

Summary of Major Literature Related to COVID-19 (Week of March 15–21)

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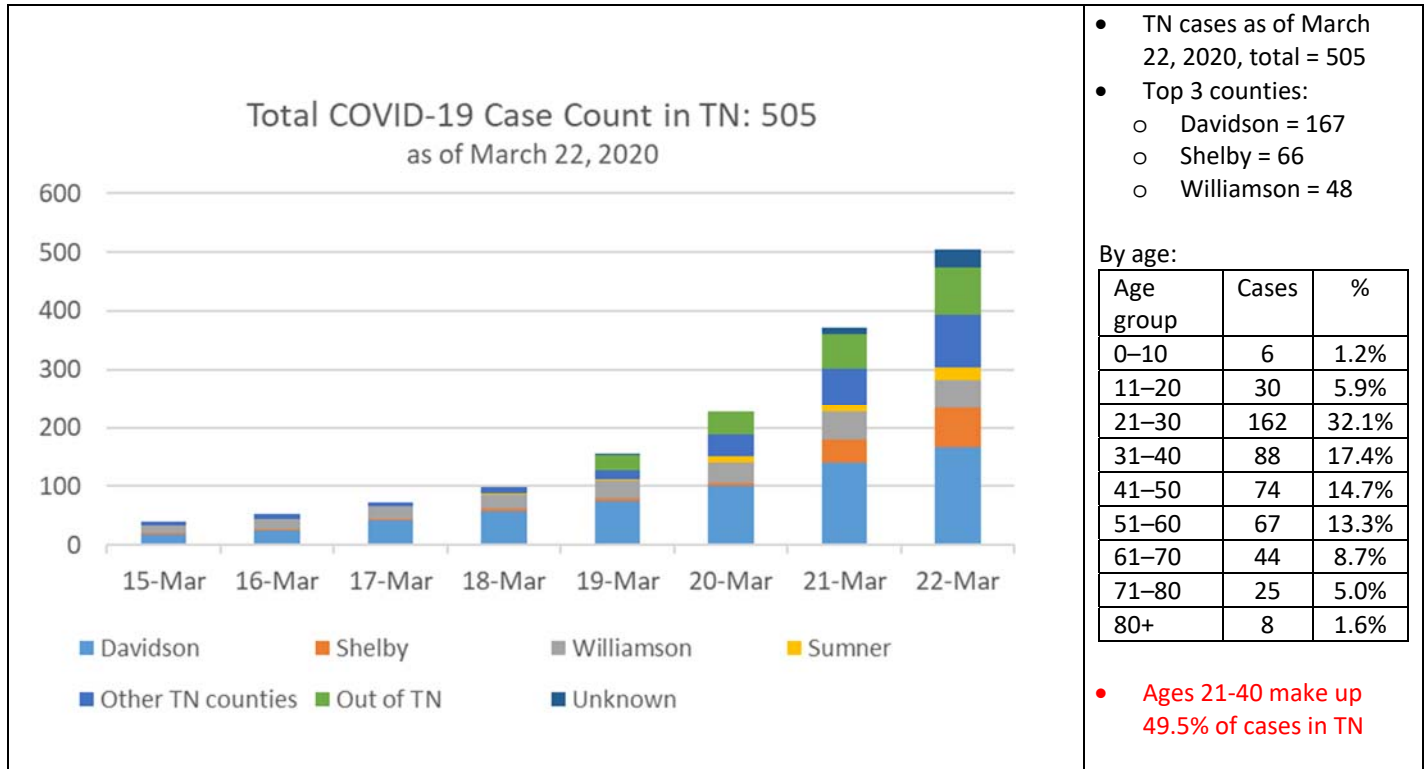
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***This is informational and not intended to create variance from VUMC policies/guidance.**

EPIDEMIOLOGY

Tennessee and Nashville

- Governor Lee suspends in-person dining and lifts alcohol regulation in TN on March 22, 2020.
- Mayor Cooper issues “safer at home” order for Davidson County beginning March 23 for 14 days.

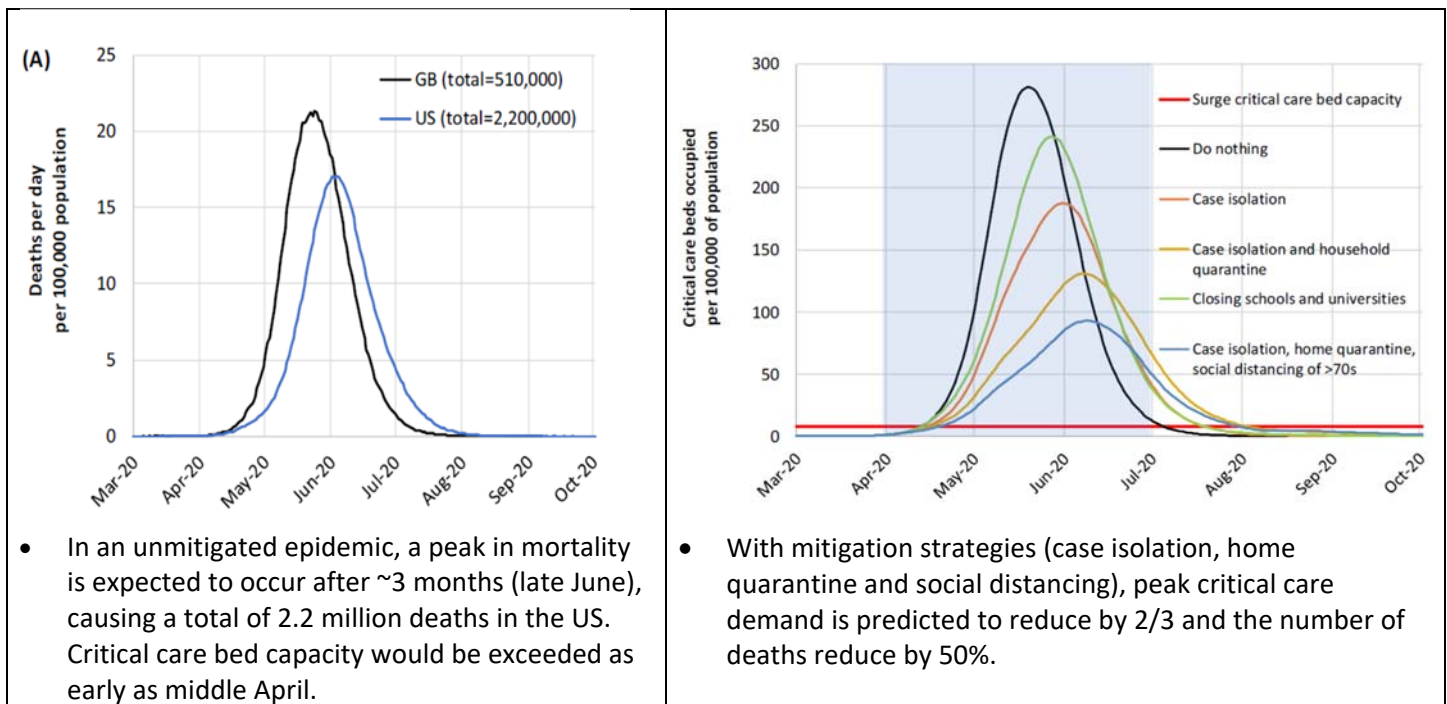


United States: Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19). CDC COVID-19 Response Team. March 18, 2020. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm>

- Based on 4,226 laboratory-confirmed cases reported to the CDC as of March 16, the case-fatality ranged from 10% to 27% among persons aged ≥ 85 , 4% to 11% among persons aged 75–84 years, 3% to 5% among persons aged 65–74 years, 1% to 3% among persons aged 55–64 years, <1% among persons aged 20–54 years, and no fatalities among persons aged ≤ 19 years.
- However, **hospitalization and ICU admission occurred in persons of any age**. The hospitalization rate was 31% to 70% among persons aged ≥ 85 , 31% to 59% among persons aged 75–84 years, 29% to 44% among persons aged 65–74 years, 20% to 30% among persons aged 45–64 years, 14% to 21% among persons aged 20–44 years, and <5% among persons aged ≤ 19 years.

Impact of non-pharmaceutical interventions to reduce COVID-19 mortality and healthcare demand. Imperial College COVID-19 Response Team. March 16, 2020. DOI: <https://doi.org/10.25561/77482>

- Provided below are predicted numbers under the scenarios with or without mitigation.



Potential male-female differences

COVID-19 Situation Update for the WHO European Region. [Data for the week of 9-15 March 2020.](#)

COVID-19 and Italy: What next? Remuzzi. Lancet. March 13, 2020. DOI: [10.1016/S0140-6736\(20\)30627-9](#)

COVID-19 in Korea: <https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030>

- Data from China, Italy and South Korea suggest men may have higher fatality rate and perhaps a slightly higher incidence than women.
- In Italy, through March 11, 80% of deaths were in men and 20% in women, with an older median age for women (83.4 years for women vs 79.9 years for men).
- In South Korea, women account for 61% of confirmed cases and 47% of deaths; fatality rate is 1.6% in men and 0.9% in women.
- A WHO report on cases from the European region noted that of 11,228 COVID-19 infections with known data, 57% were in men. **Of 1,032 deaths for which records were available, 72% were in men.**
- Published data on sex differences in incidence or fatality not yet available for the US but will be updated once available.

TESTING/DIAGNOSIS

Detection of SARS-CoV-2 in Different Types of Clinical Specimens. Wang et al. JAMA. March 11, 2020. DOI: [10.1001/jama.2020.3786](#)

- 1070 specimens collected from 205 patients in China
- Bronchoalveolar lavage fluid, sputum, and nasal swabs showed the highest positive rates (63% to 93%). Positive test rate was 32% for pharyngeal swabs, indicating **nasal swabs may reduce false negative.**

Relation Between Chest CT Findings and Clinical Conditions of COVID-19 Pneumonia: A Multicenter Study.

Am J Roentgenol. March 3, 2020. DOI: [10.2214/AJR.20.22976](#)

- CT may be helpful in early screening of highly suspected cases to reduce false negative.
- Most patients with COVID-19 pneumonia have GGO (ground-glass opacities) or mixed GGO and consolidation and vascular enlargement in the lesion.

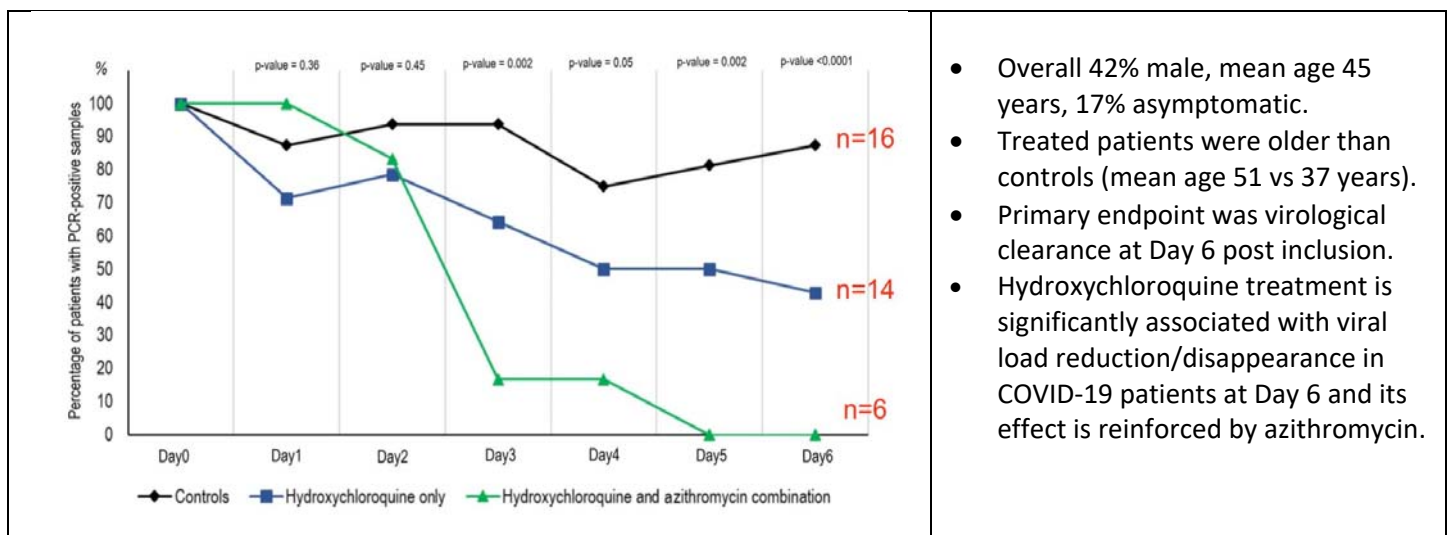
TREATMENT

A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19. Cao et al. NEJM. March 18, 2020. DOI: [10.1056/NEJMoa2001282](https://doi.org/10.1056/NEJMoa2001282)

- A randomized, controlled, open-label trial of 199 seriously ill patients with Covid-19.
- Lopinavir–ritonavir treatment added to standard care was not associated with accelerated clinical improvement or reduced mortality.

Hydroxychloroquine and azithromycin as a treatment of COVID-19. Gautret et al. International Journal of Antimicrobial Agents. March 20, 2020. DOI: [10.1016/j.ijantimicag.2020.105949](https://doi.org/10.1016/j.ijantimicag.2020.105949)

- A non-randomized, open-label trial of 42 patients; data from 36 patients were analyzed.
- **Limitation:** small sample size, NOT a double-blinded randomized clinical trial.
- **Limitation:** six hydroxychloroquine-treated patients were lost to follow up and excluded from the analysis, including three who were transferred to ICU and one who died.
- Large-scale, double-blinded, randomized trials have been initiated.



- Overall 42% male, mean age 45 years, 17% asymptomatic.
- Treated patients were older than controls (mean age 51 vs 37 years).
- Primary endpoint was virological clearance at Day 6 post inclusion.
- Hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients at Day 6 and its effect is reinforced by azithromycin.

BIOLOGY

The proximal origin of SARS-CoV-2. Andersen et al. Nature Med. March 17, 2020. DOI: [10.1038/s41591-020-0820-9](https://doi.org/10.1038/s41591-020-0820-9)

- SARS-CoV-2 is the 7th coronavirus known to infect humans; SARS-CoV, MERSCoV, and SARS-CoV-2 can cause severe disease, whereas HKU1, NL63, OC43 and 229E are associated with mild symptoms.
- Notable features of the SARS-CoV-2 genome: 1) optimized for binding to the human receptor ACE2; 2) a polybasic cleavage site at the spike protein S1–S2 junction, which may enhance cell-cell fusion.
- Theories of SARS-CoV-2 origins: 1) natural selection in an animal host before zoonotic transfer; 2) natural selection in humans following zoonotic transfer; 3) selection during passage.