# NEW ANTI-VIRAL TREATMENTS FOR COVID-19 – PRIMARY CARE

March 1, 2022

London Middlesex
Primary Care Alliance

# LONDON MIDDLESEX PRIMARY CARE ALLIANCE (LMPCA)

**Vision:**

*An inclusive network of primary care providers leading with a unified voice to improve the health of our community*

**Mission:**

*Create a strong and united primary care network to*:

- **Lead** system change utilizing quintuple aim values
- **Drive** health equity and continuous quality improvement for the best possible experience and health outcomes
- **Advance** patient-centred equitable care in partnership with those we serve
- **Improve** integration of primary health services with public health and other social and health care partners

London Middlesex

# OBJECTIVES

**Learn more  about the new anti-virals:**

- Mechanism
- Evidence and Clinical Trials
- Pharmacology
- How to access these drugs for your patients

# OUR SPEAKERS

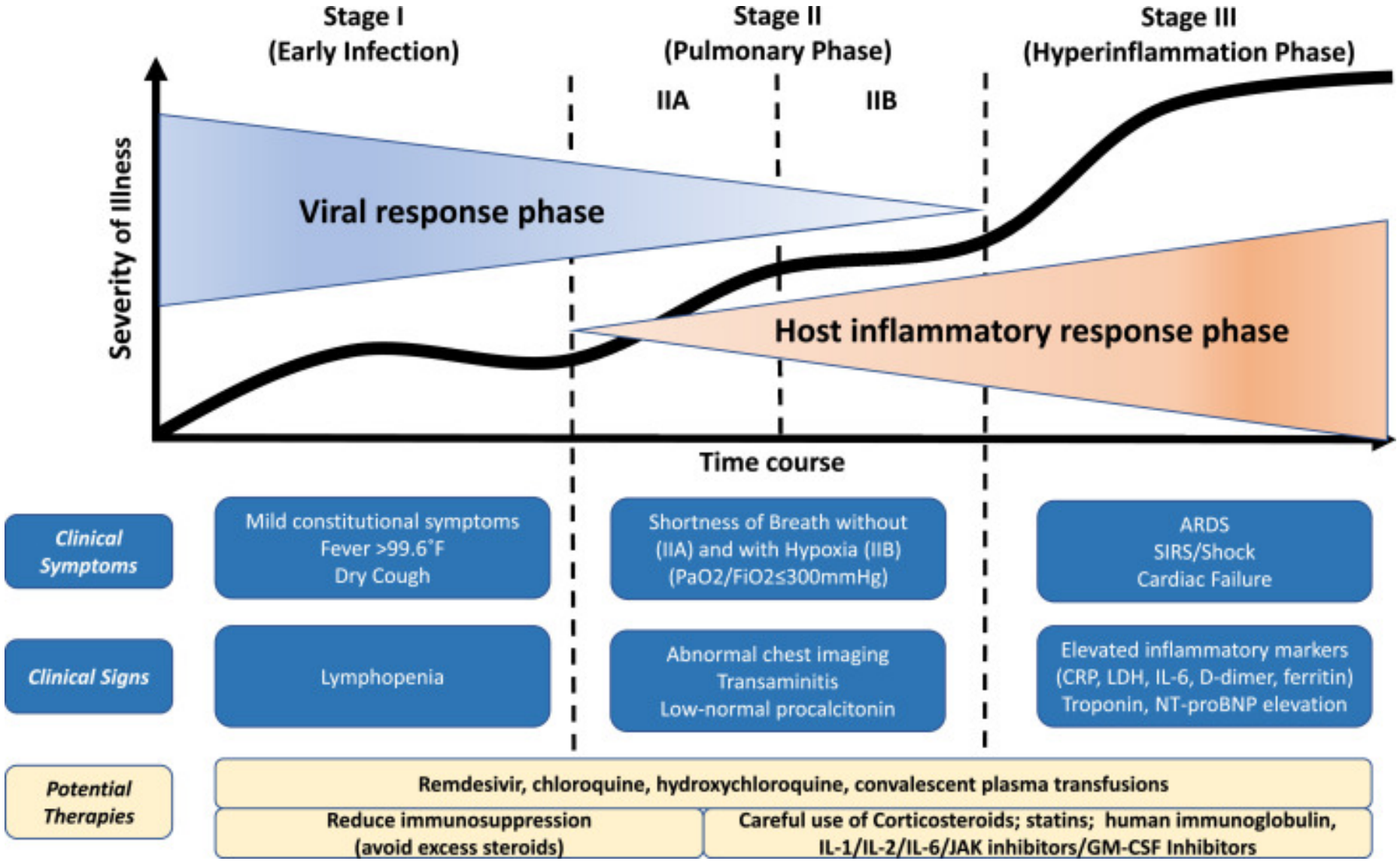
- Dr. Megan Devlin – Infectious Disease Specialist
- Dr. Sameer Elsayed – Infectious Disease Specialist
- Rita Dhami, BScPhm, Pharm.D, RPh
  Clinical Pharmacist , Antimicrobial Stewardship/ Infectious Diseases
- Dr. Gord Schacter, London Middlesex Pandemic Clinical Lead

# AGENDA

| Time | Item | Speaker/Moderator |
|---|---|---|
| 5 min | Welcome and Introduction | Dr. Vineet Nair |
| 5 min | COVID Antiviral Therapy – Introduction to Outpatient COVID treatment | Dr. Megan Devlin |
| 15 min | COVID Antiviral Therapy – Clinical Evidence | Dr. Sameer Elsayed |
| 15 min | Pharmacology of Antiviral Therapy | Rita Dhami |
| 5 min | Eligibility for Antiviral Therapy | Dr. Megan Devlin |
| 15 min | How to get Antiviral Therapy for you patient | Dr. Gordon Schacter |
| 30 min | Q & A Group Forum | All |

# Brief Overview of Outpatient COVID Therapeutics

Dr. Megan Devlin, MD, FRCPC
Assistant Professor, Infectious Diseases
Co-Lead LHSC Urgent COVID Care Clinic (LUC3)
Mar. 1, 2022




Siddiqi and Mehra. J Heart Lung Transplant. 2020 May; 39(5): 405–407.

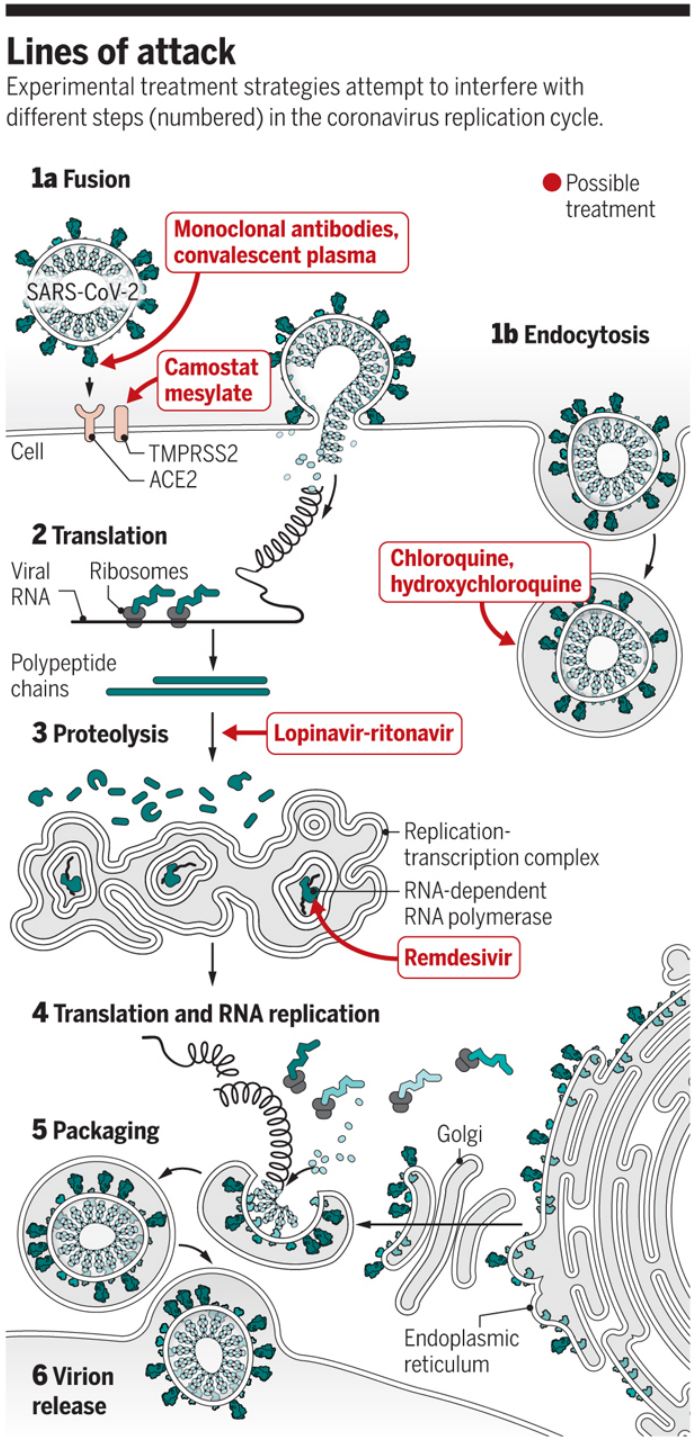
# Prescribing for COVID-19 Outpatients

**Prescribing to reduce ED visits/Hospitalizations/Death**

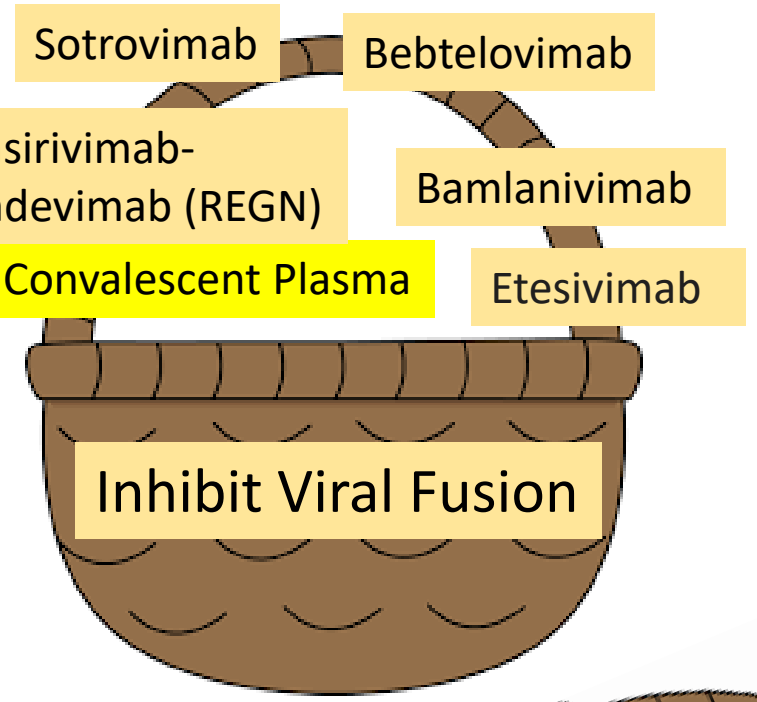
- Viral Effect
  - Oral
    - Nirmatrelvir-ritonavir (Paxlovid)
    - Molnupiravir
  - IV
    - Sotrovimab (monocolonal antibody)
    - Remdesivir (Anti-viral)
- Other
  - Fluvoxamine
  - Budesonide

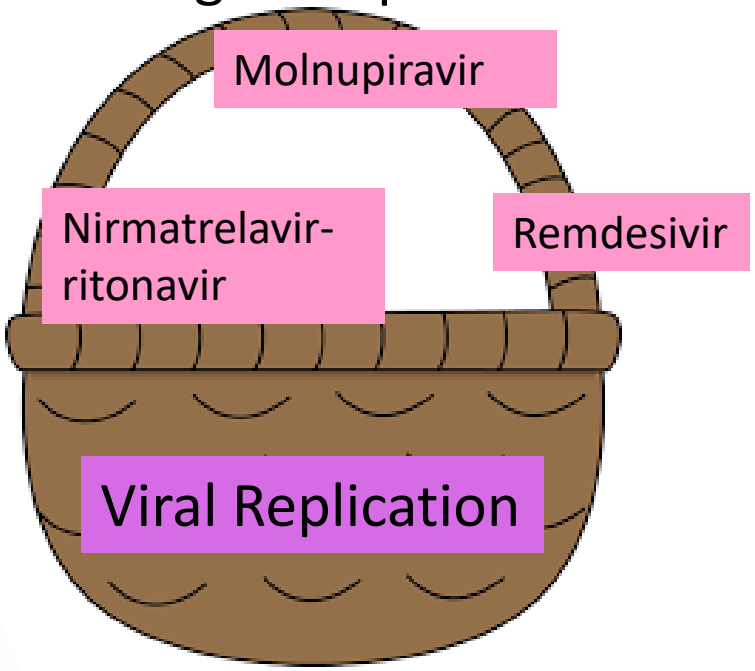
**Prescribing to ameliorate symptoms:**

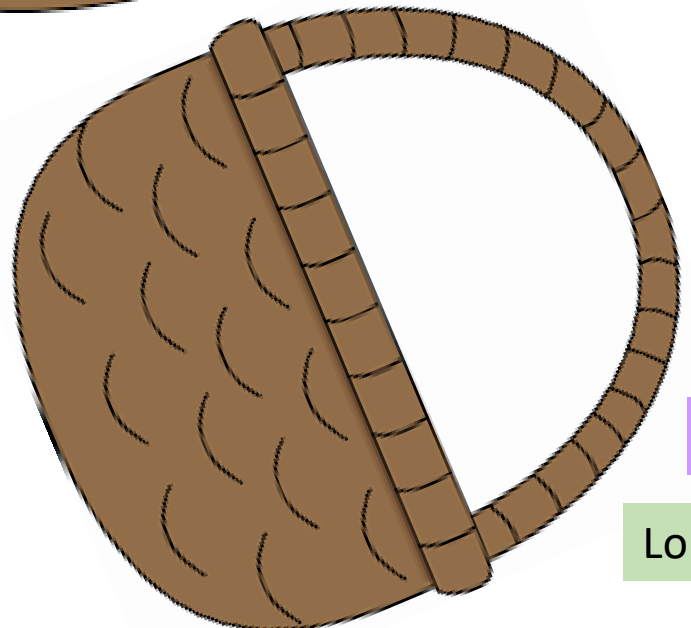
- Nausea:
  - Gravol
  - Ondansetron
- Cough/Dyspnea
  - Cough Syrup
- Headache
  - Acetaminophen/Ibuprofen




# Virus Adhesion/Replication Modulating therapies



Ivermectin

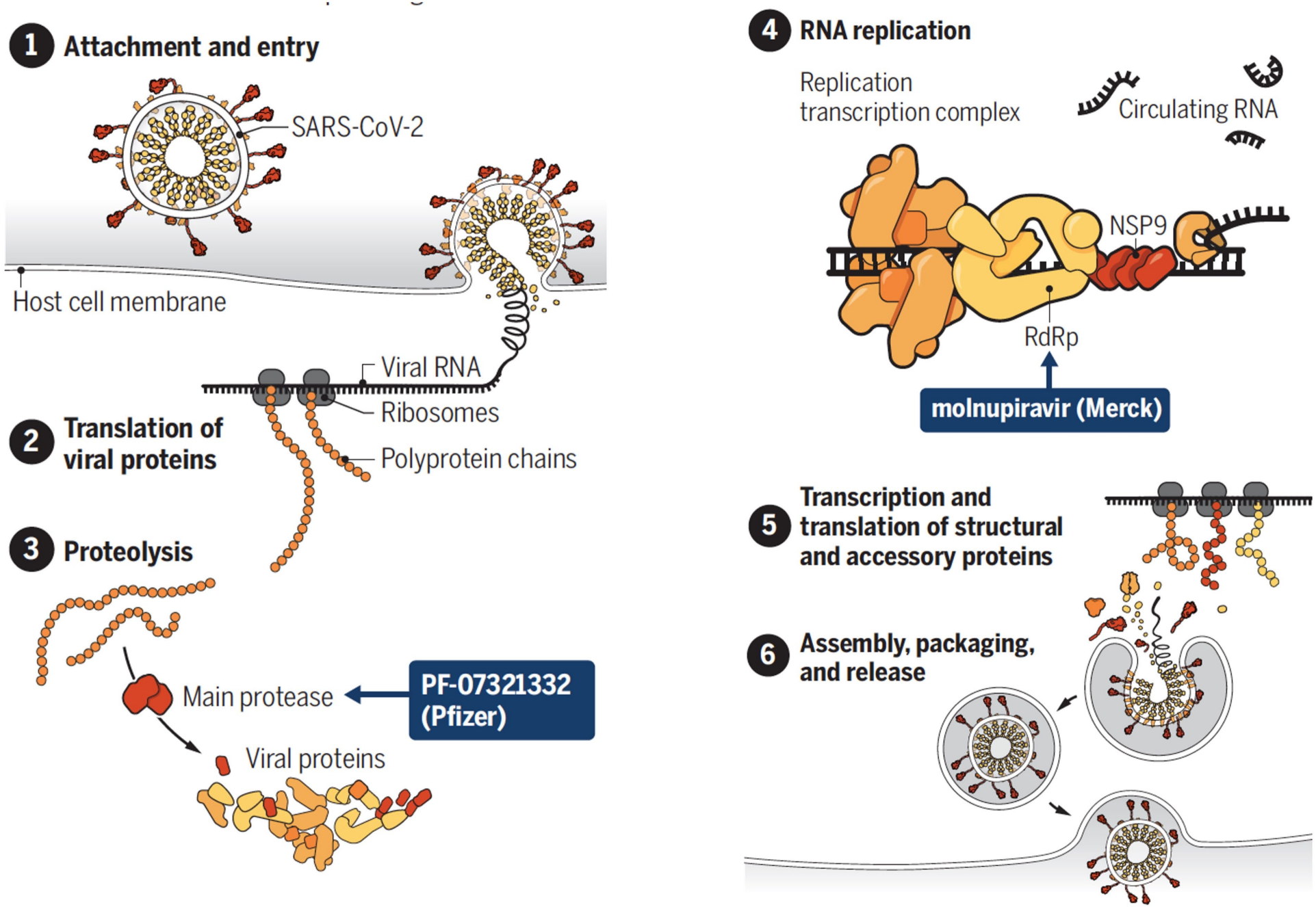
Hydroxychloroquine

Lopinavir-Ritonavir

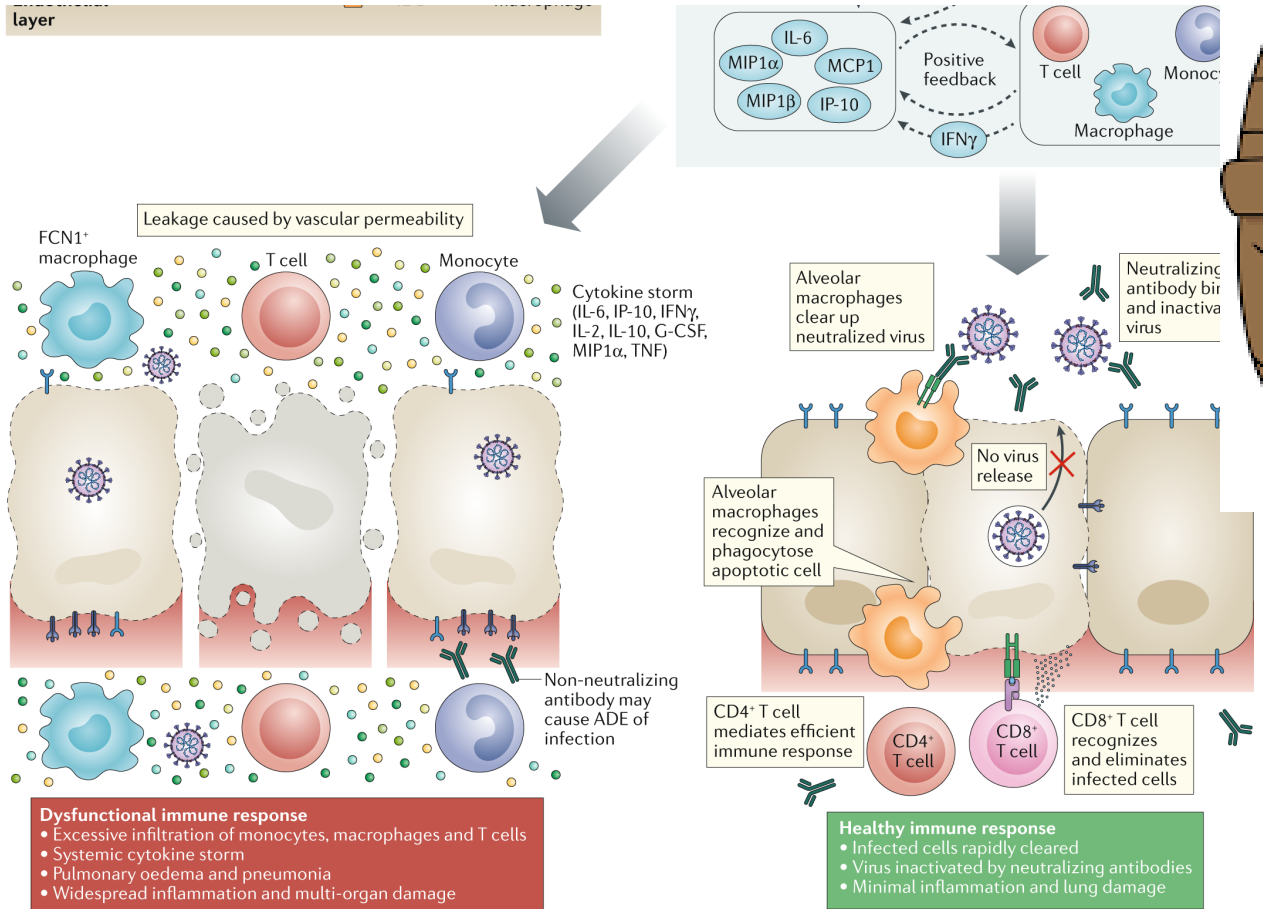
Other:

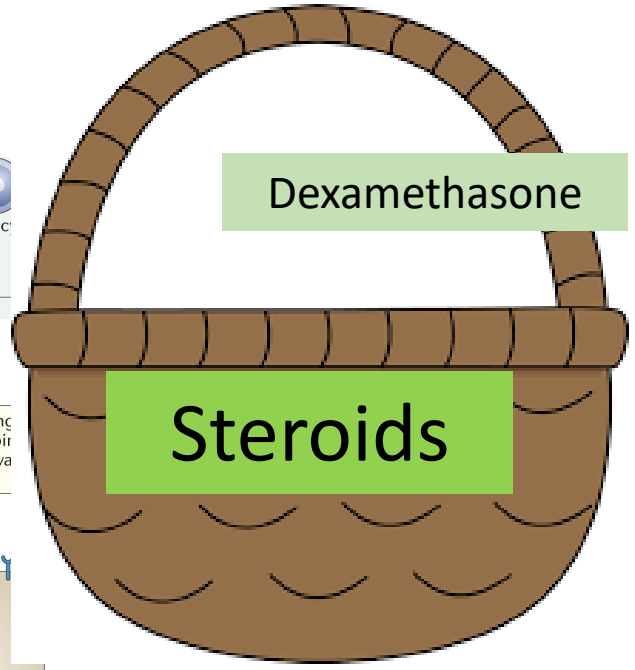
Fluvoxamine

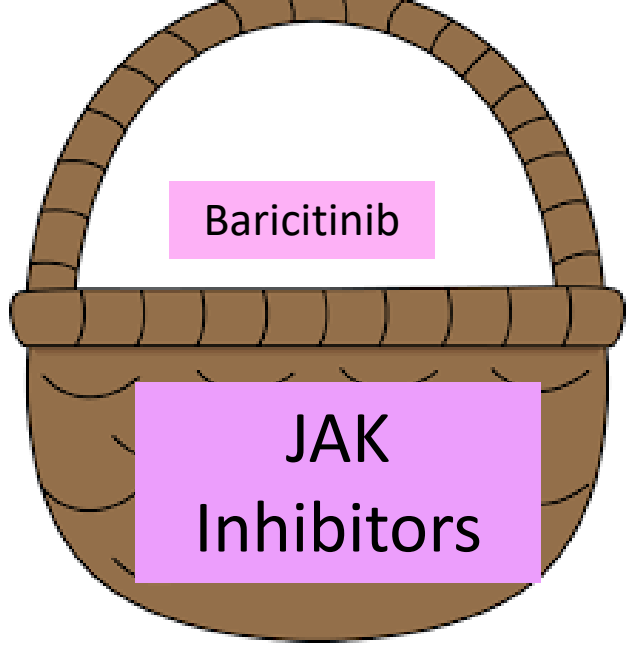
Budesonide

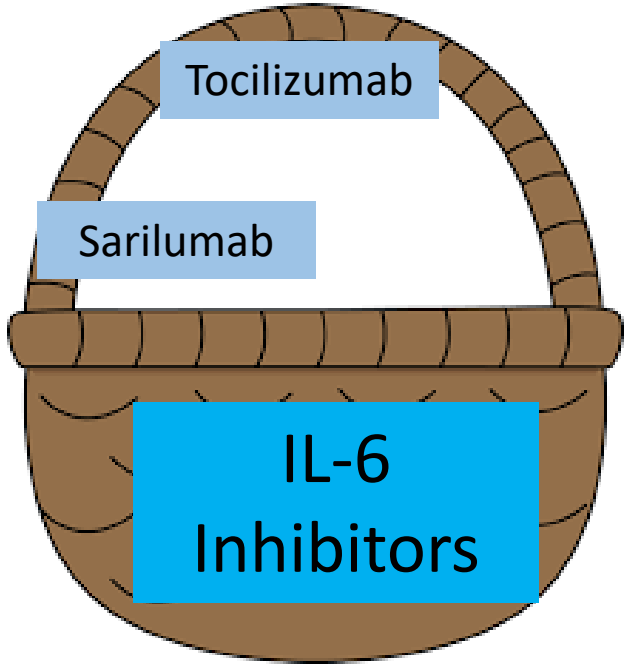

1 Attachment and entry
SARS-CoV-2
Host cell membrane
Viral RNA
Ribosomes
2 Translation of viral proteins
Polyprotein chains
3 Proteolysis
Main protease
PF-07321332 (Pfizer)
Viral proteins
4 RNA replication
Replication transcription complex
Circulating RNA
NSP9
RdRp
molnupiravir (Merck)
5 Transcription and translation of structural and accessory proteins
6 Assembly, packaging, and release

# Immunologic Effect



# Prescribing for COVID-19 Outpatients

**Prescribing to reduce ED visits/Hospitalizations/Death**

- Viral Effect
  - Oral
    - Nirmatrelvir-ritonavir (Paxlovid)
    - Molnupiravir
  - IV
    - Sotrovimab (monocolonal antibody)
    - Remdesivir (Anti-viral)
- Other
  - Fluvoxamine
  - Budesonide

**Prescribing to ameliorate symptoms:**

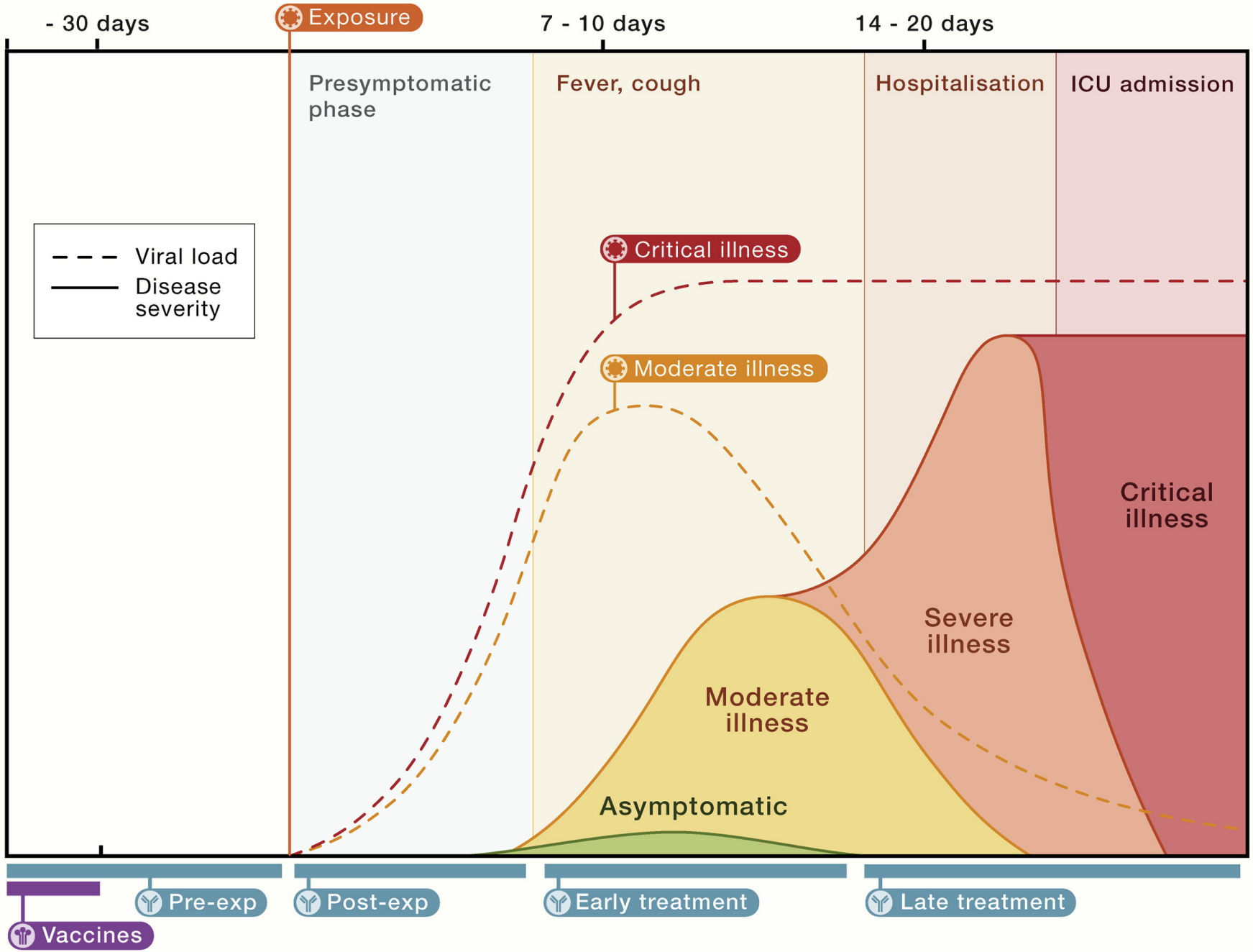
- Nausea:
  - Gravol
  - Ondansetron
- Cough/Dyspnea
  - Cough Syrup
- Headache
  - Acetaminophen/Ibuprofen

# COVID-19 Therapeutics: The Evidence

Sameer Elsayed MD, MSc, FRCPC

London Health Sciences Centre/St. Joseph's Healthcare London/Western University

March 1, 2022




**Vaccines**

- mRNA-1273 (Moderna)
- BNT162b2 (Pfizer/BioNTech)
- ChAdOx1-S (Astrazeneca)
- Ad26.COV2.S (Johnson&Johnson)
- Sputnik V (GRIEM)

**Pre-exposure**

- AZD8895+AZD1061 (Ph. 3)

**Post-exposure**

- Casirivimab+imdevimab (Ph. 3)
- Etesevimab+bamlanivimab (Ph. 3)
- AZD8895+AZD1061 (Ph. 3)

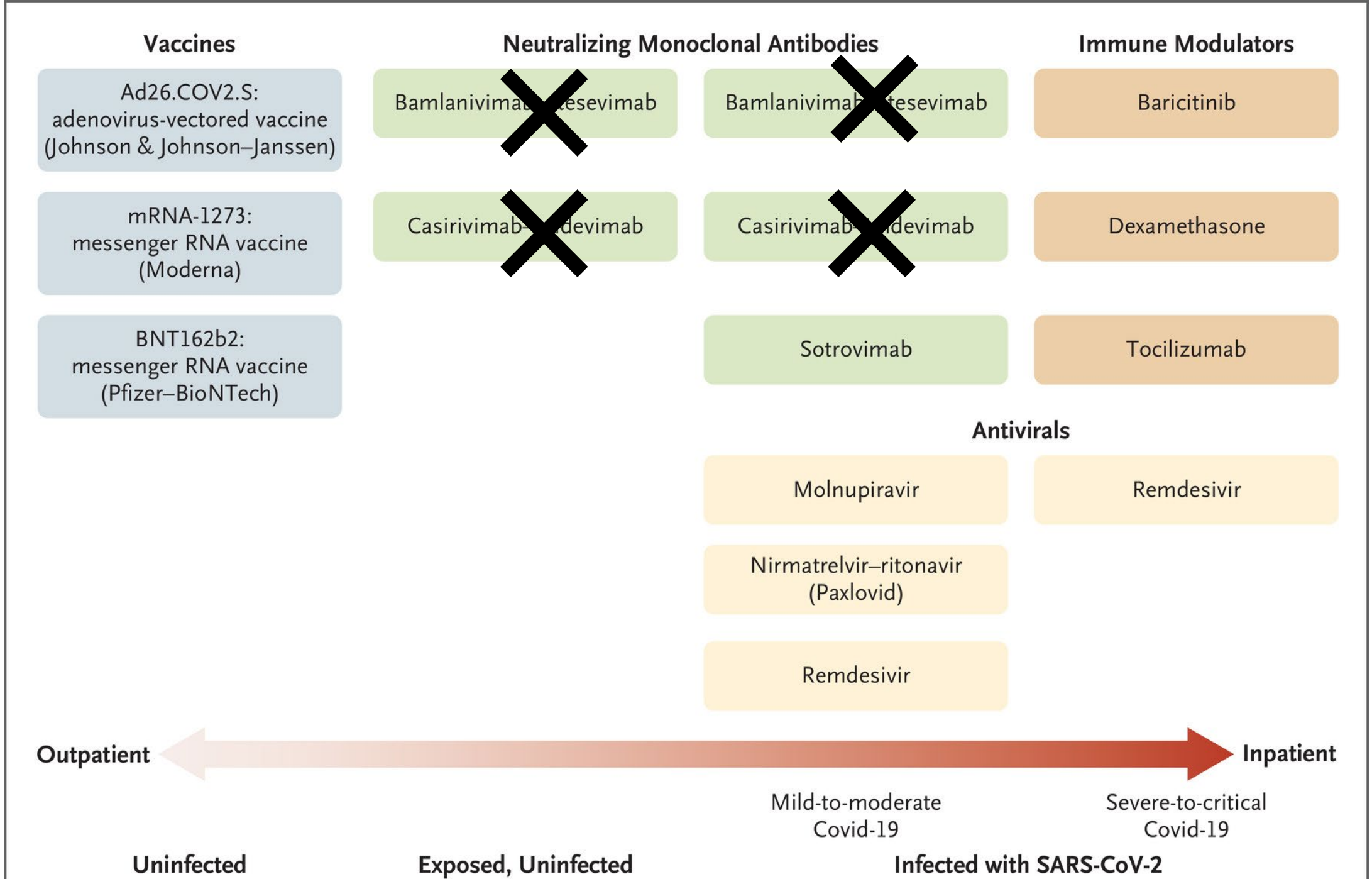
**Early treatment**

- Bamlanivimab (EUA)
- Etesevimab+bamlanivimab (EUA)
- Casirivimab+imdevimab (EUA)
- Regdanvimab (EUA in South Korea)
- Sotrovimab (EUA)
- AZD8895+AZD1061 (Ph. 3)

**Late treatment**

- Casirivimab+imdevimab (Ph. 3)
- AZD8895+AZD1061 (Ph. 3)

Corti D et al. Cell. 2021. Retrieved from https://www.cell.com/cell/pdf/S0092-8674(21)00602-4.pdf




Heil EL and Kottilil S. NEJM. Jan 2022 (online)

# COVID-19 Treatments

- **Paxlovid (PO)**
- **Sotrovimab (IV)**
- **Remdesivir (IV)**
- **Molnupiravir (PO)**
- Tocilizumab/Sarilumab (IV)
- Baricitinib (PO/NG)
- Dexamethasone (PO/IV)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

February 16, 2022

# Oral Nirmatrelvir for High-Risk, Nonhospitalized Adults with Covid-19

Jennifer Hammond, Ph.D., Heidi Leister-Tebbe, B.S.N., Annie Gardner, M.P.H., M.S.P.T., Paula Abreu, Ph.D., Weihang Bao, Ph.D., Wayne Wisemandle, M.A., MaryLynn Baniecki, Ph.D., Victoria M. Hendrick, B.Sc., Bharat Damle, Ph.D., Abraham Simón-Campos, M.D., Rienk Pypstra, M.D., and James M. Rusnak, M.D., Ph.D., for the EPIC-HR Investigators*

# EPIC-HR

- Industry-sponsored, multicentre RCT
- 202 study locations, 2246 participants
- Oral Paxlovid vs. Placebo in unvaccinated, high-risk symptomatic adult outpatients with COVID-19 (within 5 days of symptom onset)
- Study Period: July 16, 2021 to December 9, 2021
- Primary Outcome: COVID-19 related hospitalization, OR death from any cause (Day 1 –28)

# EPIC-HR: Main High-Risk Groups

- Smokers
- Diabetes
- Hypertension
- Cardiovascular Disease
- COPD
- BMI ≥ 25

Hammond J et al. NEJM. February 16, 2022

# EPIC-HR: Results

| Paxlovid (n=1039) | Placebo (n=1046) |
| --- | --- |
| • # of Events: 8<br>• Hospitalizations: 8 (0.77%)<br>• Deaths: 0<br>• Relative Risk of Event = 0.77% | • # of Events: 66 (6.31%)<br>• Hospitalizations: 65 (6.21%)<br>• Deaths: 12 (1.15%)<br>• Relative Risk of Event = 6.3% |

Relative Risk Reduction: 87.8%
Absolute Risk Reduction: 5.53%
Number Needed to Treat: 18

Hammond J et al. NEJM. February 16, 2022

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

N ENGL J MED 385;21 NEJM.ORG NOVEMBER 18, 2021

# Early Treatment for Covid-19 with SARS-CoV-2 Neutralizing Antibody Sotrovimab

Anil Gupta, M.D., Yaneicy Gonzalez-Rojas, M.D., Erick Juarez, M.D., Manuel Crespo Casal, M.D., Jaynier Moya, M.D., Diego R. Falci, M.D., Ph.D., Elias Sarkis, M.D., Joel Solis, M.D., Hanzhe Zheng, Ph.D., Nicola Scott, M.Sc., Andrea L. Cathcart, Ph.D., Christy M. Hebner, Ph.D., Jennifer Sager, Ph.D., Erik Mogalian, Pharm.D., Ph.D., Craig Tipple, M.B., B.S., Ph.D., Amanda Peppercorn, M.D., Elizabeth Alexander, M.D., Phillip S. Pang, M.D., Ph.D., Almena Free, M.D., Cynthia Brinson, M.D., Melissa Aldinger, Pharm.D., and Adrienne E. Shapiro, M.D., Ph.D., for the COMET-ICE Investigators*

Gupta A et al. NEMJ. 2021;385:1941-1950

# COMET-ICE

- Industry-sponsored, multicentre RCT
- 37 trial sites in U.S., Canada, Brazil, and Spain, with 583 participants
- IV Sotrovimab vs. Placebo in unvaccinated, high-risk symptomatic adult outpatients with COVID-19, and within 5 days of symptom onset
- Study Period: August 7, 2020 to March 4, 2021
- Primary Outcome: COVID-19 related hospitalization, OR death from any cause (Day 1 – 29)

[4]Gupta A et al. NEJM. 2021;385:1941-1950

# COMET-ICE: Main High-Risk Groups

**Age ≥ 55 years**

**Diabetes**

**Obesity**

**Asthma**

Gupta A et al. NEJM. 2021;385:1941-1950

# COMET-ICE: Results

| Sotrovimab (n=291) | Placebo (n=292) |
| --- | --- |
| • # of Events: 3 (1.03%)<br>• Hospitalizations: 3 (1.03%)<br>• Deaths: 0<br>• Relative Risk of Event = 1.03% | • # of Events: 21 (7.19%)<br>• Hospitalizations: 21 (7.19%)<br>• Deaths: 1<br>• Relative Risk of Event = 7.19% |

Relative Risk Reduction: 85.7%
Absolute Risk Reduction: 6.16%
Number Needed to Treat: 16

Gupta A et al. NEJM. 2021;385:1941-1950

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JANUARY 27, 2022 VOL. 386 NO. 4

# Early Remdesivir to Prevent Progression to Severe Covid-19 in Outpatients

R.L. Gottlieb, C.E. Vaca, R. Paredes, J. Mera, B.J. Webb, G. Perez, G. Oguchi, P. Ryan, B.U. Nielsen, M. Brown, A. Hidalgo, Y. Sachdeva, S. Mittal, O. Osiyemi, J. Skarbinski, K. Juneja, R.H. Hyland, A. Osinusi, S. Chen, G. Camus, M. Abdelghany, S. Davies, N. Behenna-Renton, F. Duff, F.M. Marty,* M.J. Katz, A.A. Ginde, S.M. Brown, J.T. Schiffer, and J.A. Hill, for the GS-US-540-9012 (PINETREE) Investigators†

# PINETREE

- Industry-sponsored, multicentre RCT
- 64 trial sites in the U.S., U.K., Spain, and Denmark
- IV Remdesivir (3 days) vs placebo in unvaccinated outpatients (age ≥ 12 years) with COVID-19, ≤ 7 days of symptoms
- Study Period: September 18, 2020 to April 8, 2021
- Primary Outcome: COVID-19 related hospitalization, OR death from any cause (Day 1 –28)

Gottlieb RL et al. NEJM. January 27, 2022

# PINETREE: Main High-Risk Groups

- Diabetes
- Obesity
- Hypertension
- Cardiovascular Disease
- COPD
- Other

Gottlieb RL et al. NEJM. January 27, 2022

# PINETREE: Results

| Remdesivir (n=279) | Placebo (n=283) |
| --- | --- |
| • # of Events: 2 (0.72%)<br>• Hospitalizations: 2 (0.72%)<br>• Deaths: 0<br>• Relative Risk of Event = 0.72% | • # of Events: 15 (5.30%)<br>• Hospitalizations: 15 (5.30%)<br>• Deaths: 0<br>• Relative Risk of Event = 5.30% |

Relative Risk Reduction: 86.5%
Absolute Risk Reduction: 4.58%
Number Needed to Treat: 22

Gottlieb RL et al. NEJM. January 27, 2022

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 FEBRUARY 10, 2022 VOL. 386 NO. 6

# Molnupiravir for Oral Treatment of Covid-19 in Nonhospitalized Patients

A. Jayk Bernal, M.M. Gomes da Silva, D.B. Musungaie, E. Kovalchuk, A. Gonzalez, V. Delos Reyes, A. Martín-Quirós, Y. Caraco, A. Williams-Diaz, M.L. Brown, J. Du, A. Pedley, C. Assaid, J. Strizki, J.A. Grobler, H.H. Shamsuddin, R. Tipping, H. Wan, A. Paschke, J.R. Butterton, M.G. Johnson, and C. De Anda, for the MOVe-OUT Study Group*

# MOVe-OUT

- Industry-sponsored, multicentre RCT with 1433 participants
- 78 trial sites in 15 countries
- Molnupiravir vs. Placebo in unvaccinated, high-risk symptomatic adult outpatients with COVID-19 within 5 days of symptoms and $\geq$ 1 risk factor
- Study Period: May 6, 2021 to November 4, 2021
- Primary Outcome: COVID-19 related hospitalization, OR death from any cause (Day 1 –29)

Bernal AJ. NEMJ. February 10, 2022

# MOVe-OUT: Main High-Risk Groups

**Age ≥ 55 yr**

**Diabetes**

**BMI ≥ 30**

**Asthma**

Gupta A et al. NEMJ. 2021;385:1941-1950

# MOVe-OUT: Results (mITT)

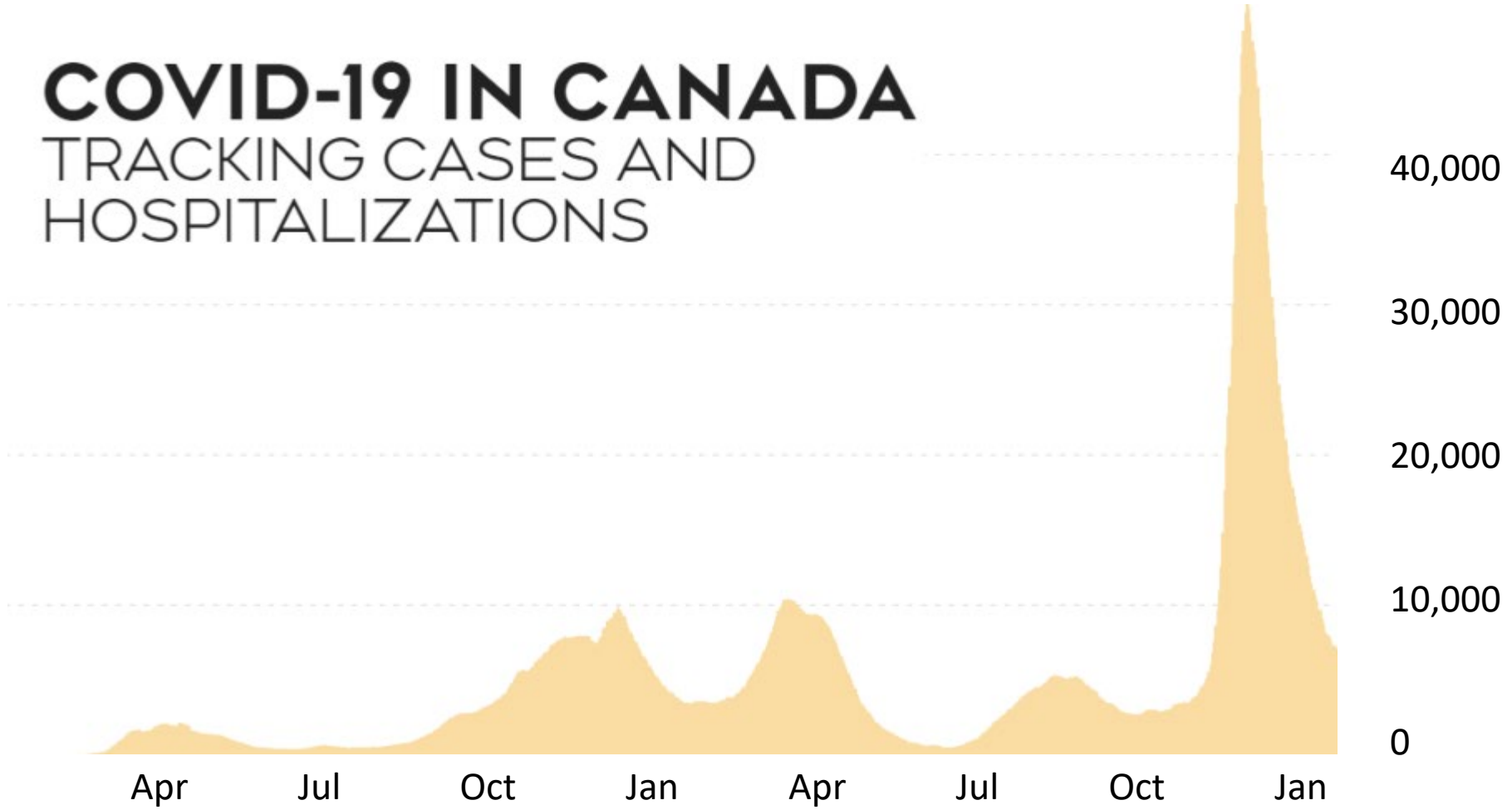
| Molnupiravir (n=709) | Placebo (n=699) |
| --- | --- |
| • # of Events: 48 (6.77%)<br>• Hospitalizations: 3 (1.03%)<br>• Deaths: 1<br>• Relative Risk of Event = 6.77% | • # of Events: 68 (9.73%)<br>• Hospitalizations: 21 (7.19%)<br>• Deaths: 9<br>• Relative Risk of Event = 9.73% |

Relative Risk Reduction: 30.4%
Absolute Risk Reduction: 2.96%
Number Needed to Treat: 34

Gupta A et al. NEMJ. 2021;385:1941-1950

https://www.ctvnews.ca/health/coronavirus/tracking-every-case-of-covid-19-in-canada-1.4852102

# SARS-CoV-2 Waves



# THANK YOU!

# Pharmacology

# Health Canada Approval Paxlovid®

- For adults with mild to moderate COVID-19 in patients who:
  - have a positive result from a SARS-CoV-2 viral test AND
  - who have a high risk of getting severe COVID-19, including hospitalization or death.

- PAXLOVID IS NOT approved for any of the following:
  - To treat patients who are hospitalized due to severe or critical COVID-19.
  - To prevent COVID-19.
  - To be used for longer than 5 days in a row.
  - For use in children and adolescents less than 18 years of age.

Health Canada. c2021 [updated 2022 Jan 17]. Paxlovid [product monograph]. https://covid-vaccine.canada.ca/info/pdf/paxlovid-pm-en.pdf

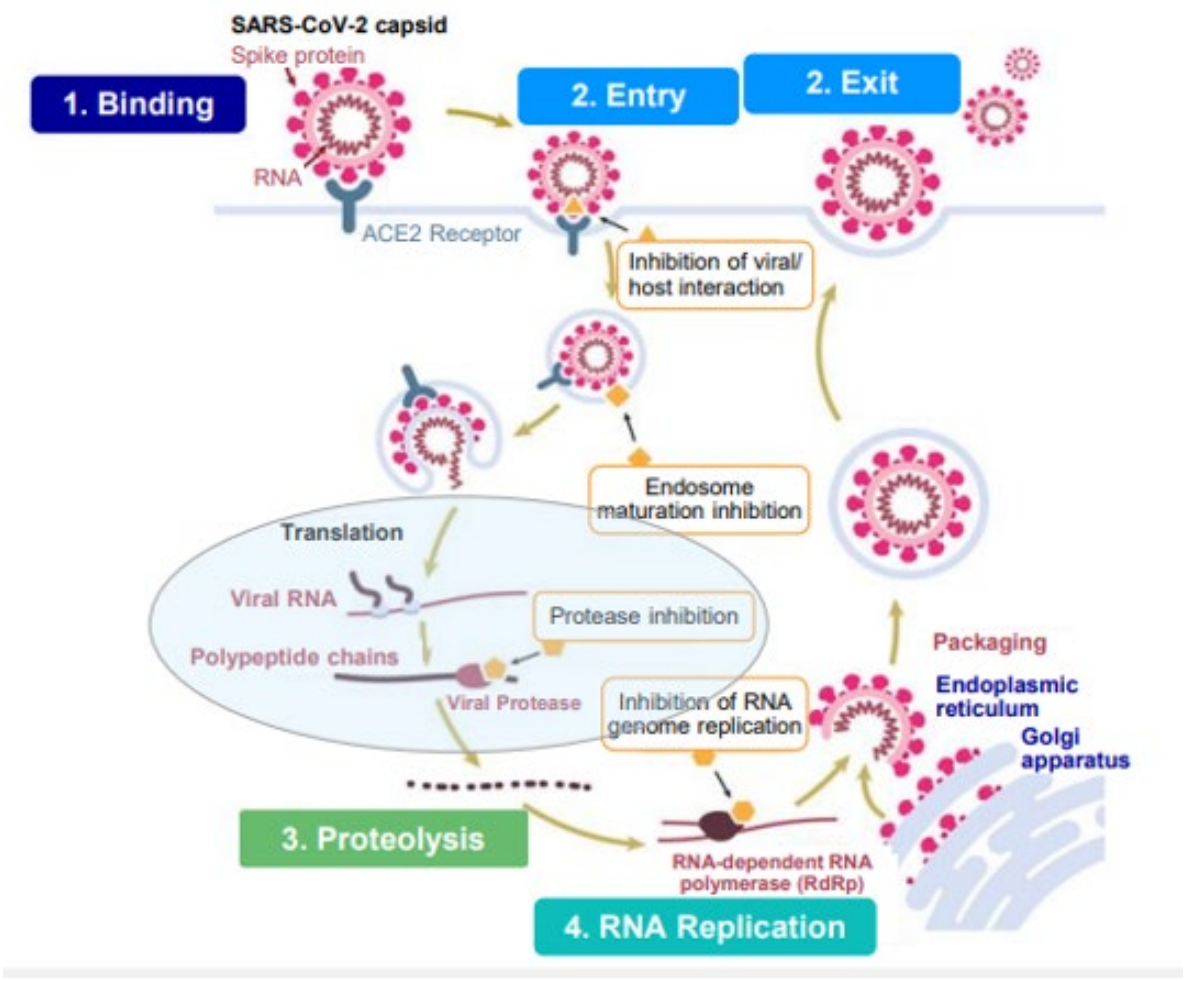
# Pharmacology

**Nirmatrelvir**

- SARS-CoV-2 3CL protease inhibitor which leads to the prevention of viral replication

**Ritonavir**

- HIV protease inhibitor
- No intrinsic activity against SARS-CoV-2
- “boosting” agent




https://www.gov.il/BlobFolder/policy/medical-treatment/he/files_regulation_pfizer_medical_treatment_Overview-of-Pfizers-Protease-Inhibitor-COVID-19-Treatment.pdf

# Administration

- Supplied
  - nirmatrelvir (pink) 150 mg tab
  - ritonavir (white) 100 mg tab

- Administration
  - Initiate within 5 days of symptom onset
  - Swallow whole, do not chew, break or crush

- Adverse Reactions
  - dysgeusia, diarrhea, hypertension, myalgia, vomiting and headache

Health Canada. c2021 [updated 2022 Jan 17]. Paxlovid [product monograph]. https://covid-vaccine.canada.ca/info/pdf/paxlovid-pm-en.pdf

# Dosing

- Standard Dosing
  - assuming eGFR > 60 mL/min
    - Nirmatrelvir 300 mg + Ritonavir 100 mg BID x 5 days
- Renal Impairment
  - eGFR 30-59 mL/min
    - Nirmatrelvir 150 mg + Ritonavir 100 mg BID x 5 days
  - eGFR less than 30 mL/min
    - Not recommended
- Hepatic Impairment
  - Not recommended beyond Child-Pugh Class C

Health Canada. c2021 [updated 2022 Jan 17]. Paxlovid [product monograph]. https://covid-vaccine.canada.ca/info/pdf/paxlovid-pm-en.pdf

# Special Populations

- Pregnancy/Lactation
  - No safety data available
- Paediatrics
  - Canadian labelling authorized ≥ 18 years old, weight ≥ 40kg
- Geriatrics
  - No specific safety concerns
  - In EPIC-HR, 13% were 65 years of age and older and 3% were 75 years of age and older

Health Canada. c2021 [updated 2022 Jan 17]. Paxlovid [product monograph]. https://covid-vaccine.canada.ca/info/pdf/paxlovid-pm-en.pdf

# Drug interactions

- Nirmatrelvir
  - substrate: CYP3A4, P-gp
  - inhibitor (potential): CYP3A4, P-gp, OATP1B1
  - inducer: does not induce any CYPs

'Victim' of Drug Interactions

- Ritonavir
  - substrate: CYP3A4, 2D6, P-gp
  - inhibitor: CYP3A4>>2D6 (lesser extent), P-gp, OATPs, MATE1
  - inducer: UGT, CYP3A4, 1A2, 2C9, 2C19, 2B6
  - dose and time-dependent inhibition/induction effects

'Perpetrator' of Drug Interactions

Adapted with Permissions: Beth Leung, Unity Health, ON Science Table

# ON Science Table Drug Interaction Resource

| Symbol | Interaction |
|---|---|
| ▲ | Contraindicated |
| ⚠ | Contraindicated (current and recent use within past 28 days) |
| ● | Contraindicated (significant increase in drug concentrations expected) |
| ◆ | Significant increase in drug concentrations expected |
| ✓ | Drug interaction not likely to be clinically relevant |

**Nirmatrelvir/Ritonavir (*Paxlovid*) Drug Interactions:**

This is not an exhaustive list. Consultation with a pharmacist who can obtain a complete medication, recreational, and natural health product history from the patient is recommended prior to prescribing nirmatrelvir/ritonavir.

| Symbol | Severity | Recommendation | Rationale |
|---|---|---|---|
| ▲ ⚠ | Contraindicated<br>Contraindicated (use within past 14 days) | Use alternative COVID agent. **Do not use nirmatrelvir/ritonavir.** | Stopping the drug will not mitigate the interaction (e.g., prolonged half-life, narrow therapeutic index, prolonged enzyme-inducing effects which may decrease effectiveness of nirmatrelvir/ritonavir). Do not coadminister due to risk of serious toxicity. |
| ● | Do not coadminister | Hold and restart 2 days after completing nirmatrelvir/ritonavir. | Significant ↑ in drug concentrations expected. Do not coadminister due to risk of serious toxicity. |
| ◆ | Caution | Therapy modification required (see Appendix). | Significant ↑/↓ in drug concentrations expected, which may lead to serious toxicity or impaired efficacy. Only coadminister if the interacting drug can be safely held or dose-adjusted and closely monitored (see Appendix). Expert consultation may be useful. |
| ✓ | Drug interaction not likely to be clinically relevant | Continue with standard dosing. | Although mentioned in the monograph, clinically relevant interaction is not anticipated (e.g., minimal impact on certain metabolic pathways, wide therapeutic index, and short course of nirmatrelvir/ritonavir). |

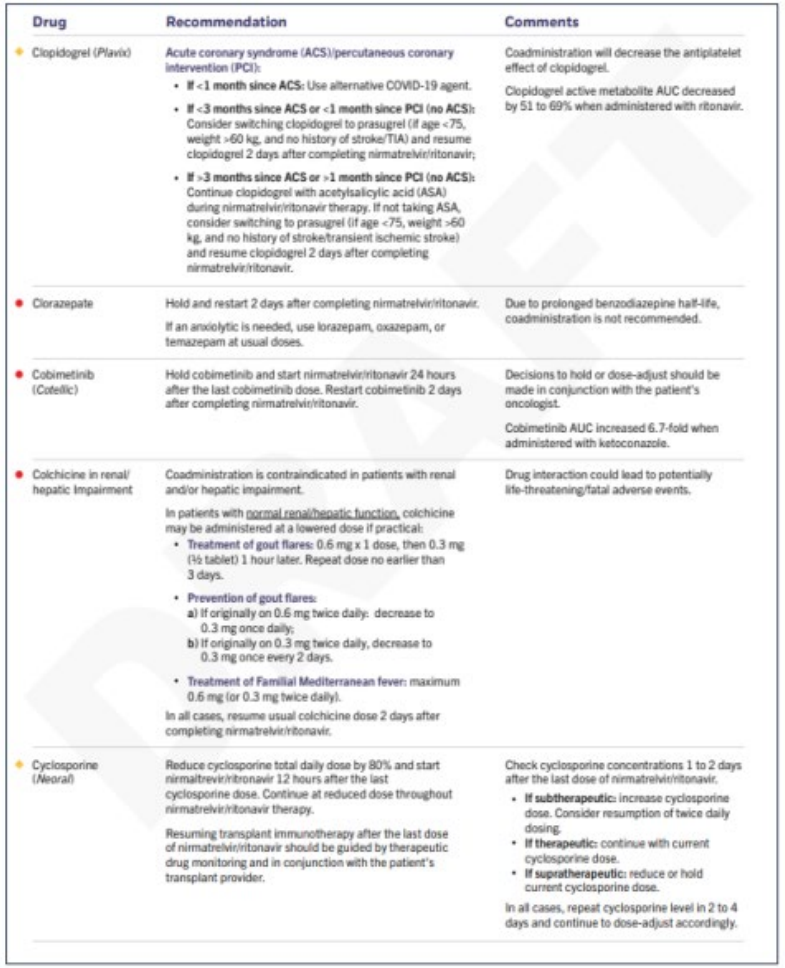
- ◆ Abemaciclib (*Verzenio*)
- ● Alfuzosin (*Xatral*)
- ◆ Alprazolam (*Xanax*)
- ▲ Amiodarone
- ✓ Amitriptyline
- ◆ Amlodipine (*Norvasc*)
- ⚠ Apalutamide (*Erleada*)
- ◆ Apixaban (*Eliquis*)
- ◆ Aripiprazole (*Abilify*), oral
- ◆ Atorvastatin (*Lipitor*)
- ✓ Atovaquone
- ▲ Bosentan (*Tracleer*)
- ● Bosutinib (*Bosulif*)
- ◆ Brexpiprazole (*Rexulti*)
- ✓ Budesonide
- ✓ Bupropion
- ◆ Buspirone (*Buspar*)
- ⚠ Carbamazepine (*Tegretol*)
- ◆ Ceritinib (*Zykadia*)
- ● Cisapride
- ✓ Citalopram
- ✓ Clarithromycin
- ✓ Clomipramine
- ● Clonazepam
- ◆ Clopidogrel (*Plavix*)
- ● Clorazepate
- ▲ Clozapine (*Clozaril*)
- ● Cobimetinib (*Cotellic*)
- ● Colchicine in renal/hepatic impairment
- ◆ Cyclosporine (*Neoral*)
- ◆ Dabigatran
- ⚠ Dabrafenib (*Tafinlar*)
- ◆ Dasatinib (*Sprycel*)
- ✓ Dexamethasone
- ● Diazepam (*Valium*)
- ◆ Digoxin
- ◆ Diltiazem (*Tiazac, Cardizem*)
- ✓ Divalproex
- ● Dofetilide
- ✓ Dronabinol
- ▲ Dronedarone (*Multaq*)
- ◆ Edoxaban (*Lixiana*)
- ◆ Elagolix (*Orilissa*)
- ◆ Encorafenib (*Braftovi*)
- ⚠ Enzalutamide
- ● Ergot alkaloids (e.g., dihydroergotamine, ergonovine)
- ⚠ Eslicarbazepine
- ✓ Ethinyl estradiol
- ● Everolimus (*Certican*)
- ◆ Felodipine
- ▲ Fentanyl (*Duragesic*)
- ▲ Flecainide
- ✓ Fluoxetine
- ● Flurazepam
- ✓ Fluvoxamine
- ◆ Fostamatinib (*Tavalisse*)
- ✓ Fusidic acid, topical
- ● Glecaprevir/Pibrentasvir (*Maviret*)
- ◆ Hydrocodone
- ● Ibrutinib (*Imbruvica*)
- ✓ Imipramine
- ✓ Itraconazole
- ✓ Ketoconazole
- ✓ Lamotrigine
- ● Lomitapide (*Juxtapid*)
- ⚠ Lorlatinib (*Lorbrena*)
- ● Lovastatin
- ▲ Lurasidone (*Latuda*)
- ✓ Maprotiline
- ✓ Maraviroc
- ● Meperidine (*Demerol*)
- ✓ Methamphetamine
- ✓ Metoprolol
- ● Midazolam, oral
- ⚠ Mitotane (*Lysodren*)
- ◆ Modafinil
- ● Neratinib (*Nerlynx*)
- ◆ Nifedipine
- ◆ Nilotinib (*Tasigna*)
- ● Nitrazepam (*Mogadon*)
- ✓ Nortriptyline
- ⚠ Oxcarbazepine
- ◆ Oxycodone (*Percocet, OxyNEO*)
- ✓ Paroxetine
- ⚠ Phenobarbital
- ⚠ Phenytoin (*Dilantin*)
- ▲ Pimozide
- ⚠ Primidone
- ▲ Propafenone
- ◆ Quetiapine (*Seroquel*)
- ▲ Quinidine
- ● Quinine
- ✓ Raltegravir
- ▲ Ranolazine (*Corzyna*)
- ◆ Rifabutin
- ⚠ Rifampin
- ⚠ Rifapentine
- ◆ Risperidone (*Risperdal*, oral
- ▲ Risperidone, long-acting injection (*Risperdal Consta*)
- ● Rivaroxaban (*Xarelto*)
- ◆ Rosuvastatin (*Crestor*)
- ● Salmeterol (*Serevent, Advair*)
- ✓ Sertraline
- ◆ Sildenafil for ED[1] (*Viagra*)
- ▲ Sildenafil for PAH[2] (*Revatio*)
- ● Silodosin (*Rapaflo*)
- ● Simvastatin
- ● Sirolimus (*Rapamune*)
- ▲ Sonidegib (*Odomzo*)
- ⚠ St. John's wort (*Hypericum perforatum*)
- ● Tacrolimus (*Prograf, Advagraf, Envarsus*)
- ◆ Tadalafil for ED[1] (*Cialis*)
- ▲ Tadalafil for PAH[2] (*Adcirca*)
- ● Tamsulosin (*Flomax*)
- ▲ Tepotinib (*Tepmetko*)
- ✓ Theophylline
- ● Ticagrelor (*Brilinta*)
- ✓ Timolol
- ◆ Tramadol
- ● Triazolam (*Halcion*)
- ✓ Trimipramine
- ● Vardenafil (*Levitra*) for ED[1]
- ▲ Vardenafil (*Levitra*) for PAH[2]
- ▲ Venetoclax (*Venclexta*)
- ✓ Venlafaxine
- ◆ Verapamil
- ◆ Vinblastine
- ◆ Vincristine
- ✓ Voriconazole
- ◆ Warfarin
- ◆ Ziprasidone (*Zeldox*)
- ◆ Zolpidem (*Sublinox, Ambien*)
- ◆ Zopiclone (*Imovane*)

Click here for the Liverpool COVID-19 Interaction Checker

Or visit https://www.covid19-druginteractions.org/

[1]ED = erectile dysfunction [2]PAH = pulmonary arterial hypertension

**Appendix:**



| Drug | Recommendation | Comments |
|---|---|---|
| ◆ Clopidogrel (*Plavix*) | **Acute coronary syndrome (ACS)/percutaneous coronary intervention (PCI):**<br>• **If <1 month since ACS:** Use alternative COVID-19 agent.<br>• **If <3 months since ACS or <1 month since PCI (no ACS):** Consider switching clopidogrel to prasugrel (if age <75, weight >60 kg, and no history of stroke/TIA) and resume clopidogrel 2 days after completing nirmatrelvir/ritonavir;<br>• **If >3 months since ACS or >1 month since PCI (no ACS):** Continue clopidogrel with acetylsalicylic acid (ASA) during nirmatrelvir/ritonavir therapy. If not taking ASA, consider switching to prasugrel (if age <75, weight >60 kg, and no history of stroke/transient ischemic stroke) and resume clopidogrel 2 days after completing nirmatrelvir/ritonavir. | Coadministration will decrease the antiplatelet effect of clopidogrel.<br>Clopidogrel active metabolite AUC decreased by 51 to 69% when administered with ritonavir. |
| ● Clorazepate | Hold and restart 2 days after completing nirmatrelvir/ritonavir.<br>If an anxiolytic is needed, use lorazepam, oxazepam, or temazepam at usual doses. | Due to prolonged benzodiazepine half-life, coadministration is not recommended. |
| ● Cobimetinib (*Cotellic*) | Hold cobimetinib and start nirmatrelvir/ritonavir 24 hours after the last cobimetinib dose. Restart cobimetinib 2 days after completing nirmatrelvir/ritonavir. | Decisions to hold or dose-adjust should be made in conjunction with the patient's oncologist.<br>Cobimetinib AUC increased 6.7-fold when administered with ketoconazole. |
| ● Colchicine in renal/hepatic impairment | Coadministration is contraindicated in patients with renal and/or hepatic impairment.<br>In patients with normal renal/hepatic function, colchicine may be administered at a lowered dose if practical:<br>• **Treatment of gout flares:** 0.6 mg x 1 dose, then 0.3 mg (½ tablet) 1 hour later. Repeat dose no earlier than 3 days.<br>• **Prevention of gout flares:**<br>**a)** If originally on 0.6 mg twice daily: decrease to 0.3 mg once daily;<br>**b)** If originally on 0.3 mg twice daily, decrease to 0.3 mg once every 2 days.<br>• **Treatment of Familial Mediterranean fever:** maximum 0.6 mg (or 0.3 mg twice daily).<br>In all cases, resume usual colchicine dose 2 days after completing nirmatrelvir/ritonavir. | Drug interaction could lead to potentially life-threatening/fatal adverse events. |
| ◆ Cyclosporine (*Neoral*) | Reduce cyclosporine total daily dose by 80% and start nirmaltrevir/ritonavir 12 hours after the last cyclosporine dose. Continue at reduced dose throughout nirmatrelvir/ritonavir therapy.<br>Resuming transplant immunotherapy after the last dose of nirmatrelvir/ritonavir should be guided by therapeutic drug monitoring and in conjunction with the patient's transplant provider. | Check cyclosporine concentrations 1 to 2 days after the last dose of nirmatrelvir/ritonavir.<br>• **If subtherapeutic:** increase cyclosporine dose. Consider resumption of twice daily dosing.<br>• **If therapeutic:** continue with current cyclosporine dose.<br>• **If supratherapeutic:** reduce or hold current cyclosporine dose.<br>In all cases, repeat cyclosporine level in 2 to 4 days and continue to dose-adjust accordingly. |

Nirmatrelvir/ritonavir (Paxlovid): What Prescribers and Pharmacists need to Know, February 23, 2022

# Contraindicated: Do not use Paxlovid®

- Anticonvulsants
  - Carbamazepine
  - Phenobarbital
  - Phenytoin
  - Pimozide
  - Primidone
- Anti-arrhythmics
  - Amiodarone
  - Dronedarone
  - Flecainide
  - Propafenone
  - Quinidine
- Anti-anginal
  - Ranolazine
- PDE5 Inhibitors for Pulmonary HTN
  - Sildenafil
  - Tadalafil
  - Vardenafil
- Endothelin Receptor antagonist
  - Bosentan
- Herbals
  - St John's Wort
- Psychotropics
  - Clozapine
  - Lurasidone
  - Pimozide
- Cancer Agents
  - Apalutamide (Erleada)
  - Enzalutamide
  - Neratinib (Nerlynx)
  - Venetoclax (Venclexta)
- Anti-infectives for TB
  - Rifampin
  - Rifapentin
- Calcineurin inhibitors
  - Cyclosporine,Tacrolimus
- mTOR kinase inhibitors
  - Sirolimus, Everolimus

Health Canada. c2021 [updated 2022 Jan 17]. Paxlovid [product monograph]. https://covid-vaccine.canada.ca/info/pdf/paxlovid-pm-en.pdf
Nirmatrelvir/ritonavir (Paxlovid): What Prescribers and Pharmacists need to Know, February 23, 2022

# Contraindicated: Do not use Paxlovid® UNLESS drug can be safely held/replaced

- Alpha blocker
  - Alflusozin
- Gastroprokinetic
  - Cisapride
- Anti-gout
  - Colchicine
- Ergot derivatives
  - Dihydroergotamine
  - Ergotamine
  - Methylergonovine
- Lipid Lowering Drugs
  - Lomitapide
  - Lovastatin
  - Simvastatin
- Benzodiazepines
  - Midazolam
  - Triazolam
- Anticoagulants
  - Rivaroxaban
  - Ticagrelor

Health Canada. c2021 [updated 2022 Jan 17]. Paxlovid [product monograph]. https://covid-vaccine.canada.ca/info/pdf/paxlovid-pm-en.pdf
Nirmatrelvir/ritonavir (Paxlovid): What Prescribers and Pharmacists need to Know, February 23, 2022

# Paxlovid® Summary

- Pharmacology: SARS-Cov-2 protease inhibitor + ‘booster’
- Indication: Mild patients, within 5 days of symptom onset
- Dosing reduction for moderate renal impairment
- Avoid in severe renal or hepatic impairment
- Obtain a ‘Best Possible Medication History’ (include OTC meds, herbals)
  - Screen for the ‘high risk contraindicated’ drugs

# Molnupiravir Comparison

| | Nirmatrelvir/Ritonavir | Molnupiravir |
|---|---|---|
| Mechanism | Protease inhibitor + 'booster' | Nucleoside Analogue |
| Indication | Adults, Mild-moderate COVID-19, wt > 40kg | Adults, Mild-moderate COVID-19, no wt |
| When to start | Within 5 days of symptom onset | Within 5 days of symptom onset |
| Dose | 300mg/100 mg every 12 hour x 5 days<br>(3 tabs per dose) | 800 mg every 12 hours x 5 days<br>(4 tabs per dose) |
| Renal Dose | Adjust eGFR 30-59mL/min<br>Avoid eGFR <30ml/min | N/A |
| Hepatic | Avoid Child-Pugh Class C | N/A |
| Warnings | Beware drug interactions<br>Hepatotoxicity<br>HIV-1 drug resistance in patients with HIV-1 infection | Embryo-fetal toxicity<br>Bone and cartilage toxicity |
| Adverse Reactions | Dysguesia, diarrhea, hypertension, myalgia | Diarrhea, nausea, dizziness |
| Pregnancy | No human data | Not recommended |
| Clinical Data | EPIC-HR | MOVe-OUT |

Molnupiravir FDA EUA. https://www.fda.gov/media/155054/download
Bernal AJ. et al. N Engl J Med 2022; 386:509-520. February 10, 2022 (e-pub Dec 2021), DOI: 10.1056/NEJMoa2116044

# Who should receive COVID specific treatment?

## Mildly Ill Patients

Patients who do not require new or additional supplemental oxygen from their baseline status

**This guidance applies to mildly ill patients in any setting, including the community, hospital (including nosocomial cases), and congregate care settings.**

It is recommended that eligibility for outpatient therapies include patients who test positive for SARS-CoV-2 on either PCR or a healthcare-professional administered RAT or ID now.

### STEP 1 ▶ Determine the risk of disease progression.

- **Higher risk** individuals are those who have a ≥5% risk of hospitalization if they develop COVID-19. **Standard risk** individuals are those who have a <5% of hospitalization.
- Indigenous people, Black people, and members of other racialized communities may be at increased risk of disease progression due to disparate rates of comorbidity, increased barriers to vaccination, and social determinants of health. They should be considered **priority populations** for access to COVID-19 drugs and therapeutics.

| AGE (years) | NUMBER OF VACCINE DOSES | | | RISK FACTORS |
|---|---|---|---|---|
| | 0 doses | 1 or 2 doses | 3 doses | |
| <20[1] | **Higher risk** if ≥3 risk factors[1] | Standard risk[1] | Standard risk[1] | • Obesity (BMI ≥30 kg/m²)<br>• Diabetes<br>• Heart disease, hypertension, congestive heart failure<br>• Chronic respiratory disease, including cystic fibrosis<br>• Cerebral palsy<br>• Intellectual disability<br>• Sickle cell disease<br>• Moderate or severe kidney disease (eGFR <60 mL/min)<br>• Moderate or severe liver disease (e.g., Child Pugh Class B or C cirrhosis) |
| 20 to 39 | **Higher risk** if ≥3 risk factors | **Higher risk** if ≥3 risk factors | Standard risk | |
| 40 to 69 | **Higher risk** if ≥1 risk factors | **Higher risk** if ≥3 risk factors | Standard risk | |
| ≥70 | **Higher risk** | **Higher risk** if ≥1 risk factors | **Higher risk** if ≥3 risk factors | |
| **Immunocompromised[2] individuals of any age** | **Higher risk**: Therapeutics should always be recommended for immunocompromised individuals not expected to mount an adequate immune response to COVID-19 vaccination or SARS-CoV-2 infection due to their underlying immune status, regardless of age or vaccine status.[1,2] | | | |
| **Pregnancy** | **Higher risk**[3] | Standard risk | Standard risk | |

1. Evidence for the safety and efficacy of sotrovimab and nirmatrelvir/ritonavir (Paxlovid) in children <18 years of age is limited. While early evidence on risk factors for moderate and severe COVID-19 in children is emerging, the ability to reliably predict disease progression in children remains very limited, and the frequency of progression is rare. While not routinely recommended in children <18 years of age, the use of these agents may be considered in exceptional circumstances (e.g., severe immunocompromise and/or multiple risk factors, clinical progression) on a case-by-case basis. Multidisciplinary consultation with Infectious Diseases (or Pediatric Infectious Diseases) and the team primarily responsible for the child's care is recommended to review the individual consideration of these medications.
2. Examples of immunocompromised or immunosuppressed individuals include receipt of treatment for solid tumors and hematologic malignancies (including individuals with lymphoid malignancies who are being monitored without active treatment), receipt of solid-organ transplant and taking immunosuppressive therapy, receipt of chimeric antigen receptor (CAR)-T-cell or hematopoietic stem cell transplant (within 2 years of transplantation or taking immunosuppression therapy), moderate or severe primary immunodeficiency (e.g., DiGeorge syndrome, Wiskott-Aldrich syndrome, common variable immunodeficiency, Good's syndrome, hyper IgE syndrome), advanced or untreated HIV infection, active treatment with high-dose corticosteroids (i.e., ≥20 mg prednisone or equivalent per day when administered for ≥2 weeks), alkylating agents, antimetabolites, transplant-related immunosuppressive drugs, cancer chemotherapeutic agents classified as severely immunosuppressive, tumor-necrosis factor (TNF) blockers, and other biologic agents that are immunosuppressive or immunomodulatory. These individuals should have a reasonable expectation for 1-year survival prior to SARS-CoV-2 infection.
3. Therapeutics should always be recommended for pregnant individuals who have received zero vaccine doses.

### STEP 2 ▶ Based on the risk level, refer to the corresponding recommendation statements below.

| RISK LEVEL | RECOMMENDATIONS |
|---|---|
| **HIGHER RISK OF SEVERE DISEASE**<br>*Individuals who have a ≥5% risk of hospitalization or are immunocompromised* | ▶ *It is recommended that higher risk patients receive one of nirmatrelvir/ritonavir (Paxlovid), sotrovimab, or remdesivir. The choice of drug depends on availability, contraindications, and ease of administration. These individuals should have a reasonable expectation for 1-year survival prior to SARS-CoV-2 infection.*<br>● **Nirmatrelvir/ritonavir (Paxlovid)** at a dose of 300 mg nirmatrelvir (two 150 mg tablets) with 100 mg ritonavir (one 100 mg tablet), with all three tablets taken together orally twice daily for 5 days, **is recommended** for these patients if they present within 5 days of symptom onset.<br>• In patients with moderate renal impairment (eGFR ≥30 to <60 mL/min), the dose should be reduced to 150 mg nirmatrelvir (one 150 mg tablet) and 100 mg ritonavir (one 100 mg tablet) taken together twice daily for 5 days. Paxlovid is not recommended in patients with severe renal impairment (eGFR <30 mL/min).<br>• Specialized pharmacist consultation is important to mitigate any significant drug-drug interactions with other drugs.<br>• Paxlovid should be preferentially deployed in regions and to populations where administration is a barrier to intravenous medication.<br>● **Sotrovimab** 500 mg IV x 1 dose **is recommended** for these patients if they present within 7 days of symptom onset.<br>• Previous SARS-CoV-2 infection and vaccination status do not need to be considered. Serologic testing is not recommended.<br>● **Remdesivir** 200 mg IV on day 1, then 100 mg IV daily for 2 days **is recommended** for these patients if they present within 7 days of symptom onset.<br>▶ *If the above drugs are unavailable or contraindicated:*<br>▲ **Fluvoxamine may be considered** for patients with mild COVID-19 illness presenting within 7 days of symptom onset. The recommended starting dose is 50 mg PO daily, titrated up to 100 mg PO twice daily for a total of 15 days. Pharmacist consultation and outpatient provider follow-up is important to avoid any significant adverse drug interactions with fluvoxamine. This recommendation balances the very low certainty evidence of benefit for preventing hospitalization with the need for management options for mild illness with a reasonable safety profile during a surge in COVID-19 cases due to the Omicron variant.<br>▲ **Budesonide** 800 mcg inhaled twice daily for 14 days **may be considered** for these patients. This recommendation is based on very low certainty evidence of reduction in duration of symptoms, and the need for outpatient treatment options with a reasonable safety profile during an anticipated spike in COVID-19 cases due to the Omicron variant. Budesonide may have a role as an additional therapy in patients already on other therapies who have respiratory symptoms. |
| **STANDARD RISK**<br>*Individuals with <5% risk of hospitalization* | ● **Reassurance and information for self-monitoring of symptoms** (including self-monitoring of oxygen saturation) **are recommended**.<br>▲ **Fluvoxamine** 50 mg PO daily titrated up to 100 mg PO twice daily for a total of 15 days **may be considered** for these patients if they present within 7 days of symptom onset. See fluvoxamine recommendation statement for higher risk mildly ill patients.<br>▲ **Budesonide** 800 mcg inhaled twice daily for 14 days **may be considered** for these patients. See budesonide recommendation statement for higher risk mildly ill patients.<br>■ The following therapies are **not recommended** for these patients: **sotrovimab**, **nirmatrelvir/ritonavir (Paxlovid)**, and **remdesivir**. |

◆ There is currently **insufficient evidence** to make a recommendation around **aspirin** or **anticoagulation** for mildly ill patients.

■ The following therapies are **not recommended** for mildly ill patients: **dexamethasone**, **tocilizumab**, **sarilumab**, and **baricitinib**.



Ontario Science Table. Updated. Feb.23, 2022

https://covid19-sciencetable.ca/wp-content/uploads/2022/02/Clinical-Practice-Guidelines_Update_20220223.pdf

# Question 1:

- Is my patient at high risk of end ending up in hospital?
  - High = >5% Risk
  - **Indigenous people, Black people, and members of other racialized communities** may be at increased risk of disease progression due to disparate rates of comorbidity, increased barriers to vaccination, and social determinants of health. They should be considered **priority populations for access to COVID-19 drugs** and therapeutics.

**STEP 1 ▶ Determine the risk of disease progression.**

- **Higher risk** individuals are those who have a ≥5% risk of hospitalization if they develop COVID-19. **Standard risk** individuals are those who have a <5% of hospitalization.
- Indigenous people, Black people, and members of other racialized communities may be at increased risk of disease progression due to disparate rates of comorbidity, increased barriers to vaccination, and social determinants of health. They should be considered **priority populations** for access to COVID-19 drugs and therapeutics.

| AGE (years) | NUMBER OF VACCINE DOSES | | | RISK FACTORS |
|---|---|---|---|---|
| | 0 doses | 1 or 2 doses | 3 doses | |
| <20[1] | **Higher risk** if ≥3 risk factors[1] | Standard risk[1] | Standard risk[1] | • Obesity (BMI ≥30 kg/m²)<br>• Diabetes<br>• Heart disease, hypertension, congestive heart failure<br>• Chronic respiratory disease, including cystic fibrosis<br>• Cerebral palsy<br>• Intellectual disability<br>• Sickle cell disease<br>• Moderate or severe kidney disease (eGFR <60 mL/min)<br>• Moderate or severe liver disease (e.g., Child Pugh Class B or C cirrhosis) |
| 20 to 39 | **Higher risk** if ≥3 risk factors | **Higher risk** if ≥3 risk factors | Standard risk | |
| 40 to 69 | **Higher risk** if ≥1 risk factors | **Higher risk** if ≥3 risk factors | Standard risk | |
| ≥70 | **Higher risk** | **Higher risk** if ≥1 risk factors | **Higher risk** if ≥3 risk factors | |
| **Immunocompromised[2] individuals of any age** | **Higher risk**: Therapeutics should always be recommended for immunocompromised individuals not expected to mount an adequate immune response to COVID-19 vaccination or SARS-CoV-2 infection due to their underlying immune status, regardless of age or vaccine status.[1,2] | | | |
| Pregnancy | **Higher risk**[3] | Standard risk | Standard risk | |

Ontario Science Table. Updated. Feb.23, 2022

# Significant Immunodeficiency

- **Malignancy** - with receipt of treatment for solid tumors and hematologic malignancies (including individuals with lymphoid malignancies who are being monitored without active treatment),
- **Solid-organ transplant** and taking immunosuppressive therapy,
- chimeric antigen receptor (CAR)-T-cell or **hematopoietic stem cell transplant** (within 2 years of transplantation or taking immunosuppression therapy),
- **Moderate or severe primary immunodeficiency** (e.g., DiGeorge syndrome, Wiskott-Aldrich syndrome, common variable immunodeficiency, Good's syndrome, hyper IgE syndrome),
- Advanced or untreated **HIV infection**,
- Active treatment with **high-dose corticosteroids** (i.e., ≥20 mg prednisone or equivalent per day when administered for ≥2 weeks), Alkylating agents, antimetabolites, transplant-related immunosuppressive drugs,
- Cancer chemotherapeutic agents classified as severely immunosuppressive,
- **Tumor-necrosis factor (TNF) blockers, and other biologic agents** that are immunosuppressive or immunomodulatory.

**STEP 2 ▶ Based on the risk level, refer to the corresponding recommendation statements below.**

| RISK LEVEL | RECOMMENDATIONS |
|---|---|
| **HIGHER RISK OF SEVERE D** *Individuals who have a ≥5% risk of hospitalization or are immunocompromised* | ▶ *It is recommended that higher risk patients receive one of nirmatrelvir/ritonavir (Paxlovid), sotrovimab, or remdesivir. The choice of drug depends on availability, contraindications, and ease of administration. These individuals should have a reasonable expectation for 1-year survival prior to SARS-CoV-2 infection.*<br>● **Nirmatrelvir/ritonavir (Paxlovid)** at a dose of 300 mg nirmatrelvir (two 150 mg tablets) with 100 mg ritonavir (one 100 mg tablet), with all three tablets taken together orally twice daily for 5 days, **is recommended** for these patients if they present within 5 days of symptom onset.<br>• In patients with moderate renal impairment (eGFR ≥30 to <60 mL/min), the dose should be reduced to 150 mg nirmatrelvir (one 150 mg tablet) and 100 mg ritonavir (one 100 mg tablet) taken together twice daily for 5 days. Paxlovid is not recommended in patients with severe renal impairment (eGFR <30 mL/min).<br>• Specialized pharmacist consultation is important to mitigate any significant drug-drug interactions with other drugs.<br>• Paxlovid should be preferentially deployed in regions and to populations where administration is a barrier to intravenous medication.<br>● **Sotrovimab** 500 mg IV x 1 dose **is recommended** for these patients if they present within 7 days of symptom onset.<br>• Previous SARS-CoV-2 infection and vaccination status do not need to be considered. Serologic testing is not recommended.<br>● **Remdesivir** 200 mg IV on day 1, then 100 mg IV daily for 2 days **is recommended** for these patients if they present within 7 days of symptom onset.<br>▶ *If the above drugs are unavailable or contraindicated:*<br>▲ **Fluvoxamine may be considered** for patients with mild COVID-19 illness presenting within 7 days of symptom onset. The recommended starting dose is 50 mg PO daily, titrated up to 100 mg PO twice daily for a total of 15 days. Pharmacist consultation and outpatient provider follow-up is important to avoid any significant adverse drug interactions with fluvoxamine. This recommendation balances the very low certainty evidence of benefit for preventing hospitalization with the need for management options for mild illness with a reasonable safety profile during a surge in COVID-19 cases due to the Omicron variant.<br>▲ **Budesonide** 800 mcg inhaled twice daily for 14 days **may be considered** for these patients. This recommendation is based on very low certainty evidence of reduction in duration of symptoms, and the need for outpatient treatment options with a reasonable safety profile during an anticipated spike in COVID-19 cases due to the Omicron variant. Budesonide may have a role as an additional therapy in patients already on other therapies who have respiratory symptoms. |
| **STANDARD RISK** *Individuals with <5% risk of hospitalization* | ● **Reassurance and information for self-monitoring of symptoms** (including self-monitoring of oxygen saturation) **are recommended**.<br>▲ **Fluvoxamine** 50 mg PO daily titrated up to 100 mg PO twice daily for a total of 15 days **may be considered** for these patients if they present within 7 days of symptom onset. See fluvoxamine recommendation statement for higher risk mildly ill patients.<br>▲ **Budesonide** 800 mcg inhaled twice daily for 14 days **may be considered** for these patients. See budesonide recommendation statement for higher risk mildly ill patients.<br>■ The following therapies are **not recommended** for these patients: **sotrovimab**, **nirmatrelvir/ritonavir (Paxlovid)**, and **remdesivir**. |

5 Days

7 Days

Ontario Science Table. Updated. Feb.23, 2022

# In Summary

- High Risk of Hospitalization (Member of a priority community, Age >70 unvaccinated, Immunodeficiency)
  - Within 5 days and High Risk with NO major DI concerns → Nirmatrelvir/r
  - Within 7 days and High Risk, Does not meet Criteria for Nirmatrelvir/r
  - → Sotrovimab
    - Until Mar. 31, 2022 → LUC3 (Via LHSC 4-OPD)
    - If Transplant Patient → Transplant ID (Via LHSC 4-OPD)

# Considerations When Prescribing COVID-19 Therapeutics

| Need | Nirmatrelvir | Sotrovimab | Remdesivir | Molnupiravir |
|---|---|---|---|---|
| Efficacy | ✓✓✓ | ✓✓✓ | ✓✓✓ | ✓ |
| Ease of delivery | ✓✓✓ | X | XXX | ✓✓✓ |
| Drug Interactions | XXX | ✓✓ | ✓✓ | ✓✓ |
| Safety during pregnancy | ✓ | ✓ | ✓✓ | XXX |
| Authorized in children (>12) | ✓✓ | ✓✓ | ✓✓✓* | XX |
| Supply/Access | | | | |

*Remdesivir approved for children >age 12 years and >40 kg; authorized for children under age of 12 years (3.5 to 40 kg)

CDC/IDSA COVID-19 Clinician Call. Access January 18, 2022.

Slide Credit: Keith Hamilton, Nina Maguire

MIDDLESEX LONDON
Ontario Health Team

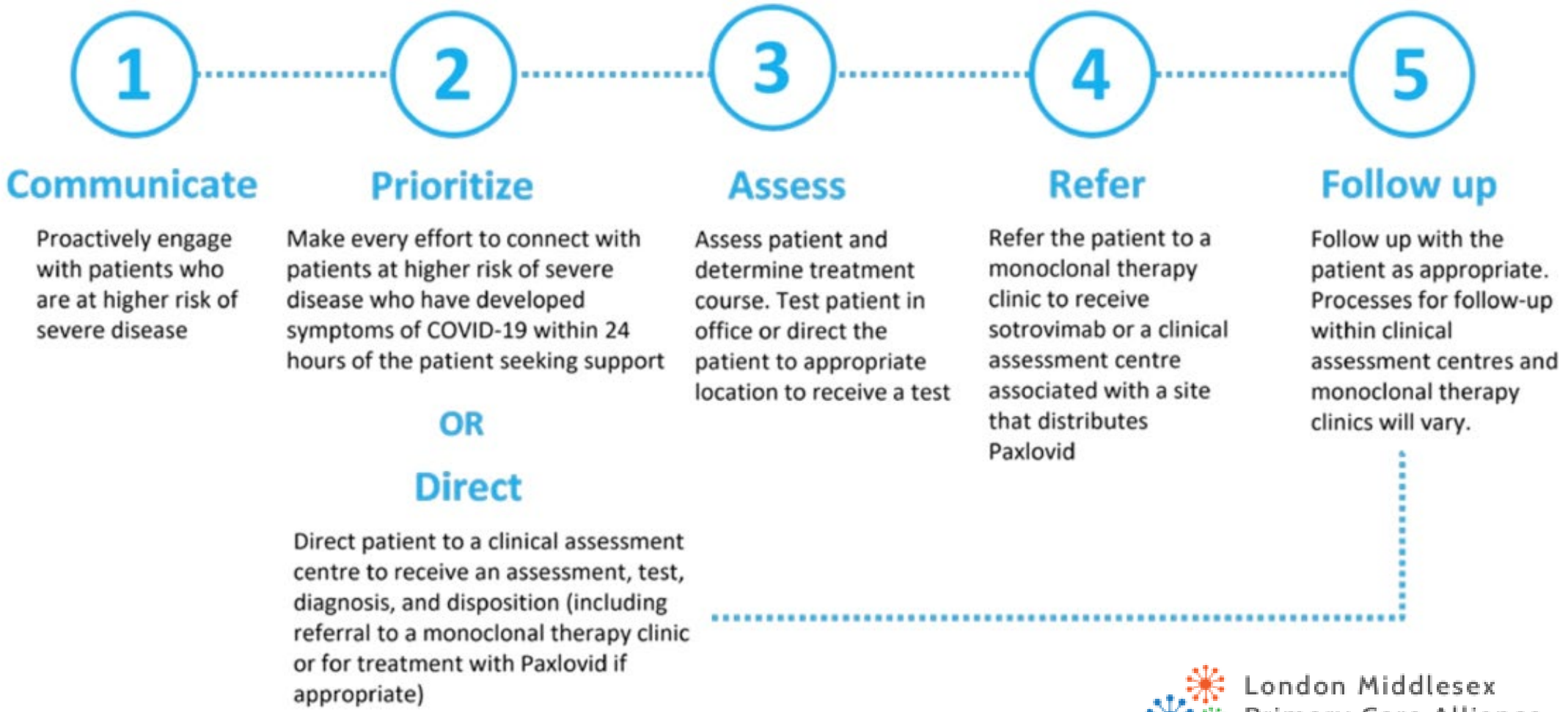
London Middlesex
Primary Care Alliance

# How to get COVID-19 Antiviral Therapy for your Patients

Dr. Gordon Schacter
London Middlesex Pandemic Clinical Lead

March 1, 2022

# Pathway for Primary Care Providers – Ontario Health




London Middlesex Primary Care Alliance

# Step 1: Communicate

London Middlesex Primary Care Alliance

- Proactively engage with patients who are considered at higher risk of severe disease.
- Consider engaging with patients:
  - During appointments (both you and your office staff)
  - Patient email blast
  - Via targeted email or telephone (after identifying patients at higher risk for severe disease via EMR search)
  - By updating the practice's website or online booking portal
  - By office Social Media accounts
  - Educational Handouts

    - **Tool: I think I have COVID. When should I call my doctor?** (https://dfcm.utoronto.ca/sites/default/files/assets/files/Q2_When_to_Call_FINAL.pdf)
    - This resource from the Department of Community and Family Medicine at the University of Toronto and the Ontario College of Family Physicians provides plain-language instructions on when patients should call their primary care provider, including specific instructions for patients at higher risk.
    - Additional resources to help the public make sense of the latest guidance around COVID/Omicron are available at www.ConfusedAboutCovid.ca.

# Step 2: Prioritize

London Middlesex Primary Care Alliance

- Awareness of the prioritization matrix
  - You and your office staff
- Timely access to care vital (≤ 24 hours)

  - **Tool: Script to support staff in identifying patients who may be eligible for outpatient treatment**
  - A script to support staff in identifying patients who may be eligible for outpatient treatment is available at the link below. Patients flagged as potentially eligible should be seen by their Family Physician/NP or other PCP within 24 hours or directed to a COVID-19 clinical assessment centre.
  - https://quorum.hqontario.ca/Portals/0/Project%20Resources/Script%20for%20primary%20care%20practice%20staff%20-%202022-01-31.pdf

# Step 3: Assess

London Middlesex Primary Care Alliance

- Virtual or In Person Assessment (within 24 hours)
- Severe symptoms? → Emergency Department
- Patient eligibility and contraindications
  - Renal and Hepatic Status assessment
- Positive COVID-19 Test
- The preferred order of COVID-19 testing options to ensure test results are available as quickly as possible is as follows:
  - ID NOW or other rapid molecular test administered by a health care professional
  - A rapid antigen test **administered by a health care professional**, with concurrent lab-based PCR if the rapid antigen test is negative *
  - A lab-based PCR test

* Rapid Antigen Tests can be ordered for free for your office by going to the Ontario Health West / HMMS order site. https://hmmscovid19.ca

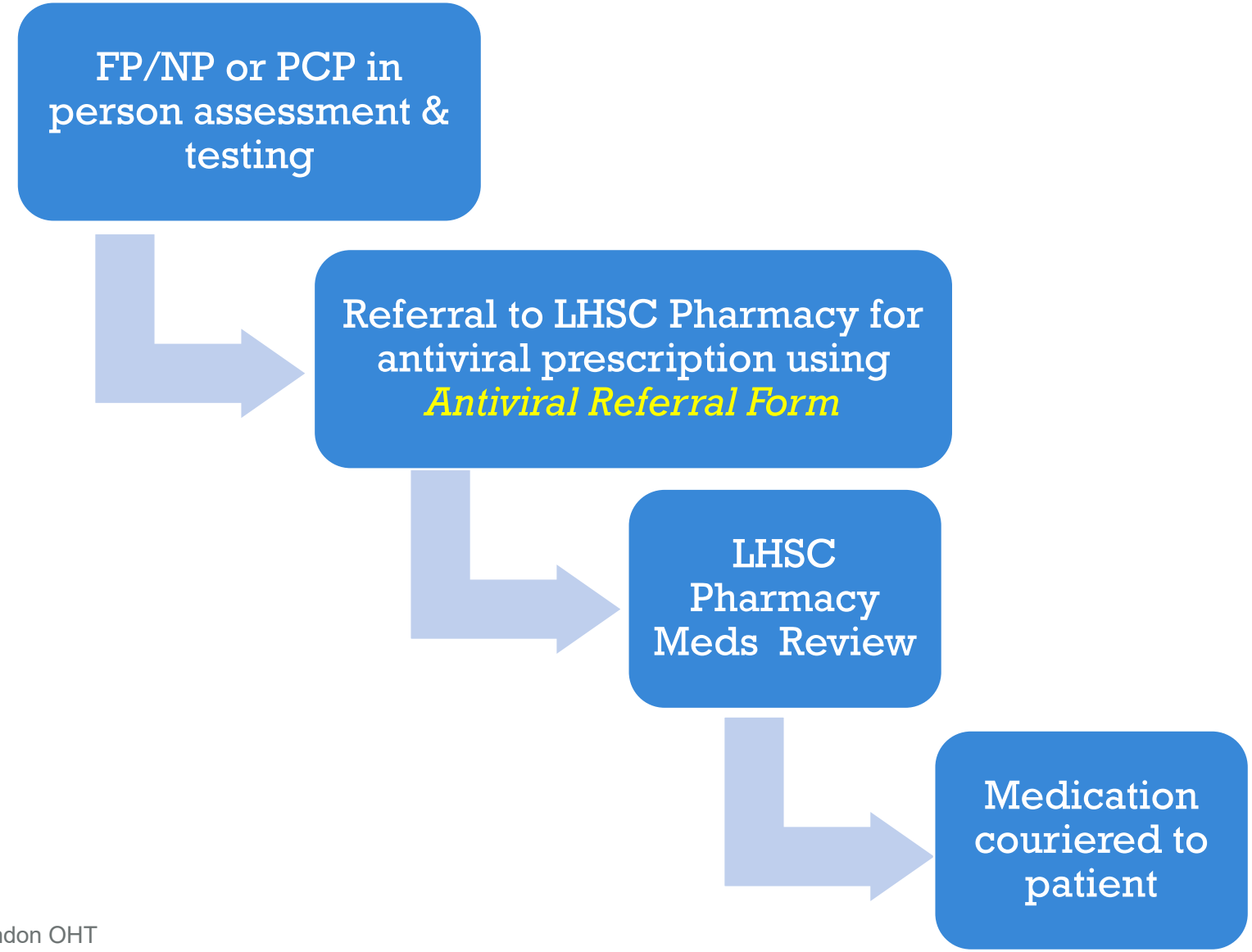
# Step 4: Refer

London Middlesex Primary Care Alliance

- 3 Clinical Pathways for referral

# Clinical Pathway #1:

London Middlesex Primary Care Alliance



# Clinical Pathway #2:

London Middlesex Primary Care Alliance

FP/NP or PCP virtual or in person assessment

Referral to CAC for IDNow testing ± lab tests (Creatinine/GFR) ONLY using *CAC Referral Form*

ID Now /Lab Results sent to referring provider

FP/NP or PCP sends Referral to LHSC Pharmacy for antiviral prescription using *Antiviral Referral Form*

LHSC Pharmacy Meds Review

Medication couriered to patient

# Clinical Pathway #3:

London Middlesex Primary Care Alliance

FP/NP or PCP assessment

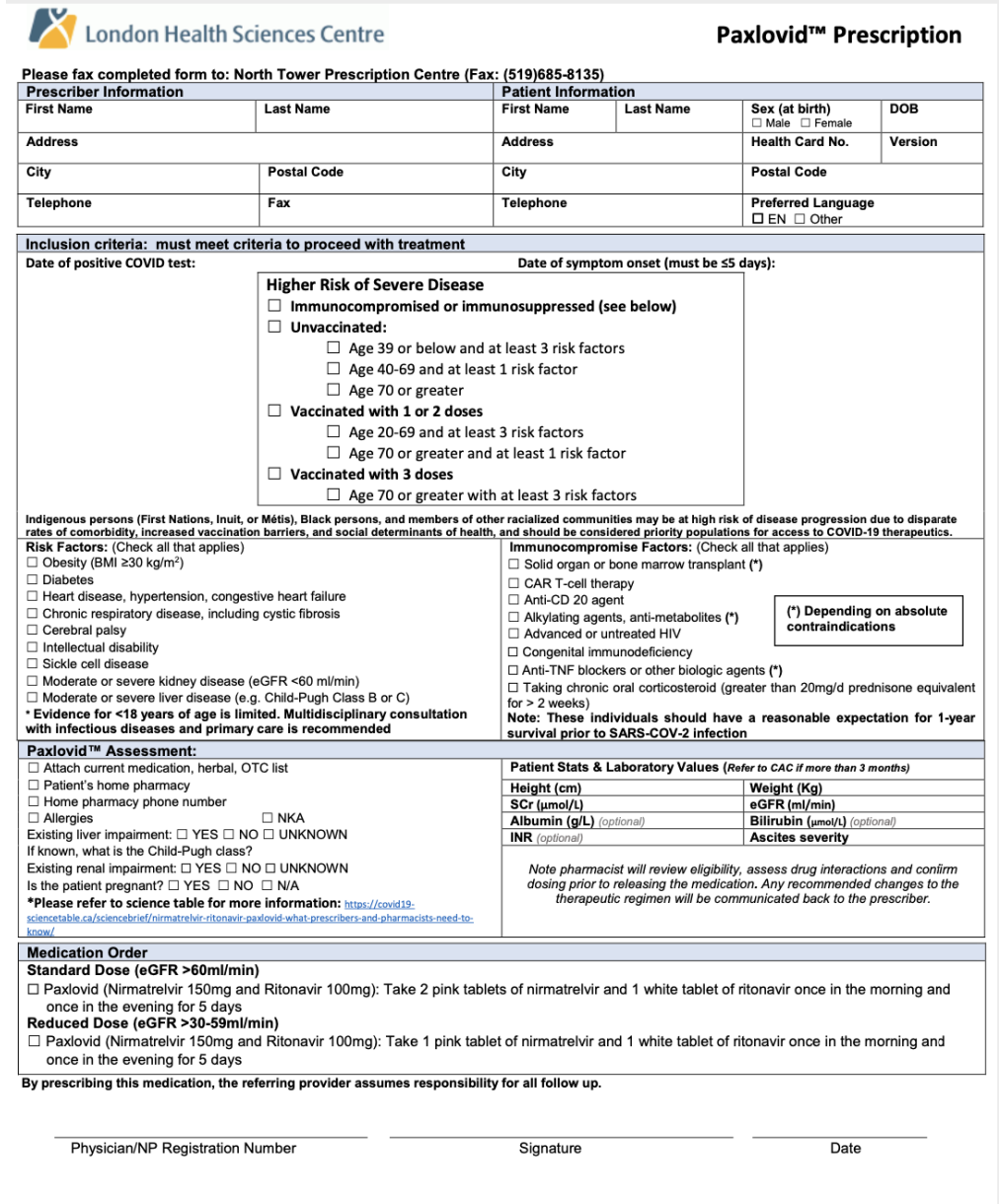
Referral to CAC for assessment, testing and antiviral assessment using *CAC Referral Form*

LHSC Pharmacy Meds Review

Medication couriered to patient

# Paxlovid Prescription Form

London Middlesex Primary Care Alliance



London Health Sciences Centre

**Paxlovid™ Prescription**

**Please fax completed form to: North Tower Prescription Centre (Fax: (519)685-8135)**

| **Prescriber Information** | | | **Patient Information** | | | |
|---|---|---|---|---|---|---|
| **First Name** | **Last Name** | | **First Name** | **Last Name** | **Sex (at birth)** ☐ Male ☐ Female | **DOB** |
| **Address** | | | **Address** | | **Health Card No.** | **Version** |
| **City** | **Postal Code** | | **City** | | **Postal Code** | |
| **Telephone** | **Fax** | | **Telephone** | | **Preferred Language** ☐ EN ☐ Other | |

**Inclusion criteria: must meet criteria to proceed with treatment**

**Date of positive COVID test:** **Date of symptom onset (must be ≤5 days):**

**Higher Risk of Severe Disease**

- ☐ **Immunocompromised or immunosuppressed (see below)**
- ☐ **Unvaccinated:**
  - ☐ Age 39 or below and at least 3 risk factors
  - ☐ Age 40-69 and at least 1 risk factor
  - ☐ Age 70 or greater
- ☐ **Vaccinated with 1 or 2 doses**
  - ☐ Age 20-69 and at least 3 risk factors
  - ☐ Age 70 or greater and at least 1 risk factor
- ☐ **Vaccinated with 3 doses**
  - ☐ Age 70 or greater with at least 3 risk factors

**Indigenous persons (First Nations, Inuit, or Métis), Black persons, and members of other racialized communities may be at high risk of disease progression due to disparate rates of comorbidity, increased vaccination barriers, and social determinants of health, and should be considered priority populations for access to COVID-19 therapeutics.**

**Risk Factors:** (Check all that applies)
- ☐ Obesity (BMI ≥30 kg/m$^2$)
- ☐ Diabetes
- ☐ Heart disease, hypertension, congestive heart failure
- ☐ Chronic respiratory disease, including cystic fibrosis
- ☐ Cerebral palsy
- ☐ Intellectual disability
- ☐ Sickle cell disease
- ☐ Moderate or severe kidney disease (eGFR <60 ml/min)
- ☐ Moderate or severe liver disease (e.g. Child-Pugh Class B or C)

*** Evidence for <18 years of age is limited. Multidisciplinary consultation with infectious diseases and primary care is recommended**

**Immunocompromise Factors:** (Check all that applies)
- ☐ Solid organ or bone marrow transplant **(*)**
- ☐ CAR T-cell therapy
- ☐ Anti-CD 20 agent
- ☐ Alkylating agents, anti-metabolites **(*)**
- ☐ Advanced or untreated HIV
- ☐ Congenital immunodeficiency
- ☐ Anti-TNF blockers or other biologic agents **(*)**
- ☐ Taking chronic oral corticosteroid (greater than 20mg/d prednisone equivalent for > 2 weeks)

**(*) Depending on absolute contraindications**

**Note: These individuals should have a reasonable expectation for 1-year survival prior to SARS-COV-2 infection**

**Paxlovid™ Assessment:**
- ☐ Attach current medication, herbal, OTC list
- ☐ Patient's home pharmacy
- ☐ Home pharmacy phone number
- ☐ Allergies ☐ NKA

Existing liver impairment: ☐ YES ☐ NO ☐ UNKNOWN
If known, what is the Child-Pugh class?
Existing renal impairment: ☐ YES ☐ NO ☐ UNKNOWN
Is the patient pregnant? ☐ YES ☐ NO ☐ N/A

***Please refer to science table for more information:** https://covid19-sciencetable.ca/sciencebrief/nirmatrelvir-ritonavir-paxlovid-what-prescribers-and-pharmacists-need-to-know/

**Patient Stats & Laboratory Values** (*Refer to CAC if more than 3 months*)

| | |
|---|---|
| **Height (cm)** | **Weight (Kg)** |
| **SCr (µmol/L)** | **eGFR (ml/min)** |
| **Albumin (g/L)** *(optional)* | **Bilirubin (µmol/L)** *(optional)* |
| **INR** *(optional)* | **Ascites severity** |

*Note pharmacist will review eligibility, assess drug interactions and confirm dosing prior to releasing the medication. Any recommended changes to the therapeutic regimen will be communicated back to the prescriber.*

**Medication Order**

**Standard Dose (eGFR >60ml/min)**

☐ Paxlovid (Nirmatrelvir 150mg and Ritonavir 100mg): Take 2 pink tablets of nirmatrelvir and 1 white tablet of ritonavir once in the morning and once in the evening for 5 days

**Reduced Dose (eGFR >30-59ml/min)**

☐ Paxlovid (Nirmatrelvir 150mg and Ritonavir 100mg): Take 1 pink tablet of nirmatrelvir and 1 white tablet of ritonavir once in the morning and once in the evening for 5 days

**By prescribing this medication, the referring provider assumes responsibility for all follow up.**

Physician/NP Registration Number _____ Signature _____ Date _____

# Paxlovid Prescription Form

London Middlesex Primary Care Alliance

London Health Sciences Centre

## Paxlovid™ Prescription

**Please fax completed form to: North Tower Prescription Centre (Fax: (519)685-8135)**

| Prescriber Information | | Patient Information | | | |
|---|---|---|---|---|---|
| First Name | Last Name | First Name | Last Name | Sex (at birth) ☐ Male ☐ Female | DOB |
| Address | | Address | | Health Card No. | Version |
| City | Postal Code | City | | Postal Code | |
| Telephone | Fax | Telephone | | Preferred Language ☐ EN ☐ Other | |

**Inclusion criteria: must meet criteria to proceed with treatment**

**Date of positive COVID test:** **Date of symptom onset (must be ≤5 days):**

**Higher Risk of Severe Disease**

- ☐ **Immunocompromised or immunosuppressed (see below)**
- ☐ **Unvaccinated:**
  - ☐ Age 39 or below and at least 3 risk factors
  - ☐ Age 40-69 and at least 1 risk factor
  - ☐ Age 70 or greater
- ☐ **Vaccinated with 1 or 2 doses**
  - ☐ Age 20-69 and at least 3 risk factors
  - ☐ Age 70 or greater and at least 1 risk factor
- ☐ **Vaccinated with 3 doses**
  - ☐ Age 70 or greater with at least 3 risk factors

**Indigenous persons (First Nations, Inuit, or Métis), Black persons, and members of other racialized communities may be at high risk of disease progression due to disparate rates of comorbidity, increased vaccination barriers, and social determinants of health, and should be considered priority populations for access to COVID-19 therapeutics.**

**Risk Factors:** (Check all that applies)

- ☐ Obesity (BMI ≥30 kg/m$^2$)
- ☐ Diabetes
- ☐ Heart disease, hypertension, congestive heart failure
- ☐ Chronic respiratory disease, including cystic fibrosis
- ☐ Cerebral palsy
- ☐ Intellectual disability
- ☐ Sickle cell disease
- ☐ Moderate or severe kidney disease (eGFR <60 ml/min)
- ☐ Moderate or severe liver disease (e.g. Child-Pugh Class B or C)

*** Evidence for <18 years of age is limited. Multidisciplinary consultation with infectious diseases and primary care is recommended**

**Immunocompromise Factors:** (Check all that applies)

- ☐ Solid organ or bone marrow transplant **(*)**
- ☐ CAR T-cell therapy
- ☐ Anti-CD 20 agent
- ☐ Alkylating agents, anti-metabolites **(*)**
- ☐ Advanced or untreated HIV
- ☐ Congenital immunodeficiency
- ☐ Anti-TNF blockers or other biologic agents **(*)**
- ☐ Taking chronic oral corticosteroid (greater than 20mg/d prednisone equivalent for > 2 weeks)

**Note: These individuals should have a reasonable expectation for 1-year survival prior to SARS-COV-2 infection**

**(*) Depending on absolute contraindications**

# Paxlovid Prescription Form

London Middlesex Primary Care Alliance

| Paxlovid™ Assessment: | |
|---|---|
| ☐ Attach current medication, herbal, OTC list<br>☐ Patient's home pharmacy<br>☐ Home pharmacy phone number<br>☐ Allergies ☐ NKA<br>Existing liver impairment: ☐ YES ☐ NO ☐ UNKNOWN<br>If known, what is the Child-Pugh class?<br>Existing renal impairment: ☐ YES ☐ NO ☐ UNKNOWN<br>Is the patient pregnant? ☐ YES ☐ NO ☐ N/A<br>***Please refer to science table for more information:** https://covid19-sciencetable.ca/sciencebrief/nirmatrelvir-ritonavir-paxlovid-what-prescribers-and-pharmacists-need-to-know/ | **Patient Stats & Laboratory Values** (*Refer to CAC if more than 3 months*)<br>**Height (cm)** — **Weight (Kg)**<br>**SCr (µmol/L)** — **eGFR (ml/min)**<br>**Albumin (g/L)** *(optional)* — **Bilirubin (µmol/L)** *(optional)*<br>**INR** *(optional)* — **Ascites severity**<br>*Note pharmacist will review eligibility, assess drug interactions and confirm dosing prior to releasing the medication. Any recommended changes to the therapeutic regimen will be communicated back to the prescriber.* |

**Medication Order**

**Standard Dose (eGFR >60ml/min)**

☐ Paxlovid (Nirmatrelvir 150mg and Ritonavir 100mg): Take 2 pink tablets of nirmatrelvir and 1 white tablet of ritonavir once in the morning and once in the evening for 5 days

**Reduced Dose (eGFR >30-59ml/min)**

☐ Paxlovid (Nirmatrelvir 150mg and Ritonavir 100mg): Take 1 pink tablet of nirmatrelvir and 1 white tablet of ritonavir once in the morning and once in the evening for 5 days

**By prescribing this medication, the referring provider assumes responsibility for all follow up.**

Physician/NP Registration Number _____ Signature _____ Date _____

Paxlovid™ Prescription Form – Version 4

# CAC Referral Form

London Middlesex Primary Care Alliance

London Health Sciences Centre

## Carling Heights Covid-19 Clinical Assessment Centre Paxlovid™ Referral Form

**Please Fax Completed Form to: North Tower Prescription Centre (Fax: 519-685-8135)**

| Prescriber Information | | Patient Information | | | |
|---|---|---|---|---|---|
| **First Name** *Enter Name* | **Last Name** *Enter Name* | **First Name** *Enter Name* | **Last Name** *Enter Name* | **Sex** *(at birth)* ☐ Male ☐ Female | **DOB** *Enter DOB* |
| **Address** *Enter Address* | | **Address** *Enter Address* | | **Health Card No.** *Enter HC No.* | **Version** *Enter Version* |
| **City** *Enter City* | **Postal Code** *Enter Postal Code* | **City** *Enter City* | | **Postal Code** *Enter Postal Code* | **PIN #** |
| **Telephone** *Enter Telephone* | **Fax** *Enter Fax* | **Telephone** *Enter Telephone* | | **Preferred Language** ☐ EN ☐ Other *Please specify* | |

**Inclusion criteria: must meet criteria to proceed with treatment**

**Date of positive COVID test:** Click or tap to enter a date. **Type of Test:** ☐ Provider Administered RAT ☐ PCR ☐ ID NOW ☐ Pending ☐ Not done

**Date of symptom onset (must be ≤5 days):** Click or tap to enter a date. **Note: Standard risk patients do not qualify for Paxlovid™**

**Higher Risk of Severe Disease**

- ☐ **Immunocompromised or immunosuppressed** *(see below)*
- ☐ **Unvaccinated:**
  - ☐ Age 39 or below and at least 3 risk factors
  - ☐ Age 40-69 and at least 1 risk factor
  - ☐ Age 70 or greater
- ☐ **Vaccinated with 1 or 2 doses**
  - ☐ Age 20-69 and at least 3 risk factors
  - ☐ Age 70 or greater and at least 1 risk factor
- ☐ **Vaccinated with 3 doses**
  - ☐ Age 70 or greater with at least 3 risk factors

*Therapeutics should always be recommended for immunocompromised individuals not expected to mount an adequate response to COVID-19 vaccination or SARS-CoV-2 infection due to their underlying immune status, regardless of age or vaccine status*

| Immunocompromised Factors: (check all that applies) | OR | Risk Factors: (check all that applies) |
|---|---|---|
| ☐ Receipt of solid-organ transplant and taking immunosuppressive therapy **(*)**<br>☐ Treatment for solid tumors and hematologic malignancies *(including individuals with lymphoid malignancies who are being monitored without active treatment)*<br>☐ Receipt of chimeric antigen receptor (CAR) T-cell or hematopoietic stem cell *transplant (within 2 years of transplantation or taking immunosuppression therapy)*<br>☐ Alkylating agents, antimetabolites **(*)**<br>☐ Transplant-related immunosuppressive drugs<br>☐ Cancer chemotherapeutic agents classified as severely immunosuppressive<br>☐ HIV *(must be on antiretroviral therapy)*<br>☐ Moderate or severe primary *immunodeficiency (e.g. Common Variable Immunodeficiency, DiGeorge Syndrome, Good's Syndrome, Hyper-IgE Syndrome, Wiskott-Aldrich Syndrome)*<br>☐ Anti-TNF blockers or other biologic agents that are immunosuppressive or immunomodulatory **(*)**<br>☐ Taking chronic oral corticosteroid *(≥20 mg prednisone or equivalent per day when administered for ≥2 weeks)* | | ☐ Obesity (BMI ≥30 kg/m²)<br>☐ Diabetes<br>☐ Heart disease, hypertension, congestive heart failure<br>☐ Chronic respiratory disease, including cystic fibrosis<br>☐ Cerebral palsy<br>☐ Intellectual disability of any severity<br>☐ Sickle cell disease<br>☐ Moderate or severe kidney disease (eGFR <60 mL/min)<br>☐ Moderate or severe liver disease (e.g. Child-Pugh Class B or C cirrhosis)<br>☐ Receiving other active cancer treatment not included in immunocompromised list<br><br>***Evidence for <18 years of age is limited. Multidisciplinary consultation with infectious diseases and primary care is recommended**<br><br>**There is a lack of data on nirmatrelvir/ritonavir use in pregnant patients, if you feel your patient would benefit from treatment,** |



| **Note: These individuals should have a reasonable expectation for 1-year survival prior to SARS-COV-2 infection**<br><br>***Depending on absolute contraindications** | | **this should be managed by a multidisciplinary team with expertise in the management of pregnancy.** |
|---|---|---|

Indigenous persons (First Nations, Inuit, or Métis), Black persons, and members of other racialized communities may be at high risk of disea progression due to disparate rates of comorbidity, increased vaccination barriers, and social determinants of health, and should be conside priority populations for access to COVID-19 therapeutics.

Nirmatrelvir/ritonavir may be considered in pregnant or lactating patients on an individual basis if the benefits of treatment outweigh the poter risks. Patients should be advised not to breastfeed for the duration of treatment and four days afterwards, during which time breast milk sho be pumped and discarded.

**Nirmatrelvir / Ritonavir Eligibility Assessment:**

☐ Attach current medications (from past 14 days), herbal, nutraceuticals, and OTC list
☐ Patient's home pharmacy *Enter Pharmacy name*
☐ Home pharmacy phone number *Enter Pharmacy phone number*
☐ Allergies *Enter Allergies Here* ☐ NKA
Existing liver impairment: ☐ YES ☐ NO ☐ UNKNOWN
If known, Child-Pugh Class? ☐Class A ☐ Class B ☐Class C
Existing renal impairment: ☐ YES ☐ NO ☐ UNKNOWN
***Please refer to science table for more information on contraindications:** https://covid19-sciencetable.ca/sciencebrief/nirmatrelvir-ritonavir-paxlovid-what-prescribers-and-pharmacists-need-to-know/

Scan the QR code for Nirmatrelvir/Ritonavir product monograph

| **Patient Stats & Laboratory Values** *(Refer to CAC if >6 months or acute illness)* | |
|---|---|
| **Height (cm)** *Enter Height* | **Weight (Kg)** *Enter Weight* |
| **SCr (µmol/L)** *Enter SCr Value* | **eGFR (ml/min)** *Enter eGFR* |
| **Albumin (g/L)** *Enter level (optional)* | **Bilirubin (µmol/L)** *Level (optional)* |
| **INR** *Enter INR (optional)* | **ALT (U/L)** |
| **Platelet Count** (x10⁹/L) | **Beta hCG** (if of child-bearing age) |
| **Encephalopathy** *Choose Grade* | **Ascites severity** *Choose Grade* |

*Note pharmacist will review eligibility, assess drug interactions an confirm dosing prior to releasing the medication. Any recommende changes to the therapeutic regimen will be communicated back to th prescriber.*

***Failure to provide this information will delay timely assessmer for therapy.***

☐ **I acknowledge I have reviewed the Ontario Science Table COVID-19 advisory for Ontario drug interactions**

☐ **I have attached the most up to date medication record for the above-named patient**

**Signature of referring provider:** _____

**Date:** Click or tap to enter a date.



**Purpose for Referral:**

**Please Select All the Apply:**

☐ 1. **Assessment and Management by the Carling Heights Covid-19 Clinical Assessment Centre Nurse Practitioner**
- *By referring this patient and if medication is prescribed, the referring provider assumes responsibility for all follow-up based on any discharge instructions from the Carling Heights COVID-19 Clinical Assessment Centre*

☐ 2. **ID NOW Test**

Referring provider would like to be notified of ID NOW results via:
- ☐ Fax: _____
- ☐ Office Phone Number: _____
- ☐ Alternative Phone Number: _____

☐ 3. **Blood Work Required:**
- ☐ SCr
- ☐ eGFR
- ☐ Albumin
- ☐ Bilirubin
- ☐ ALT
- ☐ INR
- ☐ CBC
- ☐ Beta hCG

It is the responsibility of the referring provider to follow up on **any** and **all** abnormal blood results

**Exclusions**
**(if any one criterion is met, patient does NOT qualify for therapy. Do not refer for prescription)**

- ☐ On dialysis or eGFR less than 30 mL/min
- ☐ Requires medications to be crushed or split
- ☐ Has had a severe hypersensitivity reaction to nirmatrelvir, ritonavir, or excipients
- ☐ Has an oxygen saturation less then 92% on room air
- ☐ Greater than 5 days of symptoms
- ☐ Unwilling to take COVID therapy
- ☐ Has severe hepatic impairment (Child-Pugh Class C cirrhosis or greater)
- ☐ Living with HIV and **not** on antiretroviral medication

**In order to mitigate the many potential drug interactions, a comprehensive and updated medication list must be provided for review prior to initiating nirmatrelvir/ritonavir. This review will be completed by pharmacy to determine eligibility.**

| *Enter Number* | | Click to enter a date. |
|---|---|---|
| Physician/NP Name and Registration # | Signature | Date |

# CAC Referral Form

**Purpose for Referral:**

**Please Select All the Apply:**

☐ 1. **Assessment and Management by the Carling Heights Covid-19 Clinical Assessment Centre Nurse Practitioner**
- *By referring this patient and if medication is prescribed, the referring provider assumes responsibility for all follow-up based on any discharge instructions from the Carling Heights COVID-19 Clinical Assessment Centre*

☐ 2. **ID NOW Test**

Referring provider would like to be notified of ID NOW results via:
- ☐ Fax: _____
- ☐ Office Phone Number: _____
- ☐ Alternative Phone Number: _____

☐ 3. **Blood Work Required:**
- ☐ SCr
- ☐ eGFR
- ☐ Albumin
- ☐ Bilirubin
- ☐ ALT
- ☐ INR
- ☐ CBC
- ☐ Beta hCG

It is the responsibility of the referring provider to follow up on **any** and **all** abnormal blood results

**Exclusions**
**(if any one criterion is met, patient does NOT qualify for therapy. Do not refer for prescription)**

- ☐ On dialysis or eGFR less than 30 mL/min
- ☐ Requires medications to be crushed or split
- ☐ Has had a severe hypersensitivity reaction to nirmatrelvir, ritonavir, or excipients
- ☐ Has an oxygen saturation less then 92% on room air
- ☐ Greater than 5 days of symptoms
- ☐ Unwilling to take COVID therapy
- ☐ Has severe hepatic impairment (Child-Pugh Class C cirrhosis or greater)
- ☐ Living with HIV and **not** on antiretroviral medication

**In order to mitigate the many potential drug interactions, a comprehensive and updated medication list must be provided for review prior to initiating nirmatrelvir/ritonavir. This review will be completed by pharmacy to determine eligibility.**

| *Enter Number* | | Click to enter a date. |
|---|---|---|
| Physician/NP Name and Registration # | Signature | Date |

# Step 5: Follow up

London Middlesex Primary Care Alliance

- For Antiviral Therapy, patients will need close monitoring for drug interactions and side effects.
- Follow-up may include:
  - Ongoing monitoring (e.g., via COVID@Home, or Home and Community Care Support Services Remote Patient Monitoring)
  - Virtual or in person follow up (https://hfam.ca/clinical-pathways-and-evidence/covid/assessment-diagnosis-and-management-of-covid/)

MIDDLESEX LONDON
Ontario Health Team

London Middlesex
Primary Care Alliance

# Thank you!

For more information, please contact gschacter@me.com

# Q&A

London Middlesex
Primary Care Alliance