

**Supplementary Table 2. Diagnostic Criteria for Different Stages of Infection**

<b>Pathogen</b>	<b>Seronegative</b>	<b>Latency/Colonization</b>	<b>Reactivation</b>	<b>Active Infection</b>
<b>EBV</b>	VCA-IgG, VCA-IgM, EA, EBNA all negative; EBV DNA <400 copies/mL	EBNA-IgG+, VCA-IgG+, VCA-IgM-; EBV DNA <5×10 <sup>2.5</sup> copies/mL; no symptoms	Serology similar to latent; EBV DNA ≥5×10 <sup>2.5</sup> copies/mL; no symptoms	VCA-IgM+, EA-IgG+, EBV DNA high; clinical symptoms (fever, lymphadenopathy)
<b>CMV</b>	CMV IgG & IgM negative; CMV DNA <400 copies/mL	CMV IgG+, IgM-; CMV DNA undetectable; asymptomatic	CMV DNA ≥400 copies/mL; IgM negative or weakly positive; asymptomatic	CMV DNA >1000 copies/mL; IgM+; symptomatic (fever, hepatitis, organ disease)
<b>HBV</b>	HBsAg, anti-HBc, anti-HBs all negative; HBV DNA undetectable	HBsAg-, anti-HBc+; HBV DNA undetectable; no liver injury	HBV DNA reappearance in HBsAg-/anti-HBc+ patient on RTX; no hepatitis symptoms	HBsAg+/HBV DNA high + ALT↑; clinical hepatitis symptoms
<b>Mycobacterium tuberculosis</b>	Negative IGRA; no symptoms or radiological signs	IGRA+; no symptoms or imaging; negative microbiology	N/A (not applicable)	IGRA+/TST+; symptoms + imaging changes + microbiological confirmation
<b>Fungal infections</b>	Serum GM <0.5; Serum G <60 pg/mL; no symptoms or imaging findings	Serum GM ≥0.5 or Serum G ≥60 pg/mL; no symptoms or imaging signs(possible colonization or false positive)	N/A (not applicable)	Serum GM ≥0.5 or Serum G ≥80 pg/mL, with compatible clinical and/or imaging findings after exclusion of false positives
<b>Pneumocystis jirovecii</b>	BDG <60 pg/mL;PCR- and microscopy-; No symptoms; normal imaging; LDH normal	BDG <60 pg/mL;PCR+ (low load); microscopy-; No symptoms; normal imaging	N/A (not applicable)	BDG >80 pg/mL and/or LDH↑; microbiologic confirmation (microscopy/PCR/IFA+ );Immunocompromised ; respiratory symptoms; CT: GGO ± cysts
<b>Common viruses (e.g., influenza, adenovirus)</b>	Negative PCR and serology; no clinical signs	N/A (not applicable)	N/A (not applicable)	PCR+ (nasopharyngeal or serum) + IgM+ and/or clinical symptoms (e.g., fever, cough, myalgia, rash)
<b>Common bacteria (e.g., Streptococcus, Staphylococcus)</b>	Negative culture or PCR; no clinical signs or inflammation	N/A (not applicable)	N/A (not applicable)	Positive culture/PCR from sterile site (e.g., blood, CSF) + systemic symptoms + elevated CRP/PCT or imaging evidence