

# COVID-19 Therapeutics

Jeya Nadarajah, MD, MSc, FRCPC

Infectious Diseases and Medical Microbiologist

Markham Stouffville Hospital

# Treatments based on Severity

---



**80% = ASYMPTOMATIC TO MILD SYMPTOMS**



**Prevent progression**



**15% = MODERATE ILLNESS  
(HOSPITALIZED, MOST REQUIRE OXYGEN)**



**Prevent progression and modify disease**



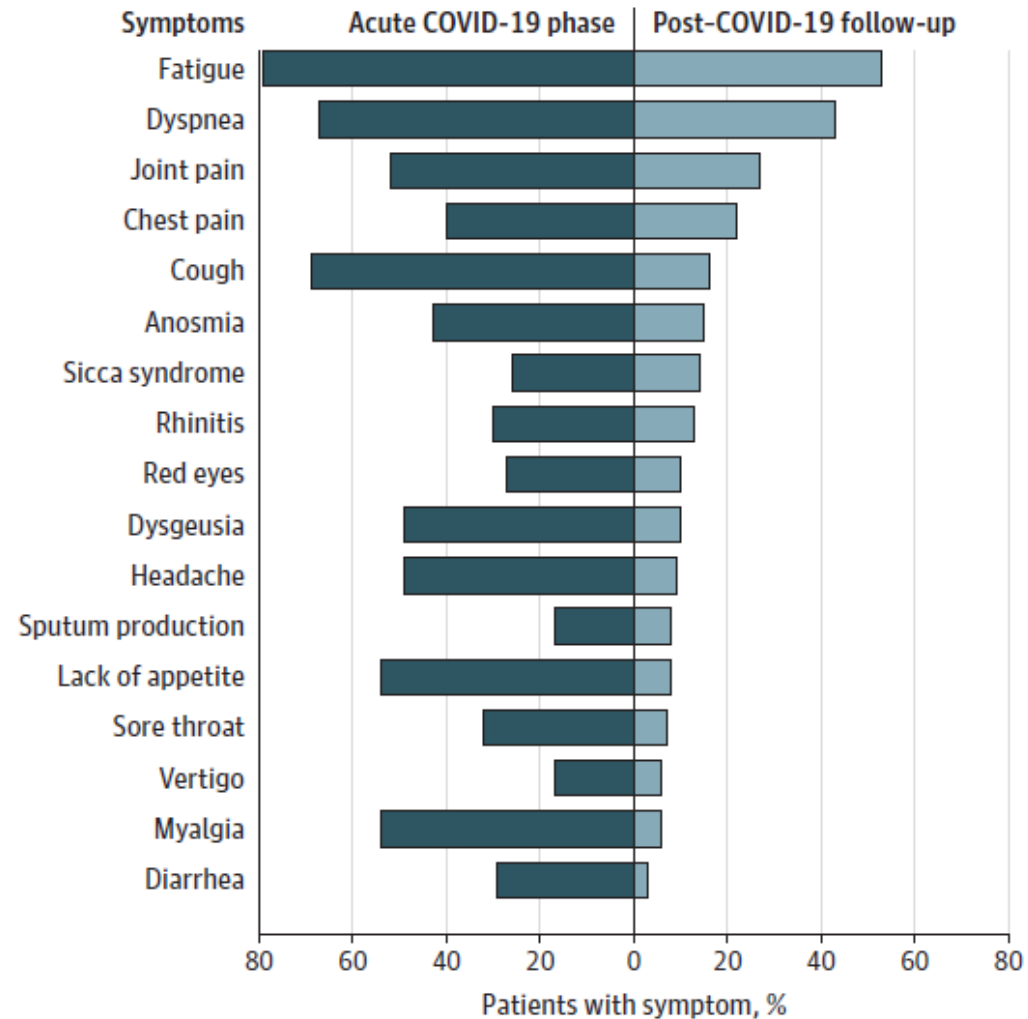
**5% = CRITICALLY ILL (IN ICU)**



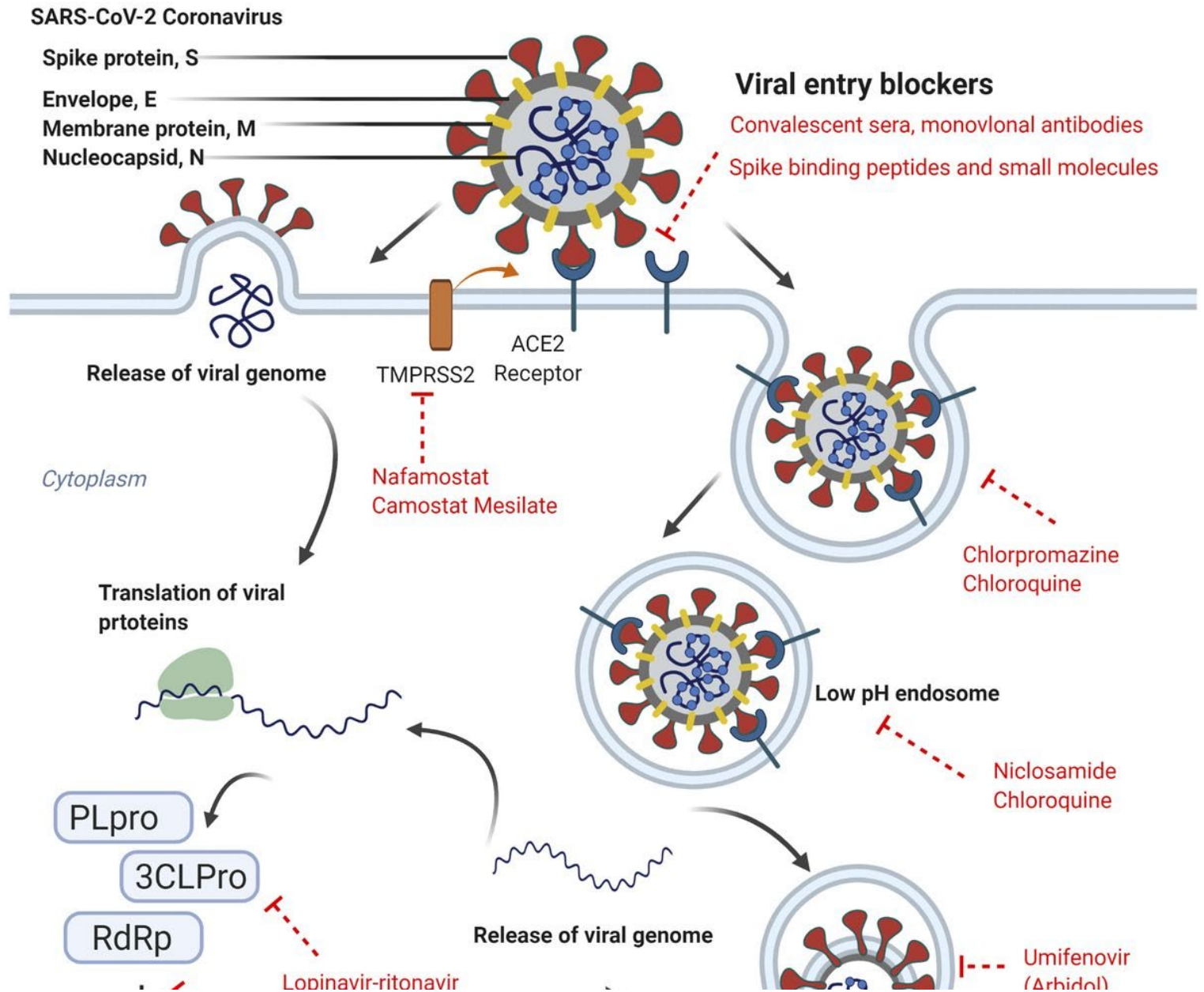
**Supportive Care**

# Persistent symptoms @ day 60

Figure. COVID-19-Related Symptoms

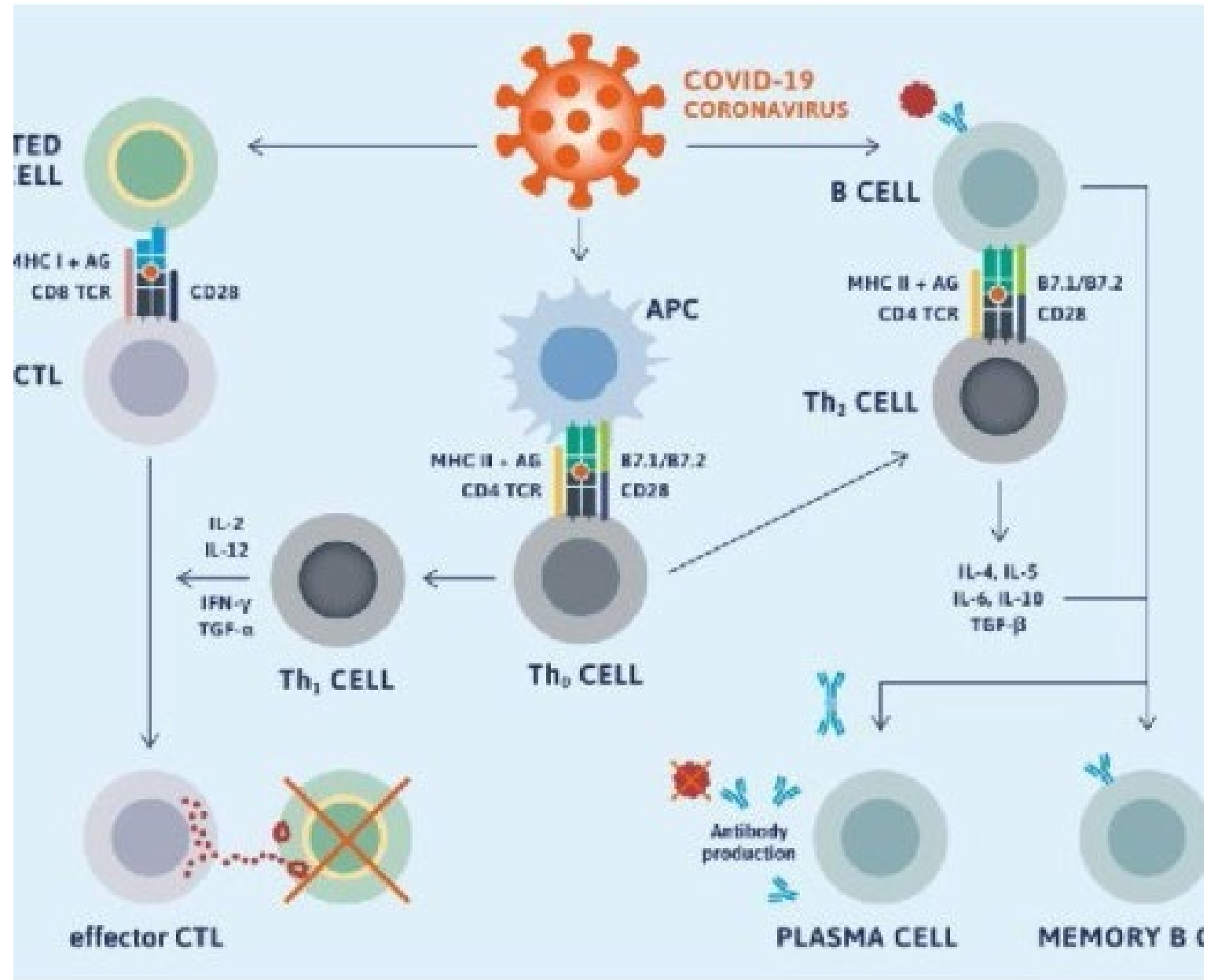


# Target the Virus



Therapy	Findings	Recommendations
<b>Hydroxychloroquine</b>	No benefit on progression of illness or mortality, or as prophylaxis	No longer recommended
<b>Lopinavir/ritonavir</b>	No benefit on duration of illness	Only use in trials
<b>Remdesivir</b>	Possible benefit in moderately ill patients	<u>Recommended</u> – in moderately and critically ill – ideally use as part of a clinical trial CATCO Trial – MSH enrolling
Ivermectin	Early in clinical trials, High toxic dose	Only use in trials (None in Canada)
Favipiravir	Early data – possible benefit but used with other treatment	Only use in trials (Treatment and prophylaxis)
Others	Pre-clinical or early clinical stages	

# Target the Immune System



Therapy	Findings	Recommendations
<b>Convalescent plasma</b> (donor plasma Antibodies from someone who has had COVID-19 given to someone who is sick.	One trial has shown no significant benefit. Ongoing global trials	Only use in trials (CONCOR – MSH enrolling)
Synthesized Antibodies (Bamlanivimab, REGN-COV2)	Early data showing prevention of hospitalization and lower viral load	Only use in trials
<b>Tocilizumab</b> (IL-6 inhibitor)	Mixed results – observational data	Only use in trials
Others: <b>Anakinra, Sarilumab</b> , Cytokine inhibitors, Kinase inhibitors, Complement inhibitors, Interferon + more	Mixed results – observational data	Only use in trials
<b>Dexamethasone</b>	Significant decrease in mortality	<u>Recommended:</u> Use in all hospitalized patients requiring Oxygen therapy

# Adjunctive Therapy

- Vitamin D
  - Theoretical benefit of modulating the immune system
  - Some data showing effect on progression to severe illness
  - Trials starting
- Vitamin C
  - No data for COVID-19
- Zinc
  - One large trial – but no differences observed in treated and untreated groups



# ICU Ventilation/ Oxygenation Therapy



Therapy	Findings	Recommendations
<b>Self-Proneing</b>	Positive benefit in improving oxygenation	<u>Recommended</u> in ICU and non-ICU setting
Non-Invasive Ventilation	Positive benefits in studies – avoid progression to being on a ventilator	<u>Recommended</u> to start early (previously recommended to avoid)
<b>Nitric Oxide</b>	Early in trials	Only use in trials
Isoflurane and other sedating drugs for ventilated patients	Early in trials	Only use in trials
Ifenprodil	Early in trials	Only use in trials

# Conclusions:

- Many therapies directed against COVID-19 are “re-purposed”
- Widely available and used for other purposes
- Most are in clinical or pre-clinical evaluation
- Recommend use ONLY within clinical trials until efficacy proven:
  - Off-label use may result in excess toxicity
  - Critical drug shortages for other illnesses
  - Evidence-based decisions