COMMON DIAGNOSTIC TESTS USED FOR SARS-CoV-2 INFECTION

	Molecular Tests Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) or Nucleic Acid Amplification	Antigen Tests	Antibody Tests
Examples	Cepheid Xpert Xpress BioFire COVID-19 panels	Abbott rapid antigen home test BinaxNOW COVID-19 Ag Card	Luminex xMAP Multi-Antigen IgG Assay EUROIMMUN QuantiVac ELISA
Collected From	• Saliva, nasal, nasopharyngeal, sputum, tracheal, deep bronchial	• Saliva or nasopharyngeal	• Serology (blood)
Clinical Use	• To achieve ***both high sensitivity*** (between 0.76-0.94) ***and specificity*** (1.00) in the detection of SARS-CoV-2 RNA	• To ***quickly*** **(10-45 min) detect the presence of SARS-CoV-2** • These are often POC tests	• To **assist in diagnosing a previous SARS-CoV-2 infection**
Sensitivity	• Sensitivity is higher among rapid RT-PCR and standard lab-based RT-PCR platforms (0.94-1.00) compared with rapid isothermal RT-PCR platforms (approximately 0.70-0.81)	• Sensitivity is somewhat reduced compared with RT-PCR (0.80-0.94) but is increased when used 5-7 days into illness when viral replication is high (WHO)	• Assays may detect IgM, IgG, or both • No obvious difference in the performance of assays designed to detect the N protein or various portions of the S protein • Timing and frequency of seroreversion to undetectable is unknown • Pooled sensitivities of IgM and IgG at 2 weeks post-infection are 0.73 and 0.68, respectively; both specificities ≥0.98 • Pooled sensitivities of total antibody assays at 2 weeks post-infection are 0.94 with a specificity of 1.00 • No significant difference in assay sensitivity detecting IgM compared with IgG in the first weeks following infection
Specificity	• Specificity across all PCR platforms are excellent (0.96-1.00) • Most RT-PCR platforms report positive results on the basis of a cycle threshold (Ct) • The **Ct is inversely proportional to viral load**	• Specificity is >0.97	
Pros	• Increased sensitivity among non-rapid isothermal RT-PCRs; excellent specificity	• Results available quickly	• May assist in the diagnosis of a previous or protracted illness
Cons	• A positive result may not represent active infection or correlate with infectiousness • Sample processing and assay run-time may take longer	• Decreased sensitivity if not used during the period of high viral replication/early symptomatic stages of illness • Specificity is very good • False positives may occur in low prevalence settings (WHO)	• Sensitivity is variable depending on date of initial infection; false positives may occur in low prevalence settings • Positive results may not represent immunity

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