

CURRICULUM MAP FOR MEDICAL MICROBIOLOGY – MERSEYSIDE ROTATION

	LCL	WHISTON
LABORATORY ASPECTS OF MICROBIOLOGY		
Level A (<12/12)	+ Excellent laboratory staff and repertoire of tests however increasingly automated laboratory which decreases 'hands on' experience	+++
Level B (13 – 36/12)	+++ Busy clinical workload with a wide range of experience across several disciplines incl TB, Brucella, Virology	+++
Level C (25 – 48/12)	+++ As above	++
Level D (48 – 60/12)	++	+++
KNOWLEDGE OF HEALTH & SAFETY Be aware of the current legislative framework underpinning health and safety (H&S) at work, including: <ul style="list-style-type: none"> • Health and Safety at Work Act (1974) • Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) • Control of Substance Hazardous to Health (COSHH) regulations Genetically Modified Organisms (Contained Use) Regulations (2001) • Management of Health and Safety at Work Regulations (1999) 	+	+++
INFECTION IN THE COMMUNITY A broad knowledge of the aetiology and clinical presentation of infectious diseases Knowledge of the pathophysiology of the disease process, with particular	++ Good liaison with GPs Regular exposure (in virology attachments) to management	+++

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<p>reference to common and important infections such as urinary tract infection and respiratory tract disease</p> <p>Knowledge of the optimum treatment of infections and how to access current guidelines</p> <p>Knowledge of the epidemiological consequences of different diseases and of the systems available for disease control with reference to: tuberculosis (TB), viral hepatitis, genitourinary disease, immunisation strategies</p>	<p>of community viral infections and exposures.</p> <p>Involvement in MDT for TB patient management both in hospital and community.</p> <p>Well established OPAT</p> <p>AMU ward rounds</p>	
<p>HEALTHCARE ASSOCIATED INFECTION / PREVENTION</p> <p>The reservoirs, sources, routes of transmission and portals of entry of common HAIs</p> <p>The interactions between the microbe, the patient risk factors and others in the environment, e.g. device and antimicrobial exposure</p> <p>The importance of the colonised patient and infected or colonised staff</p> <p>Epidemiology and control of common and important multi-resistant organisms, e.g. methicillin-resistant <i>Staphylococcus aureus</i> (MRSA), glycopeptide-resistant enterococci (GRE), <i>Clostridium difficile</i></p> <p>Disinfection and sterilisation in the hospital and primary care settings</p> <p>Knowledge and definitions (see below) of site, organism and specialty specific infections</p> <p>Common infections associated with particular surgical procedures, device-associated infections, neonatal intensive care unit (NICU), SCBU, burns units, dermatology wards, etc.</p> <p>Context of MRSA, vancomycin-resistant enterococcus (VRE), ESBL producers, etc. in the above infection</p> <p>Surveillance</p> <p>Definitions of infections, methods of data collection and validation, approaches to analysis of data, interpretation of data</p> <p>Evidence base for effectiveness of local, national and international standards guidelines, protocols for infection and antimicrobial prescribing control and prevention, including screening and isolation strategies and antimicrobial stewardship</p> <p>The audit cycle and interaction with surveillance cycles</p> <p>Importance of healthcare associated infections (HAI) in total quality</p>	<p style="text-align: center;">++</p> <p>Extensive involvement in the management of pts with HCAI in all specialties.</p> <p>Established consult service including pts with HCAI</p> <p>Involvement in antimicrobial control/stewardship initiatives.</p> <p>Established IPCT including a nurse consultant</p>	<p>+++</p>

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<p>management, controls assurance, review body inspections, e.g. HCC</p> <p>The roles and responsibilities of the infection control team and committee</p> <p>Clinical waste, laundry and kitchen: their relevance and importance in HAI prevention</p> <p>Ventilation: importance of this in the theatre, isolation rooms and other areas, e.g. pharmacy and laboratory and control</p> <p>An understanding of ward, departmental and operating theatre design & layout</p>		
<p>INFECTION IN THE IMMUNOCOMPROMISED</p> <p>Pathophysiology and clinical signs and symptoms of infection in compromised hosts</p> <p>Knowledge of biological and iatrogenic causes of immunodeficiency</p> <p>Knowledge of available diagnostic techniques and their limitations</p> <p>Knowledge of available therapeutic option and preventative measures</p> <p>INCLUDING:</p>	+++	
HIV	+++ Multidisciplinary care of HIV cohort and laboratory expertise in diagnosis and monitoring	
Transplant	+++ Bone marrow and renal transplant services well established	
Neutropenia	+++	++
<p>OUTBREAKS OF INFECTION IN HOSPITAL & COMMUNITY</p> <p>General principles of outbreak investigation and control</p> <p>Understand fully local (including out-of-hours) procedures for the prevention and control of infectious diseases</p> <p>Knowledge about the availability of expertise, e.g. modelling including reference centres</p>	++	+++
<p>INFECTION IN THE RETURNING TRAVELLER</p> <p>Knowledge of the common causes of infection in returning travellers</p> <p>Knowledge of common measures for preventing infection in travellers</p>	+++ Excellent exposure via ID unit and potential for involvement at Tropical School	+

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<p>Malaria</p> <p>Viral haemorrhagic fever</p> <p>Aware of emerging travellers or imported infections, e.g. West Nile virus, other arboviruses</p> <p>Epidemiology and distribution of common tropical infections, e.g. malaria, schistosomiasis, onchocerciasis, filariasis, trypanosomiasis, gastro-intestinal GIT parasites, dengue, yellow fever, TB, HIV, enteric fever, cholera, dysentery</p>		
<p>SEXUALLY TRANSMITTED INFECTION</p> <p>Disease specific</p> <p>A broad knowledge of the aetiology, pathophysiology and clinical presentation of STIs</p> <p>Diagnosis</p> <p>Knowledge of the available diagnostic tests and their limitations</p> <p>Congenital infections</p> <p>Knowledge of various congenital infections and available preventative strategies</p> <p>Management</p> <p>Knowledge of available therapeutic options and preventative measures</p>	<p>+++</p> <p>Established GUM department incl point of care testing</p>	<p>+</p>
<p>NEUROSURGICAL INFECTION</p>	<p>+++</p> <p>Good experience at Walton</p>	
<p>INFECTION IN THE DIALYSIS PATIENT</p>	<p>+++</p> <p>Large dialysis unit with HD & PD – significant exposure to infection management in this group</p>	
<p>FOOD MICROBIOLOGY</p> <p>Basic knowledge of the common pathogens involved in food- and water-borne infections and the laboratory methods used to test for them, including the use of indicator organisms</p> <p>Basic knowledge of the current legislation and guidelines on the microbiological testing of food and water. (Food includes milk and dairy products; water includes potable and bathing waters)</p>	<p>+</p> <p>Limited on site water testing for endoscopy and dialysis suites including endotoxin.</p> <p>No food exposure</p>	

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Knowledge of the requirements for testing endoscopy rinse water and renal unit water and the results that should be achieved		
WATER BORNE INFECTION	+	
PAEDIATRIC INFECTION Pathophysiology, clinical signs and symptoms of infectious diseases in children. Especially those illnesses that are particularly important in or specific to childhood, e.g. neonatal meningitis, group B sepsis, intraventricular shunt infections. Knowledge of available diagnostic techniques Knowledge of the pharmacokinetics of prescribing for children and the need to avoid certain antimicrobials	-	++
NEONATAL INTENSIVE CARE	+++ Extensive and established good liaison and exposure at LWH	
INFECTION IN PREGNANCY Effects of pregnancy on the immune system Infections specific to pregnancy, e.g. septic abortion, chorioamnionitis and endometritis Infection considered important in pregnancy, e.g. urinary tract infections in pregnancy, sexually transmitted diseases, fungal infection including candidosis, parasitic diseases, e.g. toxoplasmosis and malaria in pregnancy Use of antimicrobials in pregnancy Knowledge of the potential teratogenicity when prescribing in pregnancy and the need to avoid certain antimicrobials	As above +++	++
INFECTION IN THE ITU PATIENT Common infection problems in the ICU setting, e.g. ventilator-associated pneumonia, lineinfections, septicaemia Outcomes of infection Evidence-base for diagnosis and management Pathophysiology of serious sepsis Rationale for interventions	++ Large critical care department (ITU&HDU) catering for medical and surgical pts requiring level 2/3 care. Regular exposure and educational opportunities	+++

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ORTHOPAEDIC INFECTION	+++ Multidisciplinary active bone and joint infection group – regular exposure	+++
OCCUPATIONALLY ACQUIRED INFECTION Basic knowledge of zoonotic infections that may be occupationally acquired Knowledge of needlestick incident management follow-up for healthcare workers (HCWs) Knowledge of local, national and international guidelines and standards in relation to occupational exposure to infection	+	+
VIROLOGY PRE-MRCPATH PART I	+++ Excellent laboratory staff and repertoire of tests however increasingly automated laboratory which decreases 'hands on' experience. Excellent clinical liaison with children's hospital, ANC units, OCCH, ID, hepatology, GUM, renal transplant and BMT units.	+
VIROLOGY PRE-MRCPATH PART II	+++ Excellent laboratory staff and repertoire of tests however increasingly automated laboratory which decreases 'hands on' experience. Excellent clinical liaison with children's hospital, ANC units, OCCH, ID, hepatology, GUM, renal transplant and BMT units.	
HEALTH PROTECTION & EPIDEMIOLOGY Understand principles and practice of surveillance of infectious disease Routine and enhanced surveillance systems Understand the role of others in the prevention and control of infection Understand the general principles involved in immunisation programmes Occupational health and travel health procedures Agents of bio-terrorism Understand the role and function of reference laboratories	++	+

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INFECTION IN BURNS PATIENTS	-	+++
MYCOLOGY Superficial fungal infection <ul style="list-style-type: none"> • skin • hair • nail • mucous membrane Systemic infection <ul style="list-style-type: none"> • candidosis • aspergillosis • cryptococcosis Understanding of appropriate antifungal treatment strategies Understanding of the methods available for susceptibility testing and their limitations	++ Limited laboratory exposure and minimal involvement in superficial fungal infection management. Good exposure to the management and diagnosis of systemic fungal infection	++
PARASITOLOGY infections common in European practice: e.g. malaria, intestinal protozoa, intestinal helminths, leishmaniasis, trypanosomiasis, filariasis and schistosomiasis <ul style="list-style-type: none"> • Endemic parasitic infections including for example toxoplasmosis, toxocariasis, giardiasis, hydatid disease • Parasitic infections associated with severely immunocompromised patients, e.g. microsporidiosis, cryptosporidiosis Epidemiology of parasitic infections understanding the conditions under which infections are transmitted so that the risk of infection to patients can be assessed Use of antiparasitic drugs including antimalarial agents, imidazoles, ivermectin, praziquantel	+ Laboratory exposure at RLUH and potentially at Tropical School. Clinical exposure via ID unit	+
COMMUNICATION & MANAGEMENT ISSUES IN MICROBIOLOGY	++	+++

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Laboratory management Concepts of good laboratory practice Understand the process of management and being managed Laboratory accreditation Understand the criteria for accreditation Appraisal Clinical audit Delivery of service Standards of professional practice and clinical governance Up to date knowledge of the organisation of NHS and allied organisations Understanding of role of HPA, Food Standards Agency (FSA), HCC and NICE Knowledge of teaching methods, assistance and resources available Information technology: <ul style="list-style-type: none"> • working knowledge of laboratory data entry and retrieval and surveillance systems. • understanding of the Data Protection Act 		
UNDERSTANDING RESEARCH	++ Active R&D group and close links with IGH	+
OUT-OF-HOURS WORKING EXPERIENCE	+++	+++
TEACHING EXPERIENCE	+++	+++
SPINAL INJURIES	-	
MOLECULAR MICROBIOLOGY	++ Teaching on clinical use of real-time PCR and sequencing in medical virology, theory of molecular diagnostic tests used in medical virology and experience of the day-to-day work in a molecular diagnostic section of a medical virology laboratory.	-

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	Routine use of 16S rRNA PCR for diagnosis and identification of organisms coupled with genome sequencing.	