Emerging pathogens, due to the many unknowns often associated with them, present a conundrum when considering guidelines for safely working with the pathogens in the research space. Though the research and medical communities are gathering increasing knowledge concerning transmission and pathogenicity, SARS-CoV-2 finds itself squarely in the middle of this safety void. To this end, established guidelines and knowledge of related agents must be drawn upon to establish safety guidance.

Placing these practicalities into practice, the National Institutes of Health (NIH) and the Centers for Disease Control (CDC) have issued interim guidance for safely working with live SARS-CoV-2 and clinical samples from COVID-19 diagnosed patients.

Concerning work with live SARS-CoV-2, Appendix B of the NIH Guidelines provides the basis for the classification of biohazardous agents by risk group. These risk groups are then subsequently used to determine the proper level of containment needed to maximally mitigate risk involved in performing research with these agents. Risk Group 3 agents are those associated with serious or lethal human disease for which preventative or therapeutic interventions may available. Currently, as we do not have an FDA approved vaccine for SARS-CoV-2, this agent should be considered a risk group 3 agent. To this end, the proper starting point for consideration of containment when working with the live virus, either in culture or animal models, should be biosafety level 3.

Clinical samples from patients diagnosed with COVID-19 have their own guidance from the CDC. Blood, serum, plasma can be handled using Universal precautions. However, manipulation of these samples where aerosols may be generated such as vortexing or significant pipetting should occur in a biological safety cabinet (BSC), and centrifugation should always occur using sealed centrifuge rotors or cups/buckets. Ideally, rotors and cups should be loaded and unloaded in the BSC. Work with other specimens such as respiratory secretions, stools, or unfixed tissues should be conducted using biosafety level 2 practices and procedures.

For more information concerning safety guidance for research with SARS-CoV-2 and samples from patients diagnosed with COVID-19, please see the following websites:


Centers for Disease Control: https://www.cdc.gov/sars/guidance/f-lab/app5.html

Occupational Safety and Health Administration Universal Precautions: https://www.osha.gov/bloodborne-pathogens#revised_standard