

PATHOGENS: MICROBES THAT CAUSE DISEASE

Additional Resource

Summary table of transmission routes with examples of infectious human diseases and the pathogens that cause them.

Transmission route	Mode of transmission	Portal of entry	Example disease and causative pathogen
Airborne	Saliva e.g. in aerosolised droplets, kissing, or transfer from contaminated items (fomites) Inhalation of spores	Respiratory tract	Influenza – e.g. influenza virus Common cold – e.g. rhinovirus Tuberculosis - <i>Mycobacterium tuberculosis</i> Pneumonic plague – <i>Yersinia pestis</i> Whooping cough - <i>Bordetella pertussis</i> Coccidioidomycosis – <i>Coccidioides immitis</i>
Food or water-borne	Faeces e.g. via contaminated water or food, or poor personal hygiene	Gastrointestinal tract	Poliomyelitis – poliovirus Winter vomiting bug - norovirus Cholera – <i>Vibrio cholerae</i>

	Spores in food		Diarrhoeal giardiasis – <i>Giardia lamblia</i> Toxicogenic food poisoning - <i>Bacillus cereus</i>
Direct contact (non-sexual)	Contact with infected bodily fluids Or contact with spores from environment	Skin or mucosal surface, typically via wound	Ebola virus disease – ebola virus Verrucas / warts – human papillomavirus (HPV) Cutaneous anthrax - <i>Bacillus anthracis</i> Tetanus - <i>Clostridium tetanii</i> Sporotrichosis - <i>Spirothrix schenkii</i>
Direct contact (sexual)	Semen or vaginal secretions	Mucosal surfaces e.g. genital tract	Acquired immunodeficiency syndrome (AIDS) - human immunodeficiency virus (HIV) Ebola virus disease – ebola virus (EBOV) Zika fever - zika virus (ZIV)
Vector-borne	In bloodmeal of arthropod vector e.g. mosquito or tick	Bloodstream	Yellow fever - Yellow fever virus Zika fever - Zika virus Bubonic plague – <i>Yersinia pestis</i> Lyme disease - <i>Borrelia burgdorferi</i> Malaria - <i>Plasmodium falciparum</i>
Zoonotic (animal to human)	Any of the 4 horizontal		Influenza – influenza virus

	transmission routes above		Ebola virus disease – Ebola virus
Vertical (mother to child)	Across the placenta	Bloodstream	Acquired immunodeficiency syndrome (AIDS) - Human immunodeficiency virus (HIV) Congenital rubella syndrome - Rubella virus Microcephaly and birth defects - Zika virus
	Direct contact during delivery	skin and urogenital tract	Genital herpes – Herpes simplex virus-1 (HSV-1)
	In breastmilk	Gastrointestinal tract	Acquired immunodeficiency syndrome (AIDS) - Human immunodeficiency virus (HIV)
Iatrogenic	During medical intervention	Bloodstream via transfusion, during surgery or via needle	Acquired immunodeficiency syndrome (AIDS) - Human immunodeficiency virus (HIV) Hepatitis – e.g. Hepatitis B virus