

# Fall 2020 COVID-19 Update for Nurses and Health Professionals

Effective November 2020 – November 2021

Michigan Nurses Association

# Directions

- Watch the presentation at your pace
- Click on the link when finished to move to the post-test and evaluation
- Upon successful completion of these items, your CE e-certificate will be emailed to you. Certificates will also be available to MNA members in MemberLink.

# The Michigan Nurses Association is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

## **SUCCESSFUL COMPLETION:**

- To receive contact hours, participants must complete the evaluation form and post-test. Submission instructions and links to the post-test and evaluation are on the last page of this self study.
- This CE is free for MNA members and \$20 for non-members.
- Participants who achieve a minimum passing score of 80% will receive a certificate awarding 1.0 contact hours.
- Participants who do not achieve a passing score will have the option to retake the test at no additional cost.
- MNA members will have the title of the CE and a copy of the certificate posted in MemberLink under "My Profile."

## **CONFLICTS OF INTEREST:**

- All activity planners for this educational activity have reported no relevant financial relationships with commercial interests.
- Presenter(s) for this educational activity have reported no relevant conflict of interest.

## **COMMERCIAL SUPPORT:**

- No Commercial Support was received for this presentation.

## **NON-ENDORSEMENT OF PRODUCTS:**

- The presence of commercial exhibits during the presentation does not imply endorsement by MNA, the Michigan State Board of Nursing, or the American Nurses Credentialing Center's Commission on Accreditation.

# Learning Outcomes

- Understand the most recent information about the coronavirus (COVID-19) and its occurrence
- Define how vaccines work and are tested.
- Define in ways nurses, patients and their communities can/will be affected by COVID-19, including racial disparities in treatment.

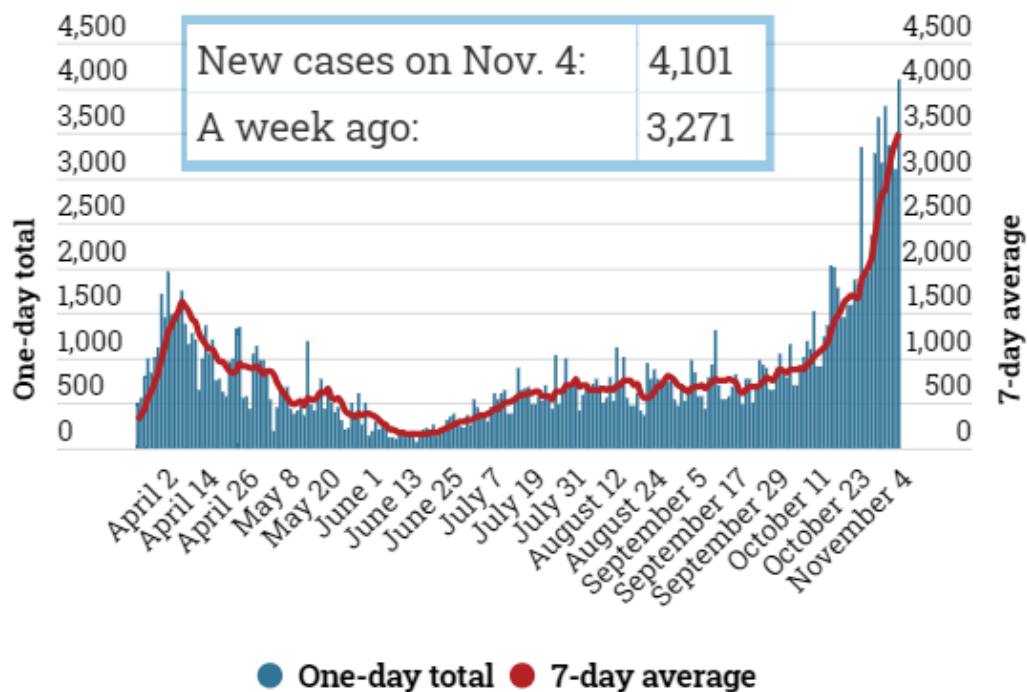
# The State of COVID-19 in Michigan

- Total Michigan COVID-19 cases was lowest around June 14; has risen again with 192,096 total cases as of 11/5/2020.
- Total deaths in Michigan as of 11/5/2020 = 7419.
- Hospitalizations had leveled off but are rising again in Fall 2020
- More varied and widespread testing including saliva testing is available as compared to earlier in the pandemic.
- The State of Michigan has a positivity rate of around 7% on 11/5/2020, with the nation at around a 3% positivity rate.

# The State of COVID-19 in Michigan

## Daily cases

New cases each day since March 25



# Prognosis with COVID-19, Fall 2020:

- Unknown factors : COVID-19 potentially worse with influenza season throughout Fall 2020-Spring 2021
- Varying schools have face to face or hybrid activities; COVID cases in schools seem to be largely from adult transmission
- Some experts are projecting that indoor living in the fall and winter may make the virus worse
- The virus is not projected to die off or be impacted by cold weather

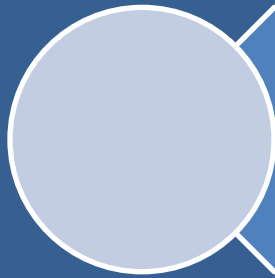
# Current interventions for COVID-19, Fall 2020:

- Continued testing for anyone with suspected contact or showing symptoms
- Schools are evaluating attendance and any virus occurrence
- There are still limits on large gatherings and some recreation facilities in Michigan
- Michigan residents are encouraged to wear a mask with indoor mask wearing mandated by several businesses and organizations

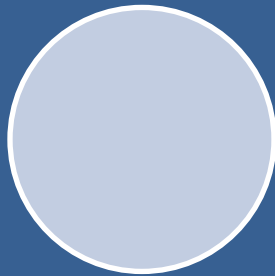


# CURRENT IMMUNOLOGY FOR COVID-19, FALL 2020:

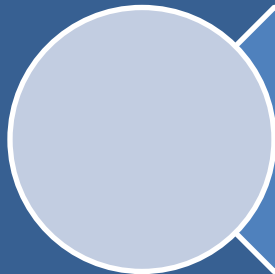
# Immunology and COVID-19



COVID-19 can interfere with and slow down your initial immune response



This delayed response allows the virus to replicate faster than other viruses



The virus can more easily trigger hyperinflammatory conditions

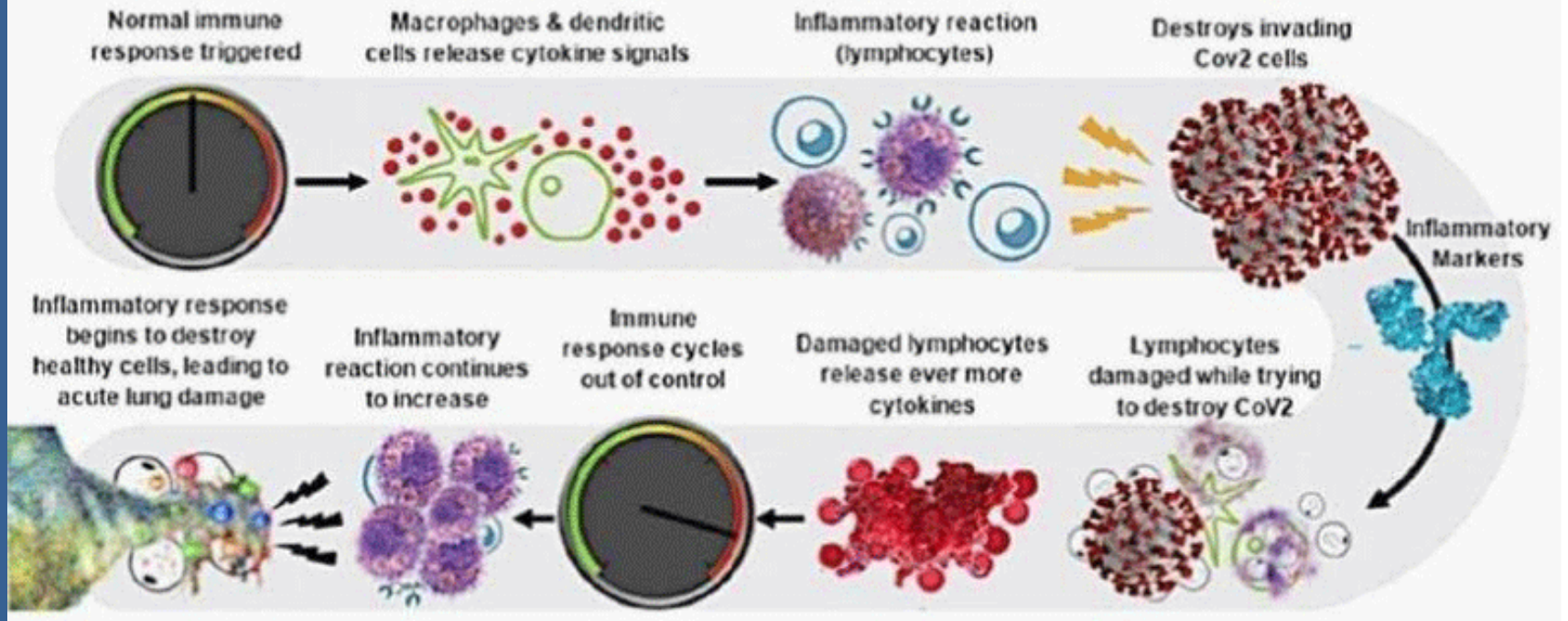
# Cytokine storms and COVID-19

- Cytokines are a protein and a normal part of an immune response
- A cytokine storm is a severe immune reaction that releases too many cytokines at once.
- Too many cytokines can cause an autoimmune response such as host (patient) organ damage
- Also called hypercytokinemia
- Too many cytokines, or a cytokine storm have arisen from COVID-19 or even some of its treatments

# 'Cytokine storm' and COVID-19

## Cytokine Storms

The majority of severe cases and deaths from COVID-19 result from runaway inflammatory responses within the patient's own immune systems, causing a cytokine storm that is difficult to interrupt.



# Bradykinin storms and COVID-19

- Bradykinin is a protein and has a normal part of overall body function
- Bradykinin is involved in the angiotensin-converting-enzyme (ACE) cascade
- COVID-19 lowers blood levels of ACE and raises ACE2 levels
- This unexpected ACE & ACE 2 response triggers excess bradykinin
- Too much bradykinin may cause increased vascular permeability, or bleeding that has been reported with COVID-19

# Immunological Treatments under investigation

Interferon: May reduce viral replication

Plasma or immunoglobulin infusions from recovered COVID-19- positive patients

Possible stem cell treatments from recovered or immune patients

Immunomodulators such as dexamethasone

Anti-kinase drugs / kinase inhibitors

# Antibodies and COVID-19

- Antibodies are proteins made by your body that help fight off infections and can provide protection against getting that disease again (immunity).
- Antibody tests look at your blood for antibodies, which may tell you if you had a past infection with the virus that causes COVID-19.
- Antibody tests should not be used to diagnose a current COVID-19 infection
- Although antibody testing is available, the presence of antibodies to COVID-19 does not seem to last.
- It is unknown if antibodies to the COVID-19 virus might help against getting infected again.

# MEDICATIONS, TREATMENTS AND COVID-19



# Medications and treatments in development and being tested



Remdesivir: antiviral

Anti-inflammatories

such as statin drugs and curcumin (turmeric)


Anti-ACE2 (angiotensin converting enzyme 2)

to block receptor sites

Anti-HIV drugs

(ritonavir, lopinavir, protease inhibitors)

# Medications and treatments in development



Remdesivir: antiviral that may work to stop the spread of the virus in the body: although controversial, did show benefits in study completed Oct 2020 (NIH, 2020).

Curcumin: anti-inflammatory that is a phytochemical : may have antiviral capabilities; may work as protease inhibitor (Zahdepour et al; 2020)

Anti-ACE2 (angiotensin converting enzyme 2) monoclonal antibodies (-mabs) may help keep virus from entering cells on ACE2 receptors (Xu et al., 2020)

Anti-HIV drugs (ritonavir, lopinavir, protease inhibitors) may help against SARS-CoV-2 infection and may help stop virus from replicating or using cell proteins to get into cells

Source: Beigel J, et al. Remdesivir for the Treatment of Covid-19 - Final Report. *N Engl J Med*. 2020 Oct 8:NEJMoa2007764. Online ahead of print. PMID: 32445440.

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# Vaccine Update

- As of October 1, 2020, there are 93+ national and international vaccine trials underway for COVID-19.
- Sites include Hong Kong, Russia, England, the USA, and others
- Companies working on vaccines include AstraZeneca, Sanofi, Sinovac, Moderna and others.
- Typical vaccine development takes 3-5 years or more

# Vaccines: How do they work?

- Vaccines are made from the same germs that cause disease so that your body will recognize the disease (For example, measles vaccine contains measles virus)
- The germs have been killed or weakened deliberately in a lab setting to the point that they don't make you sick.
- Some vaccines contain only a *part* of the disease germ such as a particular protein.
- A vaccine lets your body recognize a disease and stimulates your immune system to produce antibodies, exactly like it would if you were exposed to the disease.

# Vaccines:

## Can I get a disease from the vaccine?

- A vaccine makes an immune response in your body
- This immune response makes markers or signals that will stay and help recognize the disease if encountered in the future
- This marker system (T cells & B cells) keep the virus from taking hold in your body if encountered = immunity.
- This immune response may make you feel some effects such as a mild fever, etc. These are signs of the immune response being activated.
- Vaccines do not treat disease. Vaccines *prevent* them.
- Vaccines do not cause disease. Vaccines *prevent* them.

# Vaccine Trials: The usual path

- **PRECLINICAL TESTING:** Scientists test a new vaccine on cells and then give it to **animals** such as mice or monkeys to see if it produces an immune response.
- **PHASE 1 SAFETY TRIALS:** Scientists give the vaccine to a **small number of people** to test safety and dosage as well as to confirm that it stimulates the immune system.
- **PHASE 2 EXPANDED TRIALS:** Scientists give the vaccine to **hundreds of people** split into groups, such as children and the elderly, to see if the vaccine acts differently in them.
- **PHASE 3 EFFICACY TRIALS:** Scientists give the vaccine to **thousands of people** and wait to see how many become infected, compared with volunteers who received a placebo. These trials can determine if the vaccine protects against the coronavirus.
- **EARLY OR LIMITED APPROVAL:** China and Russia have approved vaccines without waiting for the results of Phase 3 trials. Experts say the rushed process has serious risks.
- **APPROVAL:** Regulators in each country review the trial result and decide whether to approve the vaccine or not. During a pandemic, a vaccine may receive emergency use authorization before getting formal approval.
- **COMBINED PHASES:** One way to accelerate vaccine development is to combine phases. Some coronavirus vaccines are now in Phase 1/2 trials, for example, in which they are tested for the first time on hundreds of people.

Source: Corum, et al., Sept 10 2020,  
<https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tra>

**THE EFFECTS OF COVID-19 IN OUR  
COMMUNITIES:  
WHAT HAVE WE LEARNED?**

# Race and COVID-19: What have we learned?

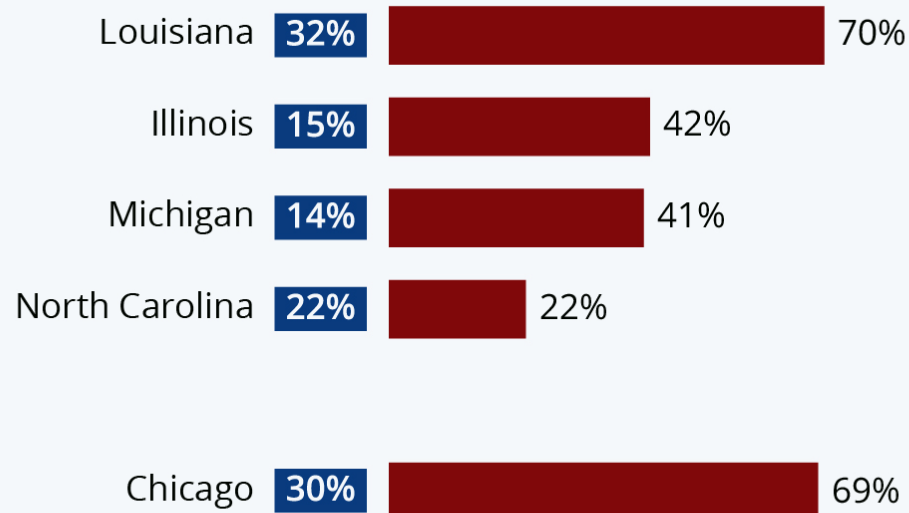
- There is a documented racial disparity both in infection and deaths with COVID-19
- African Americans/Blacks and Latinx populations are disproportionately affected by COVID-19
- African Americans/Black people are 14% of Michigan's population, but 41% of all COVID-19 deaths
- Other states are similarly affected = nationwide problem



# COVID-19's Devastating Impact On African Americans

African American share of state/city populations and COVID-19 deaths (as of Apr 06, 2020)

■ Share of state/city's population ■ Share of COVID-19 deaths



Sources: 2010 Census, respective state/city health departments



statista

# After the virus: learning about physical side effects

- Long term effects of the COVID-19 virus are not well understood and seem to be many.
- Long term side effects may include heart damage, breathing problems, strokes and other bleeding issues, Guillain-Barre syndrome and other autoimmune responses and possible Parkinson's and Alzheimer's disease
- Chronic fatigue appears in many survivors and can be long lasting

# Known Side Effects of COVID-19



Source: Mayo Clinic (Aug 4 2020). Long-term symptoms, complications of COVID-19  
Retrieved from <https://newsnetwork.mayoclinic.org/>

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**THE EFFECTS OF COVID-19 IN OUR  
NURSES:  
WHAT HAVE WE LEARNED?**

# Mental Health in Michigan Nurses: Worsened by COVID-19

- A recent study was completed in May, 2020 with Michigan nurses asking about their depression and anxiety as related to COVID-19
- Nurses are worried about taking COVID-19 home to their families and also about getting sick themselves
- Nurses who had inadequate PPE in the workplace were found to have increased depression, anxiety, and PTSD symptoms
- The more frequent the contact with COVID-19 patients in the workplace, the more those nurses reported depression, anxiety, and PTSD symptoms
- Situations in COVID-19 workplaces are directly affecting nurses' mental health

# Mental Health in Michigan Nurses: Brainstorming Solutions

- More research needs to continue.
- Nurses should have adequate amounts and types of PPE available to them.
- Nurses should not have long term work responsibilities solely in COVID-19 units.
- Mental health resources should be readily available to nurses whether working or not.
- Collective bargaining may give nurses a voice in assignments, PPE, staffing ratios, and mental health resources.

# Conclusion

- The forecast of the COVID-19 pandemic is uncertain: many countries worldwide are fluctuating with infection rates and restrictions that vary widely.
- Most experts agree that the COVID-19 virus will be a part of our world for several years.
- Science-backed medications, treatments, and study needs to continue to develop and be supported
- The long term effects of COVID-19 are still emerging
- Nurses should be supported for workplace and mental health needs.

# Post Test and Evaluation

This CE is FREE for MNA members and \$20 for non-members.

## POST-TEST DIRECTIONS

Complete the evaluation form and make your payment online by clicking [here](#)

## AWARDING OF CE

Participants who complete this module fully will receive a certificate awarding 1.0 contact hours.

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# References

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