

# “ NOVEL COVID 19 CORONA VIRUS”

## PREVENTION & IMMUNITY

### Level 1 :

Prevent the Access of Virus to the Body.

### Level 2 :

Prevent the Entry of Virus inside the Body.

### Level 3 :

Controlling the inflammatory responses and providing the symptomatic relief.

### Level 4 :

Prevention of Replication of Virus in the Body.

### Level 5 :

Taming Down of the Robust Immune Response of the Body.

### Level 6 :

Providing Passive Immunity.

### Level 7 :

Recovery from Life Threatening Complications

### Level 8 :

Active Immunity in the Community

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 1 :

### Prevent the Access of Virus to the Body.

- Disposal or Cleanliness of Fomites.
- Maintain Hygiene (Including Hand Hygiene)
- Use of Masks/Gloves (By Caregivers of Suspected Corona Covid contacts/cases)
- Use of PPE Kits (By Doctors and paramedical staff taking care of suspected/confirmed cases of Corona Covid 19)
- Social Distancing ( By masses to block the transmission Chain)
- Quarantine (Of the Contacts/suspected contacts To block the transmission Chain)
- Isolation (of confirmed cases)

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 2 :

### Prevent the Entry of Virus inside the Body.

- Maintain Hygiene (Including Hand Hygiene)
- Avoid touching Face, Eyes, Nose, Ears with fingers.
- External physical barrier (Masks, Gloves, protective eye wears, PPE wears)
- Strengthening the mucosal barriers (Potential role of Hydration, Vitamin A, and Zinc, though not studied well)

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 3 :

### ***Controlling the inflammatory responses and providing the symptomatic relief:***

- Anti-inflammation (NSAID, Chloroquine, HCQ)
- Antihistamines
- Cough Suppressant
- Bronchodilators
- Maintaining the Innate Immune Response (Vitamin D, Vitamin A, Zinc, Selenium, Thiamine; **Not Studied well**).
- Decreasing the Oxidative Stress and Free Radicals (Vitamin C, Vitamin E; **Not studied well**)

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 4 :

### Prevention of Replication of Virus in the Body.

- Altering the pH inside the cells (Potential role of Chloroquine, HCQ, Vitamin C).
- Blocking the interaction of Virus with ACE 2 Receptors (Proposed role of Chloroquine, HCQ )
- Blocking RNA Polymerase (Potential role of Chloroquine, HCQ, Remdesivir, Favipiravir)
- Binding with M<sub>-pro</sub> enzyme needed for Corona Virus replication (Potential role of Lopinavir, Ritonavir)

**Chloroquine/HCQ is a “Zinc Ionophore”. It increases the level of Zinc inside the cells. The Zinc, then blocks the RNA Dependent RNA Polymerase.**

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 5 :

### *Taming Down of the Robust Immune Response of the Body.*

- Maintaining the Innate Immune Response (Vitamin D, Vitamin A, Zinc, Selenium, Thiamine; **Not Studied well**).
- Decreasing the Oxidative Stress and Free Radicals (Vitamin C, Vitamin E; **Not studied well**)
- Immunomodulation (Chloroquine, HCQ, Azithromycin, Tocilizumab/Altizumab, Leronlimab, Sarilumab)

**Leronlimab has a potential role in controlling the Cytokine Storm (proposed)**

**“ NOVEL COVID 19 CORONA VIRUS”****LEVELS OF DEFENSE AGAINST CORONA COVID 19****Level 6 :*****Providing Passive Immunity***

- Plasma collected from persons who have recovered from Corona Covid 19 that may contain antibodies to Covid 19 **(Trials ongoing)**

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 7 :

### *Recovery from Life Threatening Complications*

- ICU care
- Oxygen
- Fluids and Electrolytes management
- Life Support
- Medicines (as mentioned in previous slides)



# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### Level 8 :

#### *Active Immunity in the Community*

- Immunization (Vaccination) (Not yet available)
- Role of Subclinical population infection to develop “Herd Immunity” can't be ruled out.

# “ NOVEL COVID 19 CORONA VIRUS”

## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### ***Role of Diet***

- Provides Nutrition.
- Provides Vitamins, Minerals, Antioxidants.
- Proteins and minerals provide the building blocks and musculoskeletal reserves.
- Fat stores provide energy reserves to be used during critical conditions.
- Improves Innate Immunity

### ***Role of Exercise/Yoga***

- Gives resilience to the body
- Improves Endurance
- Improves Innate Immunity

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## LEVELS OF DEFENSE AGAINST CORONA COVID 19

### *Role of Sleep*

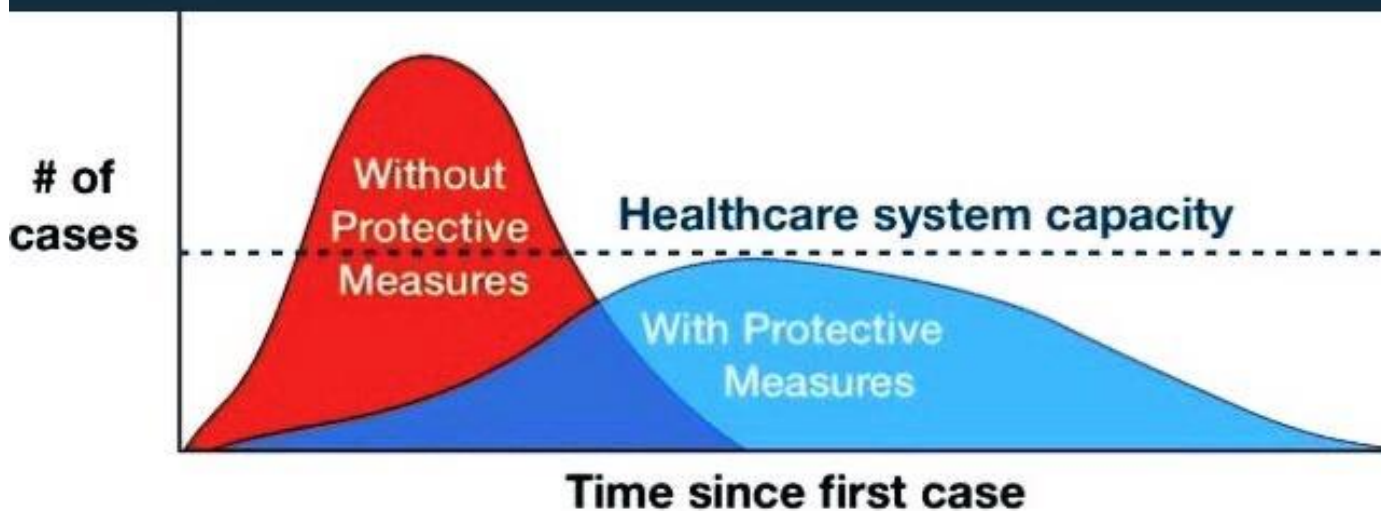
- Replenishes Energy, Neurotransmitters and Hormones.
- Improves Innate Immunity

### *Role of Sunlight*

- Maintain Circadian Rhythm.
- Promotes Vitamin D synthesis in the body.
- Improves Innate Immunity

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## LEVELS OF DEFENSE AGAINST CORONA COVID 19



*Adapted from CDC / The Economist*

### The Keys to win over Corona Covid 19:

- Maintain Hygiene
- Social Distancing (Mass Population)
- Quarantine (For Contacts)
- Isolation (For Cases)



**Dr. Deepak Anjana V. Chaturvedi;**  
**M.B.B.S.; M.D.(Medicine)**

Internal Medicine, Metabolic Medicine  
 Diabetes, Thyroid ,Obesity, Antiaging & Geriatric Consultant.  
 Antiaging Hormones Physician, Wellness & Lifestyle Consultant.  
 Motivational Speaker.

[www.drdeepakchaturvedi.com](http://www.drdeepakchaturvedi.com)

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**+91-9987002515**