

OTHER POTENTIAL CONDITIONS: CARDIOMETABOLIC AND AUTOIMMUNE

Epidemiology

Recommendation

This provides suggestions as you engage in shared health care decision-making with Veterans. It is not intended to replace clinical judgement.

Given evidence that COVID-19 may increase the risk for Diabetes, renal impairment, cardiovascular complications and autoimmune conditions, a history of infection should be considered along with other factors in deciding who should be screened for these conditions.

Cardiovascular

Increased risk of myocardial infarction (MI), cardiovascular accident (CVA), congestive heart failure (CHF), myocarditis³⁵ (Xie Y, 2022)

- High awareness for [cardiovascular complications](#)³⁶ (Gluckman T, 2022)

Kidney Disease

Increased risk of significant decline in estimated glomerular filtration rate (eGFR), proportional to severity of disease, though present even in those not admitted to the hospital³⁷ (Bowe B, 2021)

- If not already assessed, evaluate kidney function glomerular filtration rate (GFR) using creatine or cystatin C at 3-6 months after resolution of COVID-19
- Compare results to pre-COVID-19 GFR if available

Diabetes

Compared with those who never had COVID-19, Veterans who have had COVID-19 are at greater risk of developing type 2 Diabetes up to a year later, even after a mild SARS-CoV-2 infection.³⁸ (Xie Y, 2022)³⁹ (Wander P, 2022)

- Ask all Veterans who had severe COVID-19 about signs and symptoms of diabetes at every routine visit. Consider asking Veterans who had mild or asymptomatic COVID-19.
- A baseline A1c test should be done post-COVID-19 for all Veterans
- For symptomatic Veterans:
 - Veterans experiencing post-COVID-19 signs and symptoms with pre-existing diabetes should have an additional A1c test at 6 months post-infection
 - Veterans experiencing post-COVID-19 signs and symptoms without pre-diabetes but with significant risk factors for diabetes- such as strong family history and obesity-can be considered for an A1c test at 6 months post-infection
 - Routine laboratory testing for other indications should include a Fasting Blood Glucose (FBS) when possible
 - If there has been a significant increase (>0.5%) in A1c from baseline, obtain a repeat A1c or FBS earlier than 6 months post-infection

Autoimmune

Up to 25% may develop antinuclear antibody (ANA) positivity, but the titers were low and deemed not clinically significant.⁴⁰ (Lerma L, 2020) The serology of 61 patients 5 weeks after COVID-19 had no increased incidence of anti-cyclic citrullinated peptides (CCP) positivity.⁴¹ (Derksen V, 2021)

- Coronaviruses seem to typically cause signs and symptoms of arthralgia and myalgia.⁴² (Zacharias H, 2021)⁴³ (Cui D, 2022) If a patient develops clinical features of inflammatory arthritis following COVID-19, the diagnostic work-up should be similar to a patient with new onset rheumatoid arthritis (RA) in an infection naive patient.⁴⁴ (Sapkota H, 2022)

³⁵ Xie Y. Long-term cardiovascular outcomes of COVID-19. *Nat Med* 28, 583–590 (2022). <https://doi.org/10.1038/s41591-022-01689-3>

³⁶ Gluckman. ACC Expert Consensus Decision Pathway on Cardiovascular Sequelae of COVID-19 in Adults, 2022. doi: 10.1016/j.jacc.2022.02.003

³⁷ Bowe B. *JASN* November 2021, 32 (11) 2851-2862; DOI: <https://doi.org/10.1681/ASN.2021060734>

³⁸ Xie Y. Risks and burdens of incident diabetes in long COVID: a cohort study. *Lancet Diabetes Endocrinol.* 2022 May;10(5):311-321. doi: 10.1016/S2213-8587(22)00044-4

³⁹ Wander P. The Incidence of Diabetes Among 2,777,768 Veterans with and Without Recent SARS-CoV-2 Infection. *Diabetes Care* 1 April 2022; 45 (4): 782–788. <https://doi.org/10.2337/dc21-1686>

⁴⁰ Lerma L. Prevalence of autoantibody responses in acute coronavirus disease 2019 (COVID-19). *J Transl Autoimmun*, 2020. 10.1016/j.jtauto.2020.100073

⁴¹ Derksen V. Onset of rheumatoid arthritis after COVID-19: coincidence or connected? *Ann Rheum Dis*, 2021. <http://dx.doi.org/10.1136/annrheumdis-2021-219859>

⁴² Zacharias H. Rheumatological complications of Covid 19. *Autoimmun Rev*, 2021. 20(9): 10.1016/j.autrev.2021.102883

⁴³ Cui D. Rheumatic Symptoms Following Coronavirus Disease 2019 (COVID-19): A Chronic Post-COVID-19 Condition, *Open Forum Infectious Diseases*, Volume 9, Issue 6, June 2022, ofac170, <https://doi.org/10.1093/ofid/ofac170>

⁴⁴ Sapkota H. Long COVID from rheumatology perspective - a narrative review. *Clin Rheumatol*, 2022. 41(2): p. 337-348. 10.1007/s10067-021-06001-1