

The Microorganism Essay Plans

Bacteria

1. Microbiology
2. Epidemiology
3. Pathogenesis
4. Laboratory Diagnosis
5. Clinical Manifestations
6. Treatment
7. Prevention & Control

Viruses

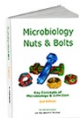
1. Structure & Description
2. Replication
3. Pathogenesis
4. Epidemiology & Transmission
5. Clinical Syndromes & Manifestations
6. Diagnosis
7. Treatment
8. Prevention

Fungus

1. Mycology
2. Epidemiology & Ecology
3. Pathogenesis & Pathology
4. Laboratory Diagnosis
5. Clinical Manifestations
6. Treatment
7. Prophylaxis

Parasites

1. Organism Description
2. Life Cycle & Epidemiology
3. Pathology & Pathogenesis
4. Clinical Manifestations
5. Diagnosis
6. Treatment
7. Prevention



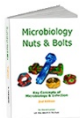
The Antimicrobial Essay Plans

Antimicrobials

1. Introduction & Classification
2. Mechanism of Action
3. Mechanism of Resistance
4. Pharmacology & Pharmacodynamics
5. Spectrum of Activity
6. Common Clinical Uses
7. Cautions & Contraindications
8. Side Effects
9. Monitoring

Antimicrobial Resistance

1. Genetics
 - Mutation of Cellular Genes
 - Acquisition of Resistance Genes
 - Mutation of Acquired Genes
2. Biochemical
 - Modification of Antibiotic
 - Modification of Target Molecule
 - Restricted Access to Target
 - Efflux Pumps
3. Clinical Implications



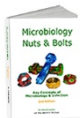
The Clinical Essay Plans

Clinical Scenarios

1. Definitions
2. Epidemiology & Aetiology
3. Pathogenesis & Pathophysiology
4. Pathology
5. Clinical Features
6. Laboratory Findings & Investigation
7. Treatment
8. Prognosis
9. Prevention & Prophylaxis

Empirical Treatment Considerations

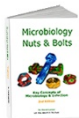
1. Diagnostic or severity assessment clues e.g. CURB-65 for community acquired pneumonia
2. Local & National Epidemiology
 - Likely causes
3. Local Resistance / Sensitivity Patterns
4. Allergy to 1st line treatment
5. Host Factors
 - Toxicity & likely source etc.
6. Combinations Needed
 - \pm Antiviral \pm Antifungal
7. Directed Treatment with Results
8. Oral Step-down Therapy
9. Prophylaxis



The Diagnosis Essay Plans

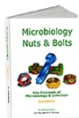
Laboratory Diagnosis

1. History
2. Examination
3. Direct Observation
 - Stains
 - Wet Prep
 - Immunofluorescence
4. Culture
 - Media
 - Equipment
 - Cell Culture
 - Blood
 - Urine
 - Stool
 - Swabs
 - Pus
5. Serology
 - Antibodies
 - Agglutination
 - CFTs
 - ELISA
 - Western Blot etc.
 - Florescence
 - Rapid Tests
 - Antigens
 - Rapid Ag Tests
 - ELISAs
 - Immunofluorescence
6. Molecular
 - Non amplified
 - Amplified



Molecular Techniques

1. Definitions
2. Non Amplified
3. Amplified
 - Signal amplification
 - b DNA
 - Hybrid Capture Assays
 - Target amplification
 - PCR
 - RT PCR
 - Nested PCR
 - Multiplex PCR
 - Quantitative PCR
 - Transcription amplification methods
 - Strand displacement amplification
 - Probe Amplification
 - Ligase Chain reaction
4. Automation
5. Post Amplification Detection & Analysis
 - Gel Analysis
 - Colourimetric Microtitre Plate
 - Real time PCR
 - Allele-specific Hybridization
 - DNA Sequencing
 - DNA Microarrays
6. Applications
 - Detection of slow growing / unculturable pathogens
 - Identification by DNA sequencing
 - Rapid Screening
 - Disease Prognosis
 - Response to Treatment
 - Resistance Mechanisms
7. Advantages & Disadvantages



The Public Health Essay Plan

Vaccination

1. Issues

- Safe
- Effective
- Acceptable to the Public
- Disease
 - Common
 - Economic
 - Difficult to Treat
 - Devastating

2. Indications

3. Contraindications

4. Storage, Distribution & Disposal

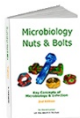
5. Schedule

6. Passive

- Natural
- Artificial

7. Active

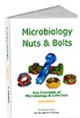
- Natural
 - Attenuated
 - Inactivated
 - Purified Macromolecules
 - DNA
 - Cloned Microbial Antigens
 - Synthetic Peptides
 - Anti-idiotypic Antigens
 - Multivalent Complexes
- Artificial
 - Advantages & Disadvantages of each type



The Estates Essay Plan

Department Design

1. Pre-Construction
 - Specific issues for area
 - Overbuild for future
 - Design & Planning
2. Construction
 - Implementing the design
3. Post-Construction
 - Monitoring



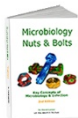
The Outbreak Essay Plans

Food & Water Outbreak Investigation

1. Establish Case Definition
2. Confirm cases are "real"
3. Confirm Outbreak & Determine Extent
4. Examine Descriptive Epidemiological Features of the Cases
5. Generate Hypotheses
6. Test Hypotheses
7. Collect & Test Environmental Samples
8. Implement Control Measures
9. Interact with the Press & Inform the Public

Hospital Infection Control Outbreak

1. Introduction
2. Is this an outbreak? Inform:
 - Infection Control Doctor (ICD)
 - Chief Executive's Representative
3. Call an outbreak meeting
4. Implement interim control measures pre-outbreak meeting
5. Call an Outbreak Control Group (OCG) Meeting
6. Generating a hypothesis
7. Potential causes of outbreak
8. The most likely cause – main hypothesis
9. Investigation of hypotheses
 - Screening
 - Samples co-ordinated by ICNs & OH
 - ? Restrict visiting & Close catering
10. Control measures
11. Management / Organisational Aspects
 - Need for additional resources
 - Nursing / Medical staff
 - Need to close beds
 - Medications etc.
 - Lab assistance
 - Ancillary staff e.g. Domestic
 - Clerical & IT support



- Cohorting & Isolation facilities
- Transfer Patients
- Secondment of appropriate area link-professional to ICT

12. Communications

- Patients & Relatives
- Press
- Within hospital

13. Write a report and close the outbreak

Outbreak Control Group (OCG) includes:	
<ul style="list-style-type: none"> • CCDC • Consultants for clinical care of affected patients • ICD • ICNs • Trust Chief Executive or nominated officer • Medical Director • Lead Medical Microbiologist • Director of Nursing / Director of Patient Services • Relevant Clinical Director or representative • Occupational Health Dept 	<ul style="list-style-type: none"> • May also need: <ul style="list-style-type: none"> - Director of Public Health - EHOs - Health & Safety Executive - Microbiology Lab Manager - Staff side Rep - GP ± PCT Reps - Relevant Lead Nurses - Pharmacy Services Manager - Relevant Service Managers - Communications & Public Relations Manager - Others (ID, Reference Lab, PHE, DoH)

