
D) Contact with infected skin lesions

- **Answer: C) Inhalation of anthrax spores from contaminated animal products**

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3. What is the mortality rate of untreated inhalation anthrax?

A) 20%
B) 45%
C) 75%
D) 85%

- **Answer: D) 85%**

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4. Which of the following occupations is at the highest risk for cutaneous anthrax?

A) Healthcare workers
B) Laboratory animal workers
C) Fishermen
D) Office employees

- **Answer: B) Laboratory animal workers**

---

5. Which combination of proteins released by Bacillus anthracis is lethal to humans?

A) Protective antigen, lethal factor, edema factor
B) Anthrax toxin, hemolysin, enterotoxin
C) Lipopolysaccharide, hemagglutinin, neuraminidase
D) Spores, endotoxin, exotoxin

- **Answer: A) Protective antigen, lethal factor, edema factor**

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6. What is the gold standard for the diagnosis of anthrax?

A) Immunofluorescence microscopy
B) Polymerase chain reaction (PCR)
C) Culture of the organism
D) Gram staining

- **Answer: C) Culture of the organism**

What is the characteristic lesion in cutaneous anthrax?

A) Vesicular rash
B) Painless black eschar
C) Painful ulcer with purulent discharge
D) Hemorrhagic blister

- **Answer: B) Painless black eschar**

10. In case of post-exposure prophylaxis following a bioterrorist attack involving anthrax, what is the recommended vaccination protocol?

A) One dose of vaccine and 30 days of antibiotics
B) Three shots of vaccine over 4 weeks plus 60 days of antibiotics
C) Five shots of vaccine over 18 months
D) Annual booster without antibiotic therapy

- **Answer: B) Three shots of vaccine over 4 weeks plus 60 days of antibiotics**

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Description	Number/Percentage
Time until death after respiratory distress.	7 to 24 hours
Incubation period for cutaneous anthrax.	2 - 5 days
Time from respiratory symptoms to severe distress.	3 - 5 days
Estimated number of spores required for inhalation infection.	10,000–20,000
Proportion of anthrax cases that are cutaneous.	90%
Mortality rate for untreated cutaneous anthrax.	20%
Mortality rate for gastrointestinal anthrax.	25% - 75%
Mortality rate of untreated inhalational anthrax.	85%
Treated inhalational anthrax mortality rate.	45%
Approximate number of global cases per year.	2,000
Vaccination schedule for high-risk individuals.	5 shots / 18 months
Vaccination schedule after exposure.	3 shots / 4 weeks
Duration of antibiotic course after exposure.	60 days
Boiling time to effectively decontaminate articles.	30 minutes

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Topic	Key Information
Causative Agent	Bacillus anthracis - Gram-positive, rod-shaped, facultative anaerobe.
Occupational Risk	Animal breeders, veterinarians, wool handlers, lab workers.
Transmission Modes	Inhalation, ingestion (GI), cutaneous, injection.
Inhalational Anthrax	Cold/flu-like symptoms, rapid progression to severe respiratory distress.
Cutaneous Anthrax	Painless black eschar, mild edema, low mortality with treatment.
Gastrointestinal Anthrax	Symptoms include bloody diarrhea, abdominal pain, high fatality if untreated.
Diagnostic Methods	Culture (gold standard), PCR, immunofluorescence microscopy, Gram staining.
Preventive Measures	Vaccination, hygiene, protective clothing, decontamination (autoclaving, burning).
Antibiotic Treatment	Ciprofloxacin, doxycycline, erythromycin, vancomycin, penicillin.
Vaccination Protocol	Pre-exposure: 5 shots over 18 months, Post-exposure: 3 shots over 4 weeks + 60 days of antibiotics.
Decontamination	Boiling for 30 minutes, use of formaldehyde, burning contaminated clothing.

Lec7,Q fever

آخر محاضرة ل د وقار🎈

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Which of the following groups is at the highest risk of contracting Q fever?

A) School teachers
B) Farmers and veterinarians
C) Office workers
D) Fishermen

Answer: B) Farmers and veterinarians

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3. What is the causative agent of Q fever?

A) Coxiella burnetii
B) Mycobacterium tuberculosis
C) Clostridium tetani
D) Streptococcus pneumoniae

Answer: A) Coxiella burnetii

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4. Which of the following symptoms is most commonly associated with acute Q fever?

A) Skin rash
B) Flu-like symptoms with abrupt fever and malaise
C) Severe joint pain
D) Bloody diarrhea

Answer: B) Flu-like symptoms with abrupt fever and malaise

---

5. What is the most severe complication associated with chronic Q fever?

A) Meningitis
B) Endocarditis
C) Pneumonia
D) Hepatitis

Answer: B) Endocarditis

Which diagnostic test is most commonly used to confirm Q fever?

A) Blood antibody test
B) Skin prick test
C) Urine culture
D) Stool examination

Answer: A) Blood antibody test

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7. What is the first-line antibiotic treatment for acute Q fever?

A) Amoxicillin
B) Doxycycline
C) Azithromycin
D) Ciprofloxacin

Answer: B) Doxycycline

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8. Which preventive measure is recommended for individuals at high risk of Q fever?

A) Vaccination with Q-VAX®
B) Wearing insect repellent
C) Regular blood donation
D) Drinking unpasteurized milk

Answer: A) Vaccination with Q-VAX®

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Explanation	Number
The incubation period of Q fever is usually **2 to 3 weeks** before symptoms appear.	**2-3**
Severe respiratory symptoms, such as atypical pneumonia, typically occur within the **first 4-5 days** of infection.	**4-5**
The percentage of infected individuals who develop **chronic Q fever** (less than 5%).	**5%**
The **antibody test** may appear negative during the **first 7-10 days** of illness, making early diagnosis challenging.	**7-10**
Mortality rate of untreated **chronic Q fever endocarditis**; with treatment, the rate drops significantly.	**10%**
After receiving the Q fever vaccine, it takes about **15 days** for immunity to develop before working in a high-risk environment.	**15**
Chronic Q fever treatment duration may last for **18 months** with antibiotics such as doxycycline and hydroxychloroquine.	**18**

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