

# Mayo Clinic Model of Care and Research leads to favorable outcomes for patients with COVID-19

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Patients with COVID-19 who received care at Mayo Clinic, whether in the hospital or at home, had outcomes that compared favorably to those reported nationally and internationally. These results demonstrate the value of an integrated, team-based approach to patient care and monitoring, according to a retrospective study of all patients with COVID-19 treated at Mayo Clinic March 1-July 31.

Included in the research during the study period were 7,891 [patients](#) who tested positive for COVID-19 and were treated at Mayo Clinic. Of those patients, 897 required hospitalization—354 in an ICU. An intensive, multilayered approach was used to manage patient care, leveraging clinical trials and available therapies, and using remote monitoring tools for patients before or after hospital care.

Just over 77.5% of hospitalized patients received at least one COVID-19 therapy, such as an

antiviral drug, systemic steroid, immunomodulatory monoclonal antibody or convalescent plasma. Nearly one-quarter of hospitalized patients received two therapies, most commonly a combination of steroids and antiviral medications.

The research, published in *Mayo Clinic Proceedings*, finds that [mortality rates](#) were lower than the national and international averages, and lower than what has been reported in other major studies and expanded-access programs. An overall mortality rate of 1.1% was reported for patients treated at Mayo, with inpatient mortality of 7.1% and ICU mortality of 11.9%.

"COVID-19 patients treated at Mayo Clinic were diagnosed, monitored and treated with a team-based approach that was designed to ensure that all patients were treated with the most up-to-date, evidence-based, treatments available," says Andrew Badley, M.D., chair of Mayo Clinic's COVID-19 Research Task Force. "By including subject matter experts from a range of disciplines in our treatment teams, and having those treatment teams reviewing the care and progress of each patient daily, our outcomes were better than what had previously been reported."

Most patients who were cared for at Mayo Clinic were not part of the first wave of infections. "Mayo physicians and scientists were able to learn from the experience of other hospitals and adopt the [best practices](#) learned into our treatment paradigms," Dr. Badley says. "That knowledge, together with the increased access to experimental agents, is likely the major reason for the outcomes we observed."

Most cases occurred June 1-July 31, accounting for 87.5% of total cases during the study period. Mayo Clinic locations across the Upper Midwest saw 59%

of patients with COVID-19, with Mayo Clinic in Arizona seeing 23% and Mayo Clinic in Florida seeing 18%. Of the patients treated, 674 were under 18. Only 13 pediatric patients were admitted to the hospital, and no deaths were reported. Given the low rates of complications, pediatric patients were excluded from subsequent analyses.

Among the 7,217 adults included in the analysis, 87.6% did not require hospitalization. Of these outpatients, 30 died, primarily in hospice or skilled nursing facilities. The median age of adult patients treated at Mayo was 59. There were slightly more male patients than female patients, and male patients were more likely to require hospitalization. The most common comorbidities were [chronic obstructive pulmonary disease](#), 11.8%; diabetes, 9.4%; renal disease, 6.5%; and peripheral vascular disease, 6.2%.

The article notes that COVID-19 mortality rates have declined as the pandemic has progressed, with one possible factor being that testing initially was prioritized for those with specific symptoms and later expanded to asymptomatic people. "The support offered by Mayo Clinic labs to allow us to start aggressive testing was critical to these outcomes," says John O'Horo, M.D., a Mayo Clinic infectious diseases physician and the study's first author. "We were able to stand up drive-thru and hospital testing quickly, identify COVID-19 patients earlier, and initiate care in a more timely manner than would have otherwise been possible."

Another factor contributing to these favorable outcomes was Mayo Clinic's outpatient COVID-19 management teams and its remote monitoring capabilities, says Dr. Badley. These programs allow for high-risk patients to be monitored at home, and detect complications or clinical deterioration early, so that hospital admission and advanced care can be provided in a timely manner. "The high proportion of our patients who were able to participate in these programs was likely a contributor to our outcomes," he says.

Another possible contributor to improved outcomes was the growing acceptance of masks and social distancing, which reduce exposure and potentially reduce the severity of illness.

Mayo Clinic has been a leader in caring for, researching and testing patients with COVID-19 since the pandemic began, with teams developing experimental therapies and clinical trials. Mayo Clinic Laboratories has developed highly accurate diagnostic and antibody tests for COVID-19, and has performed more than 2 million molecular tests for patients. Mayo Clinic was the lead institution for the national Expanded Access Program for Convalescent Plasma, which led to emergency authorization for the use of plasma to help critically ill patients.

As the pandemic continues to surge in many parts of the country, Dr. Badley says the lessons learned by Mayo Clinic and other health care providers in the early phase continue to guide [patient care](#) and research going forward.

"The volume of patients that we now are seeing in the Midwest and nationally is vastly greater than it was last spring and summer, but all of the processes that we have put in place and have optimized are continuing," Dr. Badley says. "As this global pandemic approaches its first anniversary, we should be heartened by the advances that have been made in testing, diagnosis and management of COVID-19 and its complications. By adopting best practices learned from all institutions, we can continue to improve outcomes for patients."

Provided by Mayo Clinic

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