American Journal of
Epidemiology & Public Health

Short Communication

A Scientific and Easy-to-Understand Guideline for the Prevention and Early Treatment of COVID-19 -

Ki Yeob Jeon*

Hopkins Jeonil Internal Medicine Clinic, Jeonju, 54836, the Republic of Korea (South Korea)

***Address for Correspondence:** Ki Yeob Jeon, Hopkins Jeonil Internal Medicine Clinic, Jeonju, 54836, the Republic of Korea (South Korea), Tel: +821-077-015-621; ORCID ID: orcid.org/0000-0003-4385-0702; E-mail: kjeon@hanmail.net

Submitted: 16 July 2020; **Approved:** 30 July 2020; **Published:** 01 August 2020

Cite this article: Jeon KY. A Scientific and Easy-to-Understand Guideline for the Prevention and Early Treatment of COVID-19. American J Epidemiol Public Health. 2020;4(3): 075-080. https://dx.doi.org/10.37871/ajeph.id34

ISSN: 2644-0032

ISSN: 2644-0032

Dr. Sean O'Leary and the American Academy of Pediatrics (AAP) are recommending school children to be physically present in school from this fall. In an interview with the New York Times, Dr. O'Leary explained: "Kids seem to be both less likely to catch the infection and less likely to spread the infection. We have to balance (Covid-19) with the overall health of children. Every district is making major consideration for its teachers, trying to figure out how to keep them safe. If they are taking as many precautions as they can, I think the risk is pretty low" [1]. But many people and many federal and state health officials are at odds with the AAP's interim guidance on school reopening. There were more than 273 comments over the interview, and some worried about opening schools in this pandemic and felt that "guidance for reopening should come from an expert group" [1]. There is an abundance of articles about COVID-19, but many of them are competing with each other over the issue of treatment for COVID-19, and it is very hard not only for the general population but also for doctors to clearly identify the beneficial methods to handle COVID-19. In this context, a scientific and easy-to-understand guideline is needed to clear the way to help children physically attend schools and to prepare parents to be physically and mentally equipped to overcome COVID-19.

To overcome the pandemic of COVID-19, a combination of pharmacologic and nonpharmacologic preventive methods and adequate treatment methods to cure COVID-19 patients would be needed. As for the non-pharmacologic prevention, the CDC recommendations [2] can be classified into 6 categories as seen in Table 1 by the COVID-19 evidences of the Theodor Roosevelt aircraft carrier [3] and of the WHO-funded study [4]. If you follow the CDC guidelines, you can reduce the possibility of transmission significantly by 28.6% or by 34.2%. (facial mask 11.6% + social distancing 9.4% + avoiding contaminated places 7.6% = 28.6%, $p < 0.05$) [3] or (facial mask 14.3% + wearing eye protection 10.6% + social distancing 10.2% = 35.1%, $p = 0.09$) [4]. In addition, Hand washing and Work station cleansing can provide additional 41% risk reduction if more people participate in these prevention methods.

The most effective pharmacologic prevention would be COVID-19 vaccines. However waiting for COVID-19 vaccines cannot be the only hopeful strategy for reopening schools this fall, when considering the fact that among half of the 228 ELISA positive participants, only a few participants had detectable neutralizing antibodies, which would inhibit SARS-CoV-2 infections, over 40 days after onset of symptoms [3], and that the increasing D614G mutated strain of SARS-CoV-2 showed the Spike variant, which may require some modifications of 10 vaccine candidates which used only classic D614 Spike protein segments [5]. The D614G mutated strain of SARS-CoV-2 is more active in colon (x2.4), lung (x4.6), and liver (x7.7) than the original SARS-CoV-2 virus is [5], thus persons with gastrointestinal diseases, lung diseases, and liver diseases can be high risk patients.

The epidemiologic report of the China CDC showed an overall case fatality rate of 2.3%, mild to moderate cases of 80.9%, severe cases of 13.8%, critical cases of 4.7%, and death occurred only in critical cases [6]. The severity of symptoms variable of the China CDC was changed to Tiers in the Triangle of Tiers of COVID-19 USA (Figure 1). Triangle of Tiers of COVID-19 USA has 7 tiers: Tier 1: Expired in the Critical Cases (with ECMO or invasive oxygenations for respiratory failure, septic shock/cytokine storm, and/or multiple organ dysfunction/failure); Tier 2: Survived in the Critical Cases; Tier 3: Severe Cases (with dyspnea, respiratory frequency ≥ 30/min, blood oxygen saturation ≤ 93%, PaO2/FiO2 ratio < 300, non-invasive oxygenation, and/or lung infiltrates > 50% within 24-48 hours), Tier 4: moderate cases(Some are hospitalized, but mostly are not hospitalized, tolerable dyspnea and no-oxygenation is needed, lung infiltration < 50%, 24 ≤ respiration rate ≤ 29 /min, SpO2 ≥ 94%, and/or with risk factors), Tier 5: mild cases (No need for hospitalization, fever, diarrhea, bizarre headache, lethargy, loss of appetite, shortness of breath, strange heart and/or peripheral muscle aches and pains, or coughing, respiration rate < 24 and without risk factors). The prevalence rate of COVID-19 (population of COVID-19 patients and SARS-CoV-2 carriers/ total population of the United States) can be calculated based upon the number of confirmed COVID-19 cases (4,032,430), number of deceased cases (144,167), and number of recovered persons (1,233,269) [7]: the estimated prevalence rate (rate of persons who have SARS-COV-2 viruses in the body on/as of July 24th, 2020) of the United States (total population of 330,000,000) is about 0.00805 (or 2,654,994/330,000,000) i.e., 805 persons/100,000 persons as of July 24th, 2020 [7]. The case mortality rate is about 3.58%. Statistically speaking, about 2,123,995 (or 2,654,994x0.8) persons belong to Tier 4 or Tier 5. The rest 530,999 (or 2,654,994x0.2) persons may belong to Tier 1, Tier 2, or Tier 3, and are being admitted to a hospital on the July 24th, 2020 to be treated by dexamethasone injections, High Dose Intravenous Vit C (HDIVC) injections, convalescent sera, or remdesivir as seen in Figure 1 (Please note that the numbers in the figure 1 are cumulative numbers until July 24th, 2020.). China CDC showed the rates among the Critical Cases and expired: Critical Cases and survived: Severe cases: Mild to Moderate cases were 2.3%: 2.4%: 13.8%: 80.9% in China [6]. When those rates are applied to the COVID-19 data of the United States, it becomes heavy (▲) on the top of the triangle, and it could be 3.58%: 3.5%: 12.9%: 80% in the United States. It means that the Unites States had not done well in the COVID-19 task and lots of Americans faced preventable premature deaths. It looks like at least 1~1.5% of the COVID-19 cases or 60,000 (or 4,032,430 x 0.015) persons died prematurely. Tier 6 is Undiagnosed Cases (but will be SAR-CoV-2 positive if tested), and Tier 7 (Normal population without SARS-CoV-2 viruses, and/or could have convalescent antibodies to SARS-CoV-2). The "Testing Data in the US" of the CDC shows 10% positive test rate of the total reported tests [2], and this means the Undiagnosed Tier 6 cases (who will be positive if tested) could be 10% (or 33,000,000) of the total population (of 330,000,000). The confirmed 4,032,430 cases (as of July 24, 2020, [7]) is just one-nineths (1.22%/10%) portion of an iceberg of the undiagnosed (Tier 6) SARS-CoV-2 infection. Then the real case mortality rate would be less than 1%. The true cumulative case mortality rate would be 0.44% (or 144,167/33,000,000) and less severe than we thought.

In the treatment aspects, most reported COVID-19 articles mainly dealt with approximately 20% of the total COVID-19/SARS-CoV-2 persons who were admitted to hospitals (i.e., the patients of Tier 1, Tier 2, Tier 3, and some portions of Tier 4), but they neglected the major remnant of 80% of SARS-CoV-2 positive cases who showed no symptoms or showed only mild to moderate symptoms (i.e., lots of patients of Tier 4 and all the patients of Tier 5). We need to look at the Tiers of patients who participated in a study to delineate the differences of and/or to interpret correctly the study results.

RECOVERY Collaborative Groups found out that dexamethasone reduced mortality by 11.7% (from 40.7% to 29.0%, $p < 0.001$) for the patients of Tier 1 & Tier 2, and by 3.5% (from 25.0% to 21.5%, $p < 0.002$) for the patients of Tier 3, but was not effective for the patients of Tier 4 [8]. For the patients from Tier 1 to Tier 4, remdesivir significantly shortened the recovery by 4 days (from 15 days to

ISSN: 2644-0032

Table 1: A scientific and easy-to-understand guideline for the prevention and early treatment of COVID-19: a combination of pharmacologic and nonpharmacologic preventive methods.

Contacts between SARS-CoV-2 negative persons, , Contacts among 992 persons in 1,000 persons [7]			**Possible Transmission Rate is 0 (Zero) percent.**			
Non-pharmacologic Prevention			Pharmacologic Cocktail Prevention			
Six Categories of CDC Recommendations	Contacts by 8 SARS-CoV-2 positive persons in 1,000 persons [7]	Possible Reduction of the Transmission Rate to normal persons without SARS-CoV-2,	A cocktail of oral medications [17]	No contact with nor high- risk	Probably Contacted with , or inmates/ workers of a large facility or volunteers/ workers High-risk persons for	Became SARS-CoV-2 Positive or have symptoms after contact with SARS-CoV-2 positive
(1) ☞ Wearing facial mask		Reduction of transmission by 11.6% ($p < 0.05$) [3] Or by 14.3% ($p = 0.09$) [4]	Vit C	●	●	●
				(Reduces 7.8 % of ICU stay in diverse kinds of ICU conditions) [12,17]		
(2) ☞ Wearing Eye protection		Reduction of transmission by 10.6% ($p = 0.09$)[4]	Vit D	●	●	●
				(Reduces CRP and adaptive immunity to reduce complications by 50%) [13],[17]		
(3) ☞ Social distancing of 6 feet		Reduction of transmission by 9.4% ($p < 0.05$) [3], 10.2% ($p < 0.02$) [4]	Zn	●	●	●
				(Makes 55% less likely to die when added to HCQ + AZM) [16]		
(4) ☞ Avoiding contaminated places		Reduction of transmission by 7.6% ($p < 0.05$) [3]	HCQ	–	●	●
					(Hazard ratio reduction by 66%) [15]	
(5) ☞ Hand washing, (6) ☞ Work station cleansing		There is a tendency to 41% reduction of transmission [3] (No statistical Significance)	AZM for 5 days	–	–	● 5% Additional hazard ratio reduction [15]
As of July 24, 2020, the United States has the total mortality rate of COVID-19 of 3.58% and the prevalence rate of 0.00805 i.e. 805 persons/100,000 persons or 8 persons/ 1,000 persons [7].		If people stick to this guideline, and if we can reduce the hazard ratio of COVID-19 by just 30% every 15 days, the hazard ratio will be 0.118 in the end of 3 months compared to the current hazard of 1(one)). The United States can reduce the total mortality rate of COVID-19 from 3.58% [7] further to about 2% and the prevalence rate from 0.00805 i.e. 805 persons/100,000 persons [7] further to 0.001 (or even to 0.000950), i.e. 100 persons/100,000 persons (or even to 95 persons/ 100,000 persons) in three months.				

*Legend: Schematic figures were adopted from the Coronavirus Disease 2019 website of the CDC [2].

: COVID-19 patients or SARS-CoV-2 carrier persons, : Normal person without SARS-CoV-2, ●: Recommend, – : Controversial to recommend, Zn: zinc, HCQ: Hydroxychloroquine, AZM: Azithromycin.

*Possible population size of SARS-CoV-2 positive persons in every 1,000 persons was calculated based on the information of the Johns Hopkins University on July 24, 2020 [7]: Current population of COVID-19 and SARS-CoV-2 carriers = 4,032,430 Confirmed cases – 1,232,269 Recovered -144,167 Deaths = 2,654,994 persons (who have SARS-CoV-2 viruses in the body on/as of July 24th, 2020) in the United States of about 330,000,000 persons. Estimated Current Prevalence Rate (the rate of persons who have SARS-CoV-2 viruses in the body on/as of July 24th, 2020) of the United States = 0.00805 (or 2,654,994/330,000,000) i.e., 805/100,000 persons. The case mortality of COVID-19 of the United States is 144,167 /4,032,430 = 0.0358, i.e. 3.58%.

*An example case of South Korea as of July 16, 2020 [7]: Current COVID-19 cases and SARS-CoV-2 carriers in South Korea Confirmed COVID-19 (13,612 persons) - Deceased (291 persons) - Recovered (12,396 persons) = 925 persons. Estimated Prevalence Rate of South Korea of total population of about 52,000,000 persons = 925 / 52,000,000 = 0.0000178. i.e. less than 2/100,000 persons. The case mortality of COVID-19 of the Republic of Korea (South Korea) is 291 /13,612 = 0.0213, i.e. 2.13%.

11 days, $p < 0.001$), but it could not reduce the mortality rate ($p > 0.05$ or 95% CI 0.47 ~ 1.04) [9]. (For the classification of the study-participated patients, the study used the Ordinal Scale of the Adaptive COVID-19 Treatment Trial. Ordinal Scale 8 is equivalent to Tier 5, Ordinal scale 5 & 6 to Tier 4, Ordinal scale 3 & 4 & 7 to Tier 3, Ordinal scale 2 to Tier 2, and Ordinal scale 1 to Tier 1. But there are no Ordinal scales equivalent to Tier 6 and Tier 7) [9]. Convalescent sera (Con Sera) showed encouraging results for the patients from Tier 1 to Tier 3: three recovered and two stabilized among five patients at Shenzhen Third People's Hospital; and three patients recovered and seven were improved among 10 patients at Wuhan, China [10]. Recently an antibody "Cocktail" neutralized the SARS-CoV-2 virus both in vitro and with hamsters [11].

Daegu in South Korea and Wuhan in China were endemic areas of COVID-19. Truckload Vitamin C was used in those areas and Shanghai Expert Group reported that 50 patients in Tier 3 and Tier 4 were treated with High Dose Intravenous Vit C (100 mg/Kg over 24 hours or 200mg/Kg in "cytokine storm"), who shortened hospital stays by three to five days over control groups [12].

ISSN: 2644-0032

*Tiers	7 tiers	Cumulative Numbers until July 24, 2020		Possible Treatments
Tier 1	Critical Cases (Expired)	**144,167 (3.5752%)	**4,032,430	Dexa, HDIVC, Remde, Con Sera
Tier 2	Critical Cases(Survived)	***141,135 (3.5%)		
Tier 3	Severe Cases	***521,183 (12.9248%)		Dexa, HDIVC, Remde, Con Sera
Tier 4	Moderate Cases	***3,225,944 (80%)		HCQ + AZM+ Zn + Vit C + Vit D
Tier 5	Mild Cases			
Tier 6	Undiagnosed Cases	****33,000,000 (10% of population)		Vit C, Vit D, Zn + (HCQ)
Tier 7	Total Population	330,000,000		

Figure 1: The triangle of tiers of COVID-19 U.S.A.

Oral Cocktail: Vit C + Vit D + Zn (Zinc) + and/or without **HCQ** (Hydroxychloroquine) + and/or without **AZM** (Azithromycin). **Tx**: Treatment. **Dexa**: Intravenous Dexamethason, **HDIVC**: High Density Intra-Venous Vit C; **Remde**: Remdesivir intravenous injection; **Con Sera**: Convalescent Sera injections.

***Tiers**: The severity of symptoms variable of the China CDC was changed to **Tiers**. **Tier 1**: Expired in the Critical Cases (with ECMO or invasive oxygenations for respiratory failure, septic shock/cytokine storm, and/or multiple organ dysfunction/failure); **Tier 2**: Survived in the Critical Cases; **Tier 3**: Severe Cases (with dyspnea, respiratory frequency ≥ 30/min, blood oxygen saturation ≤ 93%, PaO2/FiO2 ratio < 300, persons in non-invasive oxygenation, and/or lung infiltrates > 50% within 24-48 hours), **Tier 4**: moderate cases(Some are hospitalized, but mostly are not hospitalized, mild dyspnea but no-oxygenation is needed, lung infiltration < 50%, 24 ≤ respiration rate ≤ 29/ min, SpO2 ≥ 94%, and/or with risk factors), **Tier 5** : mild cases (No need for hospitalization, fever, diarrhea, bizarre headache, lethargy, loss of appetite, shortness of breath, or coughing, respiration rate < 24 and without risk factors). **Tier 6**: Undiagnosed Cases (but will be SAR-CoV-2 positive if tested), and **Tier 7** (Normal population without SARS-CoV-2 viruses, and/or could have convalescent antibodies to SARS-CoV-2).

**: COVID-19 Data of the Johns Hopkins University as of July 24, 2020 [7]. The numbers in Figure 1 is total cumulative ones until July 24, 2020. Please do not confuse with the numbers of sick persons on/as of July 24th, 2020.

***: A possible figure of the United States if the China CDC case rates are applied to the COVID-19 Data of July 24, 2020 [7]. Please do not confuse with the numbers of sick persons on/as of July 24th, 2020.

****: The 10% of positive test result of "Testing Data in the U.S." of the Coronavirus Disease 2019 (COVID-19) of the CDC as of July 24, 2020 [2] was applied to a possible total population of the United States of 330,000,000 persons.

The top of the Triangle of Tiers of COVID-19 U.S.A. is heavier (▲) than that of the China: the case mortality rate of the U.S.A. as of July 24, 2020 is 3.58% [7] and that of China is 2.3% [6]. It looks like many people (at least 1~1.5% of the COVID-19 cases or 60,000 persons) died prematurely because the American society neglected scientific & medical evidences and chose political correctness instead. It may cost more lives if the society does not will to change its rules to cope with COVID-19.

RECOVERY Collaborative Groups found out that dexamethasone reduced mortality by 11.7% (from 40.7% to 29.0%, $p < 0.001$) for the patients of Tier 1 & Tier 2, and by 3.5% (from 25.0% to 21.5%, $p < 0.002$) for the patients of Tier 3, but was not effective for the patients of Tier 4 [8]. For the patients from Tier 1 to Tier 4, Remdesivir significantly shortened the recovery by 4 days (from 15 days to 11 days, p<0.001), but it could not reduce the mortality rate ($p > 0.05$) [9]. Convalescent sera (Con Sera) showed encouraging results for patients from Tier 1 to Tier 3 [10,11]. Shanghai Expert Group reported that 50 patients in Tier 3 and Tier 4, who were treated with High Dose Intravenous Vit C, shortened hospital stays by three to five days over control groups [12]. Henry Ford COVID-19 Task Force found out that COVID-19 patients (from Tier 1 to Tier 4) was helped by HCQ or HCQ + AZM medications: in-hospital hazard ratio with HCQ alone was 0.340 ($p < 0.001$) and HCQ + AZM was 0.294 ($p < 0.001$) [15]. A retrospective study done at the New York University Langone Health hospitals showed that the addition of Zn to HCQ + AZM regimen significantly decreased mortality or transition to hospice by 55% ($p < 0.002$) compared to HCQ + AZM therapy for COVID-19 patients of Tier 1, Tier 2, Tier 3, and some of Tier 4 who were hospitalized [16].

A Cocktail of oral medications (Vit C + VIt D + Zn + HCQ + AZM) is recommended ASAP (as soon as possible) for patients from Tier 3 to Tier 5. Table 1 recommendations could be applied for persons of Tier 6 and Tier 7 to reduce the total hazards of COVID-19.

Related with mean Vit D serum levels from Tier 1 to Tier 5 patients, it was known that countries of high incidence rate and high mortality rate of COVID-19 like Italy, Spain, and UK had lower levels than less severely damaged countries had. Northwestern University study found a significant negative correlation between the mean serum levels of Vit D and the number of COVID-19 cases (-0.443, $p = 0.05$) and another significant negative correlation between the mean serum levels of Vit D and the mortality rate (-0.437, $p = 0.05$) [13].

A case report of a 60-year old woman, who broke out COVID-19 during Hydroxychloroquine maintenance, introduced concerns about the Hydroxychloroquine's role as a prophylactic oral medication against COVID-19 because the case had high concentrations of Hydroxychloroquine in the serum (280 μg/L) and in the saliva (4,890 μg/L) [14]. Paradoxically, however, the report may also present a generalized prophylactic role of, if not complete, Hydroxychloroquine against COVID-19 (for persons from Tier 6 to Tier 7), because it means that there are so many rheumatoid or malaria-related patients maintaining with Hydroxychloroquine over many years without being infected with SARS-CoV-2 that it could become a rare "case report". In addition to the preventive effect of the HCQ, recent research identified the therapeutic effect of it: Henry Ford COVID-19 Task Force found out that HCQ and combination of HCQ +AZM helped COVID-19 patients (from Tier 1 to Tier 4) when they were administered at early stages of patients' admission: overall, in-hospital hazard ratio with HCQ alone was 0.340 ($p < 0.001$), HCQ + AZM was 0.294 ($p < 0.001$), age of over 65 was 2.579 ($p < 0.001$), Caucasian race was 1.738 ($p < 0.001$), chronic kidney disease was 1.699 ($p < 0.001$), and low oxygen saturation < 95% was 1.488 ($p < 0.021$), [15].

Hydroxychloroquine (HCQ) and Zinc (Zn) have the inhibiting action on viral RNA dependent RNA polymerase, and HCQ acts as an ionophore to help Zn come into a cell to make innate and adaptive immune responses [16]. A retrospective analysis of the role of Zn in COVID-19 was conducted at the New York University Langone Health hospitals: the addition of Zn to HCQ + AZM regimen signifi cantly decreased mortality or transition to hospice by 55% (OR 0.449, 95% CI 0.271 ~ 0.744, $p = 0.002$) compared to HCQ + AZM therapy for COVID-19 patients of Tier 1, Tier 2, Tier 3, and some of Tier 4 who were hospitalized [16].

Once a person falls into a pool of SARS-CoV-2 positives, it is hard

ISSN: 2644-0032

to know whether the person will belong to the 80% group (Tier 4 or Tier 5: asymptomatic or mild to moderate symptoms) or to the 20% group (from Tier 1 to Tier 3: ranging from hospital admission to intensive care unit, ICU). This is the moment when a cocktail of oral medications of Vit C, Vit D, Zn (Zinc), Hydroxychloroquine (HCQ), and Azithromycin (AZM) is recommended [17]. A cocktail of oral medications has elements that can, synergistically [15,16] and/or independently [12-14], prevent the replications of SARS-CoV-2 and the progression of the COVID-19 from causing a person to be admitted to a hospital or to an ICU or to be added to the total mortality rate; a cocktail of oral medications can prevent a person from stepping up the Triangle of Tiers of COVID-19 U.S.A. of Figure 1. Hydroxychloroquine was confirmed to be effective in reducing hazard ratio in Tier 3 and Tier 4 patients when taken in the early stages (or as soon as possible) of COVID-19 [15,16]. Indirectly, it was suggested that HCQ could prevent COVID-19 for people (Tier 7), if not complete [14]. If the American society had adopted HCQ therapy or a cocktail of oral medications at the early stages of each Tiers of COVID-19, especially at Tier 3 and Tier 4, it could have saved unnecessary premature deaths of 60,000 persons (1.5% of the confirmed SARS-COV-2 positives). But it neglected scientific & medical evidences and chose political correctness instead. It may cost more lives if the society does not will to change its rules to cope with COVID-19; a Cocktail of oral medications (Vit C + VIt D + Zn + HCQ + AZM) is recommended ASAP (as soon as possible) for patients from Tier 3 to Tier 5, and the table 1 recommendations will be a guide for persons from Tier 6 to Tier 7.

If people decide to stick to a scientific guideline, and if we can reduce the hazard ratio of COVID-19 by just 30% every 15 days, even not by the expected much more advantages as seen in the Table 1 with non pharmacological (28.6%, $p < 0.05$ [3] or 35.1%, $p = 0.09$ [4]) and pharmacological prevention (Vit C + Vit D 50% + Zn 55% + HCQ) [12,13,16] with early treatment (HCQ 66% + additional 5% with AZM, $p < 0.001$) [15], the hazard ratio will be 0.118 in the end of 3 months compared to the current hazard of 1 (one). The United States can reduce the total mortality rate of COVID-19 from 3.58% [7] further to about 2% or even less and the prevalence rate from 0.00805 i.e., 805 persons/100,000 persons [7] further to 0.001 (or even to 0.000950), i.e., 100 persons/100,000 persons (or even to 95 persons/ 100,000 persons) in three months.

A scientific and easy-to-understand guideline for the prevention and early treatment for COVID-19:

1. When you meet a SARS-CoV-2 negative person, (probability of 992/1,000) [7], there is no transmission. But remember that there could be contamination on elevator buttons, benches, or other common items.

2. The high-risk group for original SARS-CoV-2 includes persons over age 65, Caucasians, those with chronic kidney disease, or have a low oxygen saturation (< 95%) [15]. In the future environment of the D614G mutated strain of SARS-CoV-2 [5], persons with gastrointestinal diseases, lung diseases, or liver diseases will be high risk persons. If possible, it is best to abstain from smoking and drinking. Exercise regularly, rest adequately, and take nutritionally well-balanced foods with a cocktail of oral medications.

3. If you follow the CDC guidelines, you can reduce the possibility of transmission significantly by 28.6% [3] or by 35.1% [4]. In addition, Hand washing and Work station cleansing can provide additional 41% risk reduction if more people participate in these prevention methods.

4. Please look at table 1. If you think you are in a group that may contain SARS-CoV-2 carriers, (probability of 8/1,000) [7], take a cocktail of oral medications of Vit C + Vit D + Zn, wear a mask, keep a social distance of 6 feet, and wear a facial protector/goggle. Have a shower and change clothes after returning to your home. Some of you may need your doctor's guidance, when taking a Vit C + Vit D + Zn cocktail of oral medications.

5. If you are a volunteer/worker for COVID-19 persons or a high-risk for COVID-19, if you are an inmate/worker of a large facility such as a nursing home or a prison, or if you suspect that you met a person with SARS-CoV-2, you are recommended to take HCQ (Hydroxychloroquine) because HCQ was proved to reduce the hazard ratio by 66% when you are already with COVID-19 [15] or it provides a partial preventive effect against COVID-10 [14]. But you need to visit or call your doctor and get your doctor's prescription.

6. Even if when you find out that you are SARS-CoV-2 positive or have symptoms (such as fever, diarrhea, bizarre headache, strange muscle pain, lethargy, loss of appetite, shortness of breath, or coughing) after contact with SAR-CoV-2 carriers, don't panic. Keep on oral intake of Vit C + Vit D + Zn and visit your doctor to get your doctor's prescription of HCQ + AZM for 5 days. You can reduce your hazard ratio significantly by 71% (HCQ 66% +additional 5% with AZM) [15].

7. If people stick to this guideline, and if we can reduce the hazard ratio of COVID-19 by just 30% every 15 days, the United States can reduce the total mortality rate of COVID-19 from 3.58% [7] further to about 2% and the prevalence rate from 0.00805 i.e., 805 persons/100,000 persons [7] further to 0.001 (or even to 0.000950), i.e., 100 persons/100,000 persons (or even to 95 persons/ 100,000 persons) in three months.

REFERENCES

1. Sean O'Leary. Why a Pediatric Group is pushing to reopen schools this fall. New York Times. Jun 30, 2020. https://nyti.ms/2Xciula
2. Coronavirus Disease 2019 (COVID-19). CDC. https://bit.ly/3hTeBJT
3. Payne DC, Smith-Jeffcoat SE, Nowak G, Chukwuma U, Geibe JR, Hawkins RJ, et al. SARS-CoV-2 infections and serologic responses from a sample of U.S. Navy Service Members-USS Theodore Roosevelt, April 2020. Morbidity and Mortality Weekly Report, US Department of Health and Human Services/ Center for Disease Control and Prevention. MMWR. 2020; 69: 714-721. https://bit.ly/2P8DLIi
4. Derek K Chu, Elie A Akl, Duda S, Solo K, Yaacoub S, Schünemann HJ, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: A systematic review and meta-analysis. Lancet. 2020; 395: 1973-1987. DOI: 10.1016/S0140-6736(20)31142-9
5. Daniloski Z, Guo X, Sanjana VE. The D614G mutation in SARS-CoV-2 Spike increases transduction of multiple human cell types. 2020. DOI: 10.1101/2020.06.14.151357
6. China CDC. Vital Surveillances: The epidemiological characteristics of

ISSN: 2644-0032

an outbreak of 2019 novel coronavirus diseases (COVID-19)-China, 2020. China CDC Weekly. 2020; 2: 113-122. DOI: 10.3760/cma.j.issn.0254-6450.2020.02.003

7. COVID-19 pandemic in the United States by the Johns Hopkins University. July 24, 2020. https://bit.ly/3flfs4h

8. Horby P, Lim WS, Emberson J, Mafham M, Bell J, Linsell L,et al. Recovery Collaborative Group. Effect of Dexamethasone in hospitalized patients with COVID-19: Preliminary report. June 25, 2020. https://bit.ly/3jUzUN4

9. Beigel JH, Tomashek KM, Dodd LE, Mehta AK, Zingman BS, Kalil AC, et al. Remdesivir for the treatment of Covid-19-preliminary report. NEJM. May 22, 2020. DOI: 10.1056/NEJMoa2007764

10. Cormac Sheridan. Convalescent serum lines up as first-choice treatment for coronavirus. Nature. May 01, 2020. Retrieved on July 25, 2020. https://go.nature.com/3jWDOFh

11. Caffery M. Antibody “Cocktail” could offer potent treatment, prevention of COVID-19. American Journal of Managed Care [AJMC] Newsroom. July 23, 2020. https://bit.ly/2PdbZKA

12. Saul AW. News media attacks Vitamin C treatment of COVID-19 coronavirus: Yet Ascorbate is a proven, powerful antiviral. Orthomolecular Medicine News Service. March 1, 2020. https://bit.ly/30ilU8e

13. Ilie PC, Stefanescu S, Smith L. The role of vitamin D in the prevention of coronavirus disease 2019 infection and mortality. Aging Clin Exp Res. 2020; 32: 1195-1198. DOI: 10.1007/s40520-020-01570-8

14. Ahn BY, Kang CK, Seo JD, Choe PG, Song SH, Park WB, et al. A Case of breakthrough COVID-19 during Hydroxychloroquine maintenance. J Korean Med Sci. 2020; 35: e231. DOI: 10.3346/jkms.2020.35.e231

15. Arshad S, Kilgore P, Chaudhry ZS, Jacobsen G, Wang DD, Huitsing K, et al. Henry ford COVID-19 task force. Treatment with Hydroxychloroquine, Azithromycin, and Combination in patients hospitalized with COVID-19. 2020; 97: 396-403. https://bit.ly/3ggnyg9

16. Carlucci P, Ahuja T, Petrilli CM, Rajagopalan H, Jones S, Rhimian J. Hydroxychloroquine and Azithromycin plus zinc *vs* Hydroxychloroquine and Azithromycin alone: Outcomes in hospitalized COVID-19 patients. July 13, 2020. DOI: 10.1101/2020.05.02.20080036

17. Ki-Yeob Jeon. Problems of not-using Hydroxychloroquine (HCQ) for COVID-19 patients. American J Epidemiol Public Health. 2020; 4: 059-061. DOI: 10.37871/ajeph.id31