**Efforts to develop prophylaxis clinical studies and prioritize in healthcare workers**

General

* Epigenetic control of the ACE2 gene might be a target for prevention and therapy in COVID-19.
* Risk-adapted treatment strategy may be a useful tool for the treatment of COVID-19 patients.
  + A recent study shows that this strategy is associated with significant clinical manifestations alleviation and clinical imaging recovery.
* Harmonization of clinically heterogeneous endpoints within and between trials can lead to faster decision making and better management of COVID-19.
* Early detection of elevations in serum CRP, combined with a clinical COVID-19 symptom presentation may be used as a surrogate marker for presence and severity of disease.
* There are multiple parameters of the clinical course and management of the COVID-19 that need optimization. A hindrance to this development is the vast amount of misinformation present due to scarcely sourced manuscript preprints and social media.
* Emphasize evidence-based medicine to evaluate the frequency of presentation of various symptoms to create a stratification system of the most important epidemiological risk factors for COVID-19.
* Vitamin C (L-ascorbic acid) has a pleiotropic physiological role, but there is evidence supporting the protective effect of high dose intravenous vitamin C (HDIVC) during sepsis induced ARDS.
  + Ongoing RCT at Zhongnan Hospital (NCT04264533): Aims to evaluate the clinical efficacy and safety of vitamin C in viral pneumonia from SARS-CoV-2.
* Vitamin D may also have a protective effect. Vitamin D is known to mitigate the scope of acquired immunity and regenerate endothelial lining.

α1-AR antagonists

Preliminary findings offer a rationale for studying α1-AR antagonists in the prophylaxis of patients with COVID-19 cytokine storm syndrome (CSS) and acute respiratory distress syndrome (ARDS).

1. Mortality of COVID-19 seems driven by acute respiratory distress syndrome (ARDS)
2. Emerging evidence suggests that a subset of COVID-19 is characterized by the development of a CSS.
3. Pre-clinical mouse data suggests that α1-AR antagonists may be a candidate for the treatment of COVID-19.
4. Using the Truven Health MarketScan Research DataBase, male men who were prescribed α1-AR antagonists in the previous year had lower odds of the composite of need for invasive mechanism ventilation and mortality compared to non-users (AOR 0.80, 95% CI 0.69-0.94, p=0.008)
5. Prospective, randomized clinical trials of α1-AR receptor antagonists are needed to further assess efficacy in preventing CSS and reducing mortality in COVID-19

Relative Risk of COVID-19 for Patients Varies by Prognostic Factors:  
COVID-19 patient outcomes vary by patient characteristics and are important considerations for COVID-19 prophylaxis. Potential important factors include interleukin-6, B lymphocyte proportion, lactate, and CD8+ T cells.

1. Observational study examined 55 consecutive COVID-19 patients to understand features of COVID-19 patients with and without pneumonia, SARS-CoV-2 transmissibility in asymptomatic carriers, and factors predicting disease progression.
2. Compared with patients without pneumonia, those with pneumonia were 15 years older and had a higher rate of hypertension, higher frequencies of having a fever and cough, and higher levels of interleukin-6 (14.61 vs. 8.06pg/mL, P=0.040), B lymphocyte proportion (13.0% vs.10.0%, P=0.024), low account (<190/Î¼L) of CD8+ T cells (33.3% vs. 0, P=0.019).
3. Multivariate Cox regression analysis indicated that circulating interleukin-6 and lactate independently predicted COVID-19 progression, with a hazard ratio (95%CI) of 1.052 (1.000-1.107) and 1.082 (1.013-1.155), respectively.
4. Conclusion: The epidemiological features are important for COVID-19 prophylaxis. Circulating interleukin-6 and lactate are independent prognostic factors. CD8+ T cell exhaustion might be critical in the development of COVID-19.

**Queries:**

Q1: preventative clinical studies for COVID-19

Q2: anti-viral prophylaxis studies for COVID-19

Q3: prophylaxis studies for COVID-19