(LP 491) AUGUST 2019 **Sub. Code: 1491**

D.M. – INFECTIOUS DISEASES

Paper I – PRINCIPLES OF INFECTION CONTROL, ANTIBIOTICS, ANTIVIRALS AND ANTIFUNGALS AND ITS PHARMACOKINETICS – PHARMACODYNAMICS, ANTIMICROBIAL RESISTANCE AND ANTIBIOTIC STEWARDSHIP

Q.P. Code: 161491

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Discuss in detail various strategies to prevent transmission of Mycobacterium tuberculosis within health care settings. Compare the advantages and disadvantages of the various special ventilation systems to reduce M. tuberculosis transmission.

2. Describe the rationale, benefits, drawbacks and indications for prolonged infusion of beta-lactam antibiotics.

II. Write notes on: **(10 x 7 = 70)**

1. Ceftazidime – Avibactam.
2. Loading does for colistin.
3. Alcohol-based hand disinfection.
4. Liposomal Amphotericin B.
5. Chlorhexidine bathing for prevention of hospital acquired infections.
6. Metallo – beta – lactamases.
7. Post-exposure prophylaxis for diphtheria.
8. VAP prevention bundle.
9. Brincidofovir.
10. Boosted protease inhibitors.

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(DM 0821) AUGUST 2021 **Sub. Code: 1491**

D.M. – INFECTIOUS DISEASES

Paper I – PRINCIPLES OF INFECTION CONTROL, ANTIBIOTICS, ANTIVIRALS AND ANTIFUNGALS AND ITS PHARMACOKINETICS – PHARMACODYNAMICS, ANTIMICROBIAL RESISTANCE AND ANTIBIOTIC STEWARDSHIP

Q.P. Code: 161491

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. A 33-year-old male recently diagnosed with acute myeloid leukemia (AML) is undergoing the second cycle of chemotherapy. Four days after the chemotherapy he is admitted with hectic fevers and chills with no other localizing symptoms. He had a left-sided subclavian line which was inserted 4 weeks earlier. Paired blood cultures from the line and peripheral line are growing gram-negative bacilli.
   What is the Central Line Associated Blood Stream Infection (CLABSI)?

   Discuss the risk factors for the same and the strategies for its prevention

   Define and discuss health care associated infections.

2. What is Antimicrobial Stewardship? What are the various components of Antimicrobial stewardship in a hospital setting and what strategies would you employ if you were asked to set up a stewardship program for a large 1500 bed tertiary hospital.

II. Write notes on: **(10 x 7 = 70)**

1. Carbapenemase producing gram-negative bacteria.
2. Remdesivir.
3. Infection control in a bone marrow transplant unit.
4. Strategies to prevent VAP.
5. Post exposure prophylaxis for hepatitis B.
6. Biomedical waste disposal in a hospital setting.
7. Liposomal amphotericin – indications for use and advantages over other forms of amphotericin.
8. Risk factors and prevention strategies for *C.difficile* associated diarrhoea.
9. Approach to an individual with MRSA colonization.
10. Pre-surgical antimicrobial prophylaxis.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[DM 0822] AUGUST 2022 Sub. Code :1491

D.M. – INFECTIOUS DISEASES
Paper I – PRINCIPLES OF INFECTION CONTROL, ANTIBIOTICS, ANTIVIRALS AND ANTIFUNGALS AND ITS PHARMACOKINETICS – PHARMACODYNAMICS, ANTIMICROBIAL RESISTANCE AND ANTIBIOTIC STEWARDSHIP

Q.P. Code: 161491

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. A 35 yr old gentleman, recently diagnosed with severe Covid pneumonia is undergoing mechanical ventilation in ICU. On day 5 of ICU stay, he develops high grade fevers with chills and hypotension requiring intotropic supports. He has a right-sided subclavian line which was inserted 10 days earlier. Paired blood cultures from the central and peripheral line which was inserted 10 days earlier. Paired blood cultures from the central and periopheral line are growing carbapenemase producing gram-negative bacilli.
   a) What is the surveillance case definition of a Central line associated blood stream infection (CLABSI)?
   b) What methods in the laboratory can be used to confirm a CLABSI?
   c) What preventive measures can be put in place to prevent development of a CLABSI?
   d) Describe the Ambler classification for β-lactamases.

2. Describe principles and practice of therapeutic drug monitoring (TDM) in Clinical Infectious Diseases. What Pk-PD parameters are useful for antibiotic administration to judge efficacy and toxicity? Mention indications and 2 examples each of antimycobacterials, antibiotics and antifungal where TDM is commonly advised and practiced.

II. Write notes on: **(10 x 7 = 70)**

1. Amp C β lactamases.
2. Baricitinib.
3. Posaconazole.
4. Adult immunization.
5. Cefedirocol.
6. Types of Infection control precautions
7. MALDI-TOF.
8. Strategies for Antimicobial Stewardship.
9. CAUTI prevention bundle.
10. Carbapenem resistant Acinetobacter baumanii.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[DM 0124] JANUARY 2024 Sub. Code :1491

D.M. – INFECTIOUS DISEASES

PAPER I – PRINCIPLES OF INFECTION CONTROL, ANTIBIOTICS, ANTIVIRALS AND ANTIFUNGALS AND ITS PHARMACOKINETICS – PHARMACODYNAMICS, ANTIMICROBIAL RESISTANCE AND ANTIBIOTIC STEWARDSHIP

Q.P. Code: 161491

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. A 35yr old gentleman, recovering from organophosphate poisoning is on mechanical ventilation in ICU. On day 5 of ICU stay, he develops fever but is otherwise vitally stable. He notes increasing breathing difficulty and there is a new infiltrate on the chest x-ray. You are called in for a consultation.
   a) How will you confirm the presence of a possible ventilator associated pneumonia (VAP) in this patient?
   b) How will you confirm the diagnosis in this patient and what procedures can be employed to facilitate the same?
   c) What preventive measures can be put in place to prevent development of a VAP?
   d) Describe the common etiologies of VAP in India and what is the possible empiric therapeutic option will you choose.

2. Describe the resistance mechanisms, classification and newer therapeutic options for common gram negative organisms in clinical practice (mention at least 3 different organisms).

II. Write notes on: **(10 x 7 = 70)**

1. Tetracycline resistance in Acinetobacter.
2. Remdesivir.
3. Isavuconazole.
4. Immunization in PBSCT recipient.
5. Methicillin resistant Staphylococcus aureus.
6. Transmission based precautions.
7. 16sRNA.
8. Antimicrobial Stewardship metrics and monitoring.
9. CLABSI prevention bundle.
10. PK-PD targets for efficacy in common antibiotics.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[DM 0225] **FEBRUARY 2025** **Sub. Code :1491**

D.M. – INFECTIOUS DISEASES

PAPER I – PRINCIPLES OF INFECTION CONTROL, ANTIBIOTICS, ANTIVIRALS AND ANTIFUNGALS AND ITS PHARMACOKINETICS – PHARMACODYNAMICS, ANTIMICROBIAL RESISTANCE AND ANTIBIOTIC STEWARDSHIP

Q.P. Code: 161491

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. A 45yr old gentleman, a diabetic develops fever with chills and rigors of 3 days duration. He has been having difficulty in passing urine on and off over the last 1 year with tissue pieces in his urine over the 1 month. His sugar control has been suboptimal. On examination he is noted to have right flank tenderness. He becomes increasingly sick with breathing difficulty, hypotension and is transferred into the Intensive care unit. He is started on broad spectrum antibiotics and goes on to require mechanical ventilation. He is starting to get better and is extubated on day 7, no longer requires inotropes, but then on day 14, he develops 7-10 episodes of diarrhoea. You are called in for a consultation.
   a) What is your differential diagnosis and possible causative pathogens?
   b) How will you confirm the diagnosis in this patient and what procedures can be employed to facilitate the same? Is there a common algorithm that is employed?
   c) You are called in again as this is a hospital acquired infection causing diarrhea due to a change in microbiome diversity and asked to specify infection control precautions. Please mention in detail regarding disinfectants, precautions, room requirements and release from isolation requirements.
   d) Make a detailed plan of management and complications that you would look for and therapeutic options for the same?

2. Describe the resistance mechanisms, classification and newer therapeutic options for Enterococcus and Staphylococcus spp in clinical practice. Elucidate in detail regarding development of Penicillin resistance, MRSA, VRSA etc., in Staphylococcus aureus and high-level aminoglycoside resistance and VRE in Enterococcus spp.

II. Write notes on: **(10 x 7 = 70)**

1. BCG vaccination in adults and children.

2. Ibrexafungerp.

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3. Biofilm and quorum sensing.
4. Principles of Immunization in patients on biologicals.
5. Engineering controls in Bone marrow Transplant Unit.
6. Airborne precautions principles and practice.
7. 18sRNA.
8. Antimicrobial Stewardship principles and metrics.
9. Ventilator associated Pneumonia prevention.
10. Optimizing PK-PD targets for efficacy in Anti-tuberculous therapy.

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[DM 0225]