virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Poxviridae: variola/ smallpox	dsDNA	Yes, complex symmetry	Cytoplasm (only DNA in cytoplasm)		High fever, malaise, centrifugal rash (all same stage, reaches skin through viremia), back pain	Shock, sepsis, 2 bacterial infection, multi organ dysfunction	Respiratory, skin, fomites	Clinical, PCR, EM, culture	Supportive, antivirals	Live attenuated vaccine (eradicated in 1970s), isolation, contact tracing		
Poxviridae: Monkey pox					Fever, malaise, lymphadenopathy, vesiculopustular rash, centrifugal rash (reaches skin through viremia)		Broken skin, fomites, respiratory, vertical	PCR	Supportive, tecovirimat	Live attenuated for high risk		
Poxviridae: Molluscum contagiosum				keratinocytes	Umbulicated papules, no systemic spread (does NOT cause viremia)		Skin, fomites, scratching / inoculation, sexual	Clinical (umbulicated papules; raised lesions with central depression)	Cryotherapy (cold), curettage (scraping), topical antivirals			
Parvoviridae: B19	ssDNA (smallest DNA)	no		Erythroid progenitor cells	Children: fifth disease/ slapped cheek syndrome, fever, rash Adults: arthritis	**Immunocompromised**: pure red cell aplasia (chronic anemia) **Chronic anemia:** transient aplastic crisis (severe acute anemia) **Congenital:** hydrops fetalis (fatal anemia)	Respiratory, vertical	Clinical, PCR, serology	supportive			
Parvoviridae: bocaparvovirus				Respiratory cells	U,LRTI							
Adenoviridae	dsDNA	no	nucleus	Conjunctiva, U,LRT, GI, urinary epitheliu m	Conjunctivitis, U,LRTI (most common cause of pharyngitis), gastroenteritis, cystitis		Respiratory, feco-oral, contact	Antigen, PCR	supportive	Live attenuated vaccine for pneumonia causing seroypes		

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
HPV ONCOVIRUS	dsDNA	no	nucleus	Skin epitheliu m, mucous mem	Mostly asymptomatic. common warts, 6,11: condyloma acuminata/ genital warts, laryngeal papilloma	16,18: cervival, vulvar, anal, penile, oropharyngeal cancer	Skin, sexual	Clinical, PCR, pap smear	Resolve 2-3 yrs. Chemical (podophyllotoxin, podophyllin, imiquimod (immune modifier)), laser, surgical excision	Subunit vaccine: Cervarix (16,18) Gardasil (6, 11, 16, 18) Nonavalent (6, 11, 16, 18, 31, 33, 45, 52, 58)		
Polyomaviridae	dsDNA	no	nucleus			**BK**: cystitis in BM transplant patients **JC**: prog multifocal leukoencephalopathy (PML) in AIDS **Merkel cell:** merkel cell carcinoma (rare skin cancer)		PCR, radiology, histopathologic		No vaccine		Wide spread (asymptomatic, reactivate in immune compromised)

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Herpesviridae: HHV1, HHV2 (simplex) Alpha	dsDNA	Yes Envelope from nuclear mem Ecosahedral		Mucosal epitheliu m membranes Heparan sulfate R Remains latent lifelong in sensory/ dorsal ganglia	Most asymptomatic (13 symptoms)	Immunocompromised: disseminated Neonates: severe	HHV1: saliva, direct contact HHV2: sexual, vertical	Clinical, PCR, culture, serology, Tzanck smear (histopathology- Giemsa stain)	Nucleoside analogues (valacyclovir, penciclovir, acyclovir, famciclovir)	No vaccine	Keeps reactivated infection under control	HHV1 is widespread HHV2 less
Herpesviridae: HHV3 (varicella zoster) Alpha					**Primary**: chicken pox, malaise, fever, vesicles at diff stages **Reactivation**: shingles & postherpetic neuralgia(severe pain) in adults, immunocompromised		Highly contagious, direct contact, respiratory	Clinical, PCR, tzanck smear, serology	Nucleoside analogue; Acyclovir for immunocomp	Live attenuated vaccine highly effective Vaccinated could get mild infec		Subclinical is unusual
Herpesviridae: HHV4 (Epstein barr virus) ONCOVIRUS Gamma				B cells, oral epithelium CR2 (CD21) **Latency** in B	Asymptomatic in **children** Infectious mononucleosis in **adults** (fever, sore throat, cervical lymphadenopathy), splenomegaly	Cancer: Burkett lympohoma, Hodgkin, peripheral T cell lymphoma, lymphoproliferative disease, nasopharyngeal carcinoma	Saliva, oral secretions	Antigen (MA, EBNA, VCA, EA) If equivocal→ PCR	Supportive. Avoid contact sports		Childhood infection provides lifelong immunity against IM	>90% children asymptomatic
Herpesviridae: HHV5 (cytomegalovirus) Beta				Many cells **Latency in** Myeloid cells (WBC precursors)	**1:** IM like disease	**Immunocomp**: Gastroenteritis, retinitis, pneumonia **AIDS**: Disseminated **Infants**: Microcephaly, hearing loss, seizures,…	Contact with urine, saliva, congenital, sexual	PCR, serology for blood, urine, owls eye of inclusion bodies Culture too slow	ganciclovir			

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Herpesviridae: HHV6, HHV7 (roseola) Beta				6: T, B, NK, monocytes, epitheliu m, nerves 7: CD4+ T, epitheliu m of salivary glands **Latency** in peripheral blood mononuclear cells (PBMNCs)	7 mostly asymp **Children:** Roseola infantum/6th disease/ exanthem subitem; sudden fever, rash, febrile seizures **6 in adults** rare, may cause EBV-IM		Respirator, direct contact (Same as 3)					
Herpesviridae: HHV8 (Kaposi sarcoma associated) ONCOVIRUS Gamma				B cells **Latency** in B cells	Nodular lesions in mouth, GI, respiratory, skin	Kaposi sarcoma in mesenchymal, Primary effusion lymphoma (PML), multicentric castlemans disease (MCD-lympho proliferative disease)	Saliva, sexual	Histopathology, immunohistochem	HAART, radiotherapy, chemo			

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Retroviridae: HTLV1,2 ONCOVIRUS (tax)	+ssRNA, Retro, diploid (the only virus)	yes		CD4+ T monocytes	Mostly asymptomatic	Adult T cell lymphoma, Cutaneous T cell leukemia, HTLV assoc myelopathy	Vertical, sexual, blood	PCR, western blot, antigen (ELISA)	ATL: chemo HAM: unsuccessful	Screening blood units		1>2 1: sub-Saharan Africa, southwest Japan, south America 2: native americans, African tribes, IV drug users
Retroviridae: HIV1,2				CD4+T, macs, dendritic	**Primary**: non specific, IM-like **Latency**: asymptomatic, generalized lymphadenopathy			Enzyme immune assay for 1 M,O,N & 2 & p24 antigens then Western blot, HIV-1 RNA	HAART	Pre-exp proph, post exp, testing, hit early hit hard		1 M: worldwide 2: west africa

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Picornaviridae: Rhinovirus	+ssRNA (smallest virus)	no		URT ICAM1 R LDLR	URTI (coryza/ common cold), acute asthma exacerbation		Hand to hand, hand to obj to hand, hand to eye	RT PCR	supportive	Hand washing		Fall, winter, spring (seasonal)
Picornaviridae: Enterovirus: Polio					Most asymp Acute febrile illness, non-paralytic poliomyelitis	Paralytic poliomyelitis	Mouth→ replicates in stomach or oropharynx	Culture, PCR	supp	Live att vaccine (sabin), killed (salk)		
Picornaviridae: Enterovirus: coxsackivirus					Aseptic meningitis, acute febrile illness, resp illness **A**: acute hemorrhagic conjunctivitis, HFM disease (A10,A16), herpangina **B**: pleurodynia, pericarditis, myocarditis							
Picornaviridae: Echovirus, parechovirus, human enteroV					**Echo:** aseptic meningitis, enceph, febrile illness, common cold, ocular rash **EV70:** severe CNS, acute hemorrhagic conjunctivitis **EV71:** severe CNS, HFM			RT PCR	Pleconaril (capsid inhibitor) to prevent acute asthma exacerbation	vaccine		

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Orthomyxoviridae: infleunza	-ssRNA, segmented	yes	Nucleus (only RNA virus in nucleus)	Respiratory Epitheliu m	High fever, chills, headache, weakness, myalgia, arthralgia, sore throat, dry cough, pneumonia,2 pneumonia		Droplets, aerosols	Antigen, PCR	Supportive, Oseltamivir, zanamivir	Live attenuated, inactivated, recombinant vaccine		Seasonal in winter
Coronavirida: Sars-cov1, sars-cov2, mers-cov	+ssRNA	yes	cytoplasm	Respiratory Epitheliu m				RT-PCR, antigen	Supportive, dexamethasone (immunomodulator), remdesivir (antiviral)	Vaccine for Sars-cov2		
Paramyxoviridea : PIV 1-4, RSV, hMPV	-ssRNA	yes	cytoplasm	Respiratory Epitheliu m	Common cold (PIV, RSV, hMPV) Laryngitis (PIV) Croup (PIV, RSV) Bronchiolitis (RSV) Pneumonia (RSV)		Respirator Highly contagious	Antigen, PCR multiplex panel	Supportive, oxygen	Maternal RSV for infant, elderly RSV vaccine, passive immunization for infants (Nirsevimab, Palivizumab)	Short lived	
Paramyxoviridea: Measles					Fever, 3C(cough, coryza, conjunctivitis), maculopapular rash	Otitis media, pneuomia, acute encephalitis, post infection encephalomyelitis, subacute sclerosing panencephalitis (SSPE) many yrs later		Koplik spots, serology	Supportive	MMR vaccine	lifelong	

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Paramyxoviridea: Mumps					Painful Salivary enlargement	Oophoritis, orchitis, pancreatitis, aseptic meningitis, encephalitis		serology	supportive	MMR vaccine	lifelong	
Togaviridae: rubella (German measles)	+ssRNA	yes	cytoplasm		fever, maculopap rash (3 days)	In pregnant: congen rubella syndrome (cataract, deafness, cardiac abnormalities)	Respirator, vertical	PCR, serology	supp	MMR live att		
Filoviridae: ebola (& Marburg)	-ssRNA (filamentous)	yes	cyto	Hepato, endoth, mono, macs, dendritic	Fever, fatigue, vomiting, diarrhae, abdominal pain, kidney & liver dysfunction, bleeding, cofusion	Immune problems, hemorrhage		PCR (in BSL4)	supp	vaccine		
Rhabdoviridae: rabies	-ssRNA (bullet)	yes	cyto		Headache, fever, itching at site, aerophobia, hydrophobia, anxiety, confusion, hallucinations	Fatal if reaches CNS (paralysis, coma, death) Negri bodies detected after death	Rabid animals bite	PCR, serology, immunohis, antibody	Cleaning wound, PE prophylactic vaccine (5doses), Ig			
Arboviruses: flavoviridae	+ssRNA	yes	cyto		Dengue virus. yellow fever (hepatitis). west nile (mostly asym, may meningitis). Zika		All mosquitoes. Zika vertical			Dengue has vaccine		Dengue is most common arboV worldwide

virus	genome	envelope	Cell site	tropism	Symptoms	Complications	transmission	diagnosis	Treatment	prevention	Immunity	epidemiology
Rotavirus	dsRNA, segmented	no			gastroenteritis					Live att		Most common cause of gastroenteritis in infants
Norovirus	+ssRNA											Most common cause of gastroenteritis in adults
Astrovirus												
Sapovirus												
Hep A virus	+ssRNA	no		Liver cells	Acute viral hepatitis: jaundice, fatigue, nausea, vomiting, anorexia, fever, ALT>AST. Could be asymptomatic. All could cause fulminant hep (acute liver failure)		Feco oral, sexual, close direct contact	serology		Inactivated vaccine		
Hep E						Chronic in immunocompromised	Fecooral, vertical, blood			Recombinant protein vaccine is some countries		
Hep B	dsDNA	yes				Chronic-→ cancer	Blood, vertical, sexual, healthcare (transplants, hemodialysis)	Serology, molecular	Nucleoside analogs, interferon for life	Surface antigen vaccine		
Hep C	+ssRNA								Direct acting antiretrovirals (DAA)	No vaccine		
Hep D	-ssRNA								Controlling Hep B, interferon	Preventing B will prevent D		

3rd disease: german measles (rubella- Togaviridae)

5th disease: slapped check syndrome (Parvoviridae B19)

6th disease: Roseola infantum (Herpesviridae: HHV6, HHV7 (roseola))