

SystemWise Microbiology

High-yield organisms grouped by organ system. Use it before you start a system, and again when you revise it.

USMLE Vault — SystemWise Microbiology. Cardiovascular column added 2026-08-01.

MICROBIOLOGY	CARDIOVASCULAR	GIT	MSK	DERMAT	RESPIRATORY	RENAL	REPRODUCTION	CNS	IMMUNOLOGY
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Bacteria	ENDOCARDITIS - Staphylococcus aureus — acute, IV drug use, tricuspid - Viridans group streptococci — subacute, after dental work - Staphylococcus epidermidis — prosthetic valves - Enterococcus — after GI/GU procedures - Streptococcus gallolyticus — look for colon cancer MYOCARDITIS / OTHER - Streptococcus pyogenes — Group A, rheumatic fever - Corynebacterium diphtheriae — diphtheritic myocarditis - Borrelia burgdorferi — Lyme carditis, AV block - Treponema pallidum — syphilitic aortitis	WATERY DIARRHOEA - Vibrio cholerae - Enterotoxigenic E. coli (ETEC) - Staphylococcus aureus - Clostridium perfringens - Bacillus cereus BLOODY DIARRHOEA - Shigella species - Enterohaemorrhagic E. coli (EHEC) - Enteroinvasive E. coli (EIEC) - Salmonella — especially non-typhoidal - Campylobacter jejuni - Yersinia enterocolitica - Clostridioides difficile STOMACH - Helicobacter pylori — gastritis, peptic ulcer, MALT lymphoma FOODBORNE TOXIN - Clostridium botulinum — ingested toxin; the illness itself is neuromuscular (see CNS)	- Gonococci - Borrelia - Staphylococcus - Salmonella	- Staphylococcus - Streptococcus	- Streptococcus pneumoniae - Haemophilus influenzae - Mycobacterium tuberculosis - Bordetella pertussis - Staphylococcus aureus — including MRSA - Legionella pneumophila	- Escherichia coli - Staphylococcus saprophyticus - Proteus mirabilis - Klebsiella pneumoniae - Enterococcus species - Pseudomonas aeruginosa - Serratia marcescens - Streptococcus agalactiae — Group B	- Neisseria gonorrhoeae — gonorrhoea, PID - Chlamydia trachomatis — D-K: urethritis, PID; L1-L3: LGV - Treponema pallidum — syphilis - Haemophilus ducreyi — chancroid - Gardnerella vaginalis — bacterial vaginosis - Escherichia coli — UTIs - Streptococcus agalactiae — Group B, neonatal	- Neisseria meningitidis - Streptococcus pneumoniae - Haemophilus influenzae type B - Listeria monocytogenes - Group B Streptococcus — S. agalactiae - Escherichia coli — K1 strain - Mycobacterium tuberculosis - Treponema pallidum — neurosyphilis - Borrelia burgdorferi — neuroborreliosis, Lyme - Clostridium botulinum - Clostridium tetani	ANTIBODY DEFECTS & ASPLENIA — ENCAPSULATED - Streptococcus pneumoniae — the classic: sepsis, meningitis, otitis - Haemophilus influenzae type B — no capsular antibody, no protection - Neisseria meningitidis — encapsulated — sepsis and meningitis - Klebsiella pneumoniae — encapsulated - Streptococcus agalactiae — Group B — encapsulated - Salmonella — encapsulated; osteomyelitis in sickle cell - Pseudomonas aeruginosa — encapsulated COMPLEMENT DEFECTS — C5-C9 / MAC - Neisseria meningitidis — recurrent meningococcaemia — the defining clue - Neisseria gonorrhoeae — disseminated gonococcal infection PHAGOCYTE DEFECTS — CGD, LAD, CHÉDIAK-HIGASHI - Staphylococcus aureus — catalase-

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									positive — abscesses, poor pus • Burkholderia cepacia — catalase-positive • Serratia marcescens — catalase-positive • Nocardia — catalase-positive T-CELL DEFECTS • Mycobacterium avium complex — disseminated when CD4 is very low
Viruses	• Coxsackievirus B — commonest viral myocarditis • Echovirus — myocarditis, pericarditis • Adenovirus — myocarditis in children • Parvovirus B19 — myocarditis • HIV — dilated cardiomyopathy	• Norovirus • Rotavirus • Adenovirus • Cytomegalovirus — especially immunocompromised • Herpes simplex virus — especially immunocompromised HEPATITIS • Hepatitis A virus (HAV) — faeco-oral, acute only • Hepatitis B virus (HBV) — sexual/perinatal; can become chronic	• Parvovirus • Rubella	• HSV • VZV • HPV • Molluscum contagiosum • HHV-6	• Influenza virus • Respiratory syncytial virus (RSV) • Adenovirus	• BK virus	• Human papillomavirus (HPV) • Herpes simplex virus — HSV-2 > HSV-1, genital herpes • Human immunodeficiency virus (HIV) — opportunistic infections • Cytomegalovirus (CMV) — congenital, immunosuppressed • Hepatitis B virus (HBV) — sexual, perinatal	• Herpes simplex virus — HSV-1, HSV-2 • Varicella-zoster virus (VZV) • Cytomegalovirus (CMV) • Epstein-Barr virus (EBV) • Human herpesvirus 6 (HHV-6) — roseola, encephalitis • Rabies virus • Enteroviruses — poliovirus, coxsackievirus, echovirus • Mumps virus • Measles virus — SSPE • West Nile virus • JC virus — PML	T-CELL DEFECTS — DIGEORGE, SCID, HIV • Cytomegalovirus (CMV) — retinitis, colitis, pneumonitis • Epstein-Barr virus (EBV) — lymphoproliferative disease • Varicella-zoster virus (VZV) — disseminated, not dermatomal • Herpes simplex virus (HSV) — severe, persistent, recurrent SEVERE T-CELL DEFECTS • JC virus — progressive multifocal leukoencephalopathy ANTIBODY DEFECTS • Enteroviruses — echovirus, poliovirus — chronic meningoencephalitis in Bruton's

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Parasites	- Trypanosoma cruzi — Chagas: dilated cardiomyopathy, megacolon - Taenia solium — cysticercosis, rarely myocardium	- Giardia lamblia - Cryptosporidium parvum - Entamoeba histolytica	—	—	Strongyloides stercoralis — respiratory symptoms in disseminated infection	Schistosoma haematobium	Trichomonas vaginalis — trichomoniasis	- Toxoplasma gondii — toxoplasmosis - Naegleria fowleri — primary amoebic meningoencephalitis - Acanthamoeba species — granulomatous amoebic encephalitis - Trypanosoma brucei — African sleeping sickness - Taenia solium — neurocysticercosis	T-CELL DEFECTS - Toxoplasma gondii — ring-enhancing brain lesions - Cryptosporidium — chronic watery diarrhoea IGA DEFICIENCY - Giardia lamblia — no secretory IgA on the gut surface
Fungi	- Candida species — endocarditis in IV drug use, prosthetic valves - Aspergillus species — endocarditis in immunocompromised	—	Coccidioides	—	- Pneumocystis jirovecii — especially immunocompromised - Aspergillus species — invasive aspergillosis - Histoplasma capsulatum - Coccidioides immitis - Blastomyces dermatitidis	Candida species	Candida albicans — vulvovaginal candidiasis, balanitis	- Cryptococcus neoformans - Coccidioides immitis - Histoplasma capsulatum - Blastomyces dermatitidis	T-CELL DEFECTS - Candida albicans — thrush, oesophagitis — mucocutaneous - Pneumocystis jirovecii — pneumonia below CD4 200 - Cryptococcus neoformans — meningitis PHAGOCYTE DEFECTS — CGD - Aspergillus — invasive - Candida albicans — catalase-positive — invasive here, not mucosal