COVID-19 Diagnosis: Molecular Testing

Symptomatic and asymptomatic-exposure NAAT strategies, specimen types/collection, situations where NAAT is NOT recommended, and home testing.

2023 IDSA Guideline
Diagnosis of COVID-19: Molecular Diagnostic Testing
Hayden, Hanson, Kohn et al. · Clin Infect Dis
2024;78(7):e386-426

FORMAT *12 GRADE recommendations — NAAT = nucleic acid amplification test (RT-PCR or other molecular platforms).*

1 Symptomatic Individuals

STATEMENT	STRENGTH
R1 — NAAT recommended in symptomatic patients suspected of COVID-19 — clinical assessment alone is not accurate for diagnosis	Strong Moderate
R2 — Collect from nasopharynx, anterior nares, oropharynx, or midturbinate; saliva; or mouth gargle. AN or OP alone yield more false-negatives than combined AN/OP, MT, saliva, or gargle — acceptable only if others infeasible	Conditional Low
R3 — AN and MT specimens may be self-collected or provider-collected	Conditional Moderate
R4 — Either rapid or standard laboratory-based NAAT may be used	Conditional —
R5 — Perform a single NAAT; do NOT routinely repeat after a negative result. If repeated, generally wait 24–48 h — consider for new/worsening symptoms or suspected poor specimen quality	Conditional Very low

2 Asymptomatic — Known Exposure

STATEMENT	STRENGTH
R6 — RNA testing suggested when clinical/epidemiologic factors make it desirable (high-risk patients, contacts of immunocompromised persons). Test ≥5 d after exposure — earlier if symptoms develop	Conditional Moderate
R7 — Either rapid or standard laboratory-based NAAT may be used for known-exposure testing	Conditional Moderate

3 Situations Where Routine NAAT Is NOT Recommended

STATEMENT	STRENGTH
R8 — Against routine NAAT in asymptomatic hospital admissions without known exposure — no evidence of reduced transmission; consider PPE/vaccination instead	Conditional Very low
R9 — Against routine NAAT in asymptomatic patients without known exposure before a medical/surgical procedure — RNA detection may not reflect infectious virus	Conditional Very low
R10 — Against routinely repeating NAAT before a procedure in patients with recent COVID-19 — Ct values cannot reliably establish infectiousness	Conditional Very low
R11 — Against routinely repeating NAAT to guide release from isolation — prolonged RNA positivity without infectious virus is common; may unnecessarily extend isolation	Conditional Very low

4 Home Testing

STATEMENT	STRENGTH
R12 — Neither for nor against home NAAT testing for SARS-CoV-2	— Evidence gap

5 Practical Reference

ITEM	DETAIL
Common symptoms	Fever/chills, cough, shortness of breath/dyspnea, fatigue, muscle/body aches, headache — 2–14 d after exposure define the symptomatic population for these recommendations
Rapid NAAT definition	Turnaround varies by definition — FDA and others use ≤30 min; some use ≤60 min or longer. Time reflects testing only (incl. nucleic acid extraction), not collection-to-test or test-to-report intervals
Ct values	Nonstandardized across platforms — insufficient data to use cycle threshold values to determine infectiousness for procedure timing or isolation decisions
RNA vs. infectious virus	SARS-CoV-2 RNA can be detected for prolonged periods without evidence of infectious virus — a key rationale against repeat/release-from-isolation testing

Hayden MK, Hanson KE, Kohn RA, et al. The Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19: Molecular Diagnostic Testing. *Clin Infect Dis.* 2024;78(7):e386-e426 (December 2023 guideline).