The following summarizes key literature pertaining to treatment of COVID-19 during the past week.

*Note: some of the data discussed below is in pre-print form that has not yet been peer-reviewed. We have noted some discrepancies in some of this data, and final printed versions may ultimately differ from what is shown here. We will update as soon as possible; caution is advised when interpreting this literature.

**Remdesivir Access:** After initial announcements that availability would be through Amerisource Bergen to a list of hospitals pre-determined by FEMA, the Department of Health and Human Services (HHS) released an updated Saturday morning that supplies would be distributed directly to state health departments, the Veterans Health Administration and the Indian Health Service. More information about current allocations are available at this [link](https://dason.medicine.duke.edu/summary-recent-clinical-data-use-hydroxychloroquine-and-chloroquine-covid-19).

**Hydroxychloroquine Data:** Please note, the summary table has also been updated and is available at this link: https://dason.medicine.duke.edu/summary-recent-clinical-data-use-hydroxychloroquine-and-chloroquine-covid-19


This was a retrospective observational analysis of 1376 patients admitted to New York Presbyterian-Columbia University Irving Medical Center in New York City with a positive PCR test for SARS-CoV-2 from March 7 to April 8, 2020 and data available up to April 25, 2020. Patients were mostly ≥ 60 years of age (60%), male (57%) and Hispanic (51%); 36% had diabetes mellitus and 32% had hypertension. The clinical guidelines at the hospital recommended hydroxychloroquine (600 mg BID for 1 day, followed by 400 mg daily for 4 days) for moderate-to-severe disease, defined at O₂ <94% on room air. Azithromycin (500 mg x1, followed by 250 mg daily for 4 days) was also recommended up until 4/12/2020. 58.9% of patients received HCQ, and 41.1% did not (“standard of care”, SOC). The primary study outcome of interest was intubation or death. This was experienced by 32.3% of HCQ treated patients, and 14.9% of SOC patients (unadjusted hazard ratio, 2.37 (95% CI 1.84-3.02)). Several methods were undertaken to adjust for factors associated with receiving HCQ vs SOC treatment. After adjustment, there was no benefit of either HCQ (HR 1.04 (95% CI 0.82-1.32)) or azithromycin (HR 1.03 (95% CI 0.81-1.31)) over SOC for the composite outcome of intubation or death. Limitations of the study include retrospective nature of the study, non-controlled design, and potential inability to control for factors related to the treatment received. In addition, some patients were still intubated/hospitalized at the time the data were analyzed. Time to viral clearance or other outcomes such as adverse events were not reported.


This was a retrospective analysis of COVID-19 treatment among 166 patients age 18-85 admitted to a single hospital in Madrid Spain. Patients over 85 were excluded from the study as they were not treated with off-label medications based on a risk-benefit analysis. 123 patients received hydroxychloroquine (HQ) while 43 did not (“standard of care”, (SOC)) due to risk of underlying comorbidities or drug shortages. 50% of patients had “mild” COVID -19 (no hypoxia/respiratory insufficiency), while 29% had “moderate” and 21% “severe”. Cardiomyopathy and dementia were significantly more common in the SOC group, and patients in the SOC group with severe COVID-19 were significantly older than those who were treated with HCQ.
HQ was given as a loading dose of 800 mg followed by 400 mg, and then 400 mg daily. All patients may have received other therapies such as lopinavir/ritonavir, interferon-β, steroids and or tocilizumab, but this is not otherwise described. Length of stay did not differ between the treatment groups. At hospital discharge, death had occurred in 22% of HCQ and 48.8% of SOC patients. Mean survival was longer in larger “mild” COVID-19 group treated with HCQ (14.4 vs 8.2 days), but not significantly different between the two treatment groups in the smaller “moderate” and “severe” strata. In a multivariate analysis, significant predictors of death included cardiomyopathy, dementia, lymphopenia, elevated CRP, and treatment with hydroxychloroquine. Limitations of the study include retrospective nature of the study, non-controlled design, potential inability to control for factors related to the treatment received, lack of analysis of other treatments received by the patients or HCQ dose scheme. Time to viral clearance or other outcomes such as worsening of disease/ventilation or adverse events were not reported.


This was a prospective observational study at 12 Chinese hospitals evaluating outcomes of patients who received chloroquine (CQ) therapy compared to historical controls. Patients were mostly <= 65 years of age (96%) with predominantly moderate COVID-19 (92%) and few had comorbidities such as hypertension (17%) or diabetes (2.4%). 233 patients who received CQ were enrolled, 33 withdrew due to AEs (N=8) or were excluded from the analysis for other reasons, leaving 197 CQ patients. The CQ group was initially planned to be compared to patients receiving lopinavir/ritonavir (LPV/RTV) or a combination of CQ and LPV/RTV, but patients ended up receiving a myriad of other agents such as arbidol and traditional Chinese medicine, so the analysis compared CQ to these other agents as “standard of care” (SOC). CQ was given as 500 mg BID but in one hospital they used a lower dose (500 mg QD) in 29 patients that were also included. Approximately two-thirds of CQ patients started treatment >7 days from symptom onset, compared to 46% of SOC patients. Time to undetectable RNA was shorter with CQ: median of 3 days CQ vs 9 days SOC; median difference -5.4 days (95% CI -6 to -4 days). Duration of fever was shorter with CQ 1.2 vs 1.9 days SOC, difference 0.6 (CV 0.5, 0.8) days. Length of hospitalization was no different (19 days CQ vs 20 days SOC). Mortality and ICU admission were not different between groups- none died or were admitted to the ICU in either group. Total adverse events were similar (26.9% CQ vs 32.4% SOC). Adverse events seemed to be lower with the CQ dose (3.5%) in the one hospital compared to full dose CQ (31%) used at the other hospitals, with similar viral clearance. Differences in viral clearance with CQ were not apparent in the subgroup of patients with severe disease (only 2% of patients in the study), patients from Guangong treated >14 days from symptom onset, or in 1 of the 12 hospitals.

Limitations of this study include the lack of an intent to treat analysis, the post-hoc nature of many of the analyses and multiple subgroup analyses, many protocol amendments made while the study was underway, and lack of randomization.