



COVID lessons learned & moving forward

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October 19, 2022

Objectives

- Increase understanding of COVID and how it affected healthcare locally
- Lessons learned from treating COVID – early to current
- The future with COVID

Introduction

- Emergency Physician
- Trained Wayne State, Grand Rapids
- Medical Director Covenant ECC 7 years
- Assistant Chief Medical Officer – Sept 2019
- Physician Lead COVID at Covenant
- Medical Consultant with SVSU



Feb 10, 2020 at 3:09 PM

Are you afraid of the corona virus in the United States?

No

Nope

Okay I had a friend that wanted to ask 😂

How is your trip?

Before
COVID

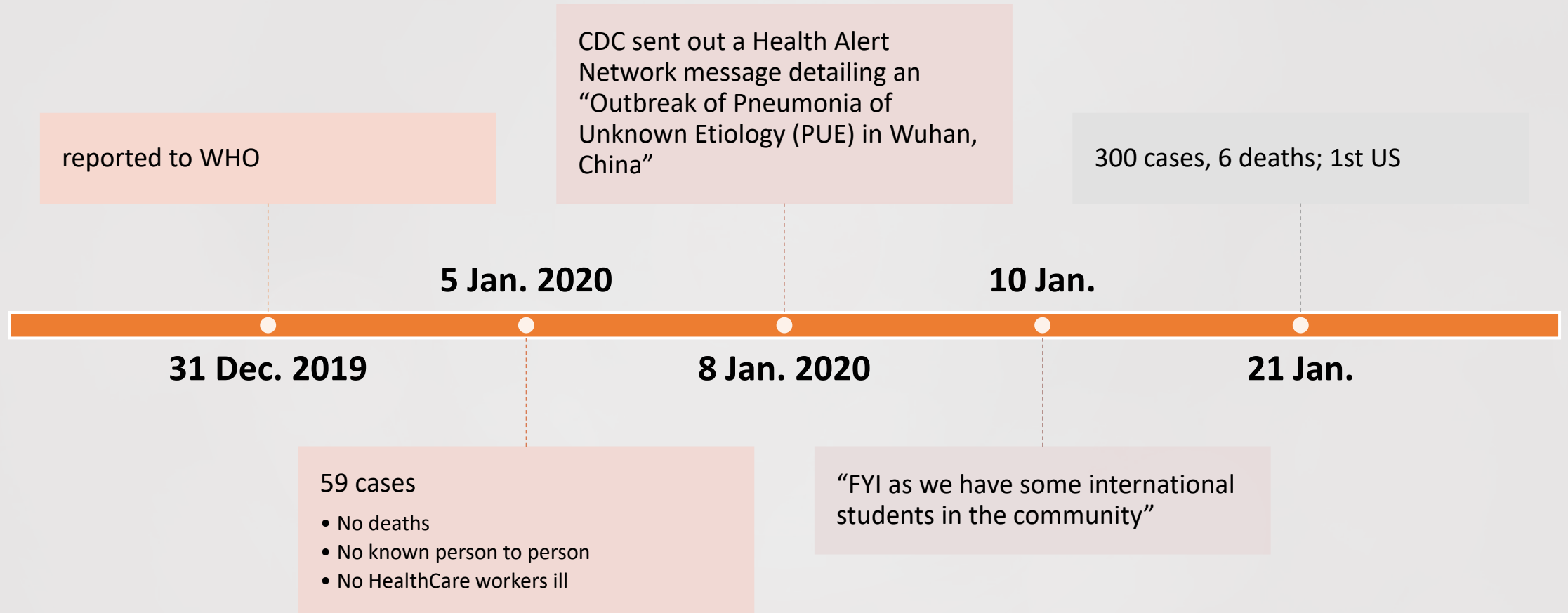
SARS 2002-4 in China – 11%
mortality; gone

Swine flu (H1N1) 2009 – Fatality
rate 0.02%

MERS 2012 – 30% mortality, not
transmit easily

Ebola 2014-16 (11 people in US)
– 50% mortality

COVID coming?





First case in US

- Although the etiology and transmissibility have yet to be determined, and to date, no human-to-human transmission has been reported and no health care providers have been reported ill, CDC currently recommends a cautious approach to symptomatic patients with a history of travel to Wuhan City. Such patients should be asked to wear a surgical mask as soon as they are identified and be evaluated in a private room with the door closed. Personnel entering the room to evaluate the patient should use contact precautions and wear an N95 disposable facepiece respirator.
- As of January 21, 2020, the Centers for Disease Control and Prevention (CDC) reported approximately 300 human infections in China with six deaths. Exported cases have been confirmed in Thailand, Japan, The Republic of Korea, and the United States. Initially, most patients reported exposure to a large seafood and animal market, suggesting animal-to-person spread. However, many recent patients do not report visiting animal markets, providing evidence that some person-to-person transmission is occurring.

Close encounters?

- Jan 27 the ECC patient from Taiwan, no known contacts, ST/cough/runny nose, no fever, fatigue
 - Negative workup
 - D/W epidemiology rec: not to CDC
- Feb 3 encounter patient with fever, roommate was in China 2 weeks earlier
 - Negative pressure, PPE
 - Patient did not meet criteria for testing

**Michigan Interim 2019 Novel Coronavirus (2019-nCoV)
Patient Under Investigation (PUI) Cover Sheet Continued**

The completed CDC PUI form with intact cover sheet (with patient identifiers below) should be faxed to the MDHHS Communicable Disease Division at (517) 335-8263 or uploaded to the Michigan Disease Surveillance System (MDSS) if the patient has been entered into the MDSS. Entry into MDSS should be under the Reportable Condition: "Novel Coronavirus" with the Outbreak Name: "Wuhan19-20"

(Cover sheet with patient identifiers will be removed by MDHHS prior to sending the PUI Form to CDC)

Patient Information:

First name: _____ Last name: _____

CDC PUI ID#: _____
(Note: A CDC PUI ID # must be obtained by MDHHS prior to specimens being submitted from the healthcare facility to the MDHHS BOL for 2019-nCoV testing at CDC.)

MDSS ID number (MDHHS/LHD use): _____

Date of birth: ____/____/____ Age: ____ Sex: Female Male

Patient residence street address: _____ City: _____
County: _____ State: _____ Zip Code: _____

Patient phone number(s): _____ / _____

Patient hospital ID (Medical Record) number: _____

Reporting healthcare facility: _____

Reporting healthcare facility contact name and title: _____

Healthcare facility contact phone number: _____

Healthcare facility contact e-mail: _____

For additional information about 2019 Novel Coronavirus, please see:

<https://www.cdc.gov/coronavirus/2019-ncov/in dex.html>

Version date: 01/31/2020

Form Approved: OMB: 0920-1011 Exp. 4/23/2020
Specimens for 2019-nCoV testing

Specimen type	Specimen ID	Date collected	Sent to CDC?
NPSwab			<input type="checkbox"/>
DP swab			<input type="checkbox"/>
Sputum			<input type="checkbox"/>
BAL fluid			<input type="checkbox"/>
Tracheal aspirate			<input type="checkbox"/>

Specimen type	Specimen ID	Date collected	Sent to CDC?
Stool			<input type="checkbox"/>
Urine			<input type="checkbox"/>
Serum			<input type="checkbox"/>
Other, specify _____			<input type="checkbox"/>
Other, specify _____			<input type="checkbox"/>

Form Approved: OMB: 0920-1011 Exp. 4/23/2020
Interim 2019 novel coronavirus (2019-nCoV) patient under investigation (PUI) form

As soon as possible, notify and send completed form to your local/state health department. The Michigan Department of Health and Human Services (MDHHS) will submit the completed PUI form to CDC.

Today's date: _____ State: _____ Patient ID: _____ NNDSS local record ID/Case ID: _____ State: _____ Country: _____
Patient first name: _____ Patient last name: _____ Patient date of birth: _____
Interviewer's name: _____ Phone: _____ Email: _____
Physician's name: _____ Phone: _____ Pager or Email: _____
Sex: M F Age: _____ yr mo Residency: US resident Non-US resident, country: _____

PUI Criteria
Date of symptom onset: _____
Does the patient have the following signs and symptoms (check all that apply)?
 Fever Cough Sore throat Shortness of breath
Does the patient have these additional signs and symptoms (check all that apply)?
 Chills Headache Muscle aches Vomiting Abdominal pain Diarrhea Other, Specify: _____
In the 14 days before symptom onset, did the patient:

Spend time in Wuhan City, China?	Does the patient live in Wuhan City?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown
Date traveled to Wuhan City: _____	Date traveled from Wuhan City: _____	Date arrived in US: _____
Spend time in Hubei Province, China?	Does the patient live in Hubei Province?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown
Date traveled to Hubei Province: _____	Date traveled from Hubei Province: _____	Date arrived in US: _____
Spend time in China?	Does the patient live in China?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown
Date traveled to China: _____	Date traveled from China: _____	Date arrived in US: _____
Have close contact* with a person who is under investigation for 2019-nCoV?	Was the case ill at the time of contact?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown
Have close contact* with a laboratory-confirmed 2019-nCoV case?	Was the case ill at the time of contact?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown
Is the case a U.S. case?	Is the case an international case?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown
In which country was the case diagnosed with 2019-nCoV? _____		

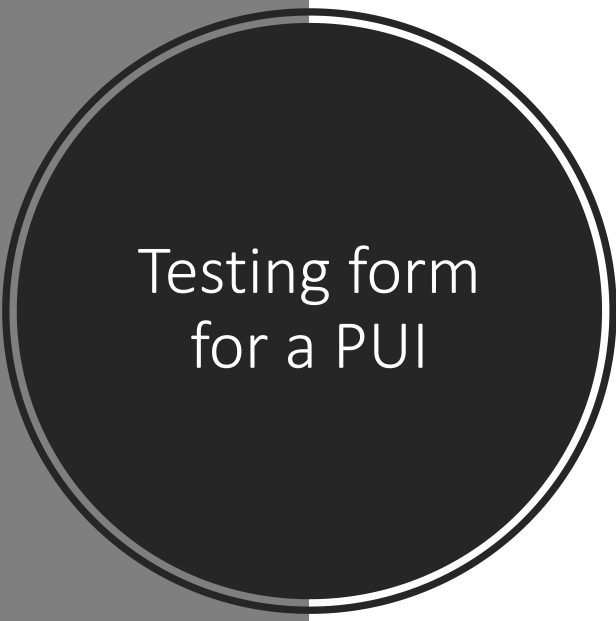
Additional Patient Information
Is the patient a healthcare worker? Y N Unknown
Have history of being in a healthcare facility (as a patient, worker, or visitor) in China? Y N Unknown
Care for a rCoV patient? Y N Unknown
Is patient a member of a cluster of patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) of unknown etiology in which rCoV is being evaluated? Y N Unknown
Diagnosis (select all that apply): Pneumonia (clinical or radiologic) Y N Acute respiratory distress syndrome Y N
Comorbid conditions (check all that apply): None Unknown Pregnancy Diabetes Cardiac disease Hypertension Chronic pulmonary disease Chronic kidney disease Chronic liver disease Immunocompromised Other, specify _____
Is/was the patient hospitalized? Y, admit date: _____ N Admitted to ICU? Y N
Intubated? Y N On ECMO? Y N Patient died? Y N
Does the patient have a other diagnosis/etiology for their respiratory illness? Y, Specify: _____ N Unknown

Respiratory diagnostic results

Test	Pos	Neg	Pending	Not done
Influenza rapid Ag	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Influenza PCR	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RSV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. metapneumovirus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parainfluenza (1-4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adenovirus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Test	Pos	Neg	Pending	Not done
SARS-CoV-2/2019-nCoV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coronavirus (OC43, 229E, HKU1, NL63)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M. pneumoniae	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. pneumoniae	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLEASE TURN OVER





Jan 27, 2020

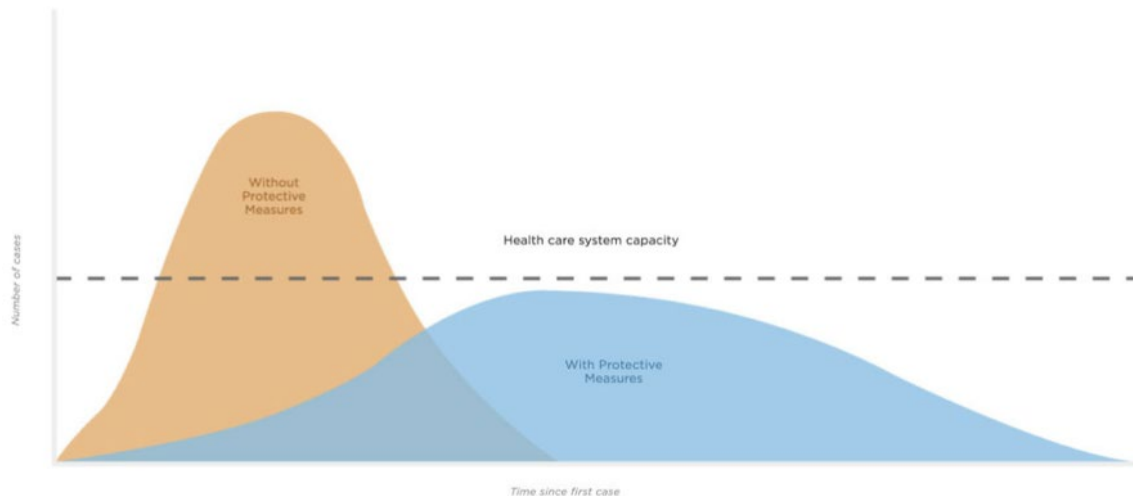
Worldwide shortage of
N-95's impacting OR
inventory at Covenant
- Ordered 20 boxes of
N-95's

Covenant meetings
begin



March 10, 2020 – First Michigan Cases

- Email to Emergency Physicians
 - All testing in Lansing = 300 kits
 - Expect 4-6 weeks before commercial test
 - Self-quarantine if low suspicion
 - PAPER for collecting specimens, RVP
 - Mortality 0.7-3% (vs 0.1% bad flu year)
 - Flatten the curve
 - Other clinical findings: low to normal WBC, ground glass on CT
 - Plans if too many patients





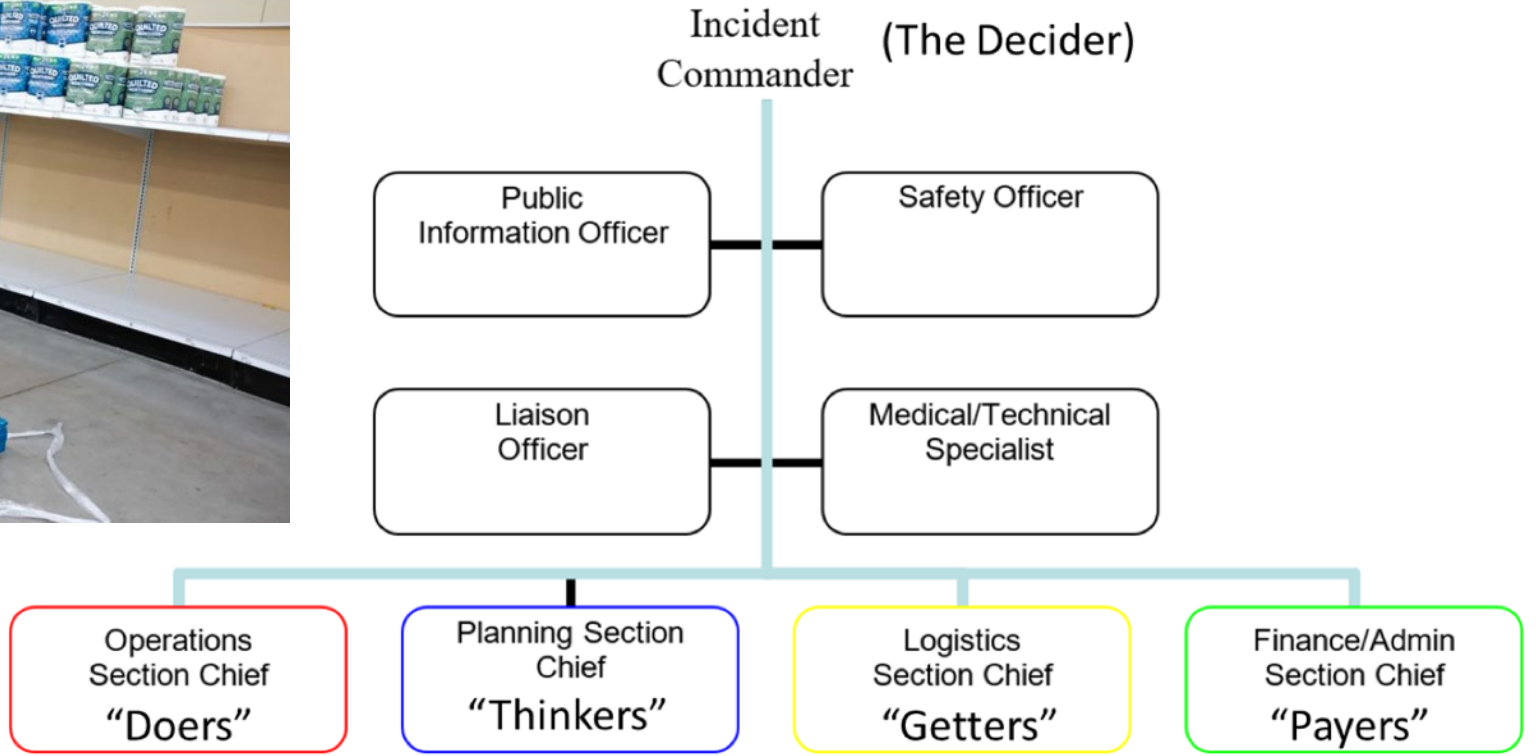
Wednesday March
11, 2020

NBA cancels season



Thursday March 12,
2020

- Incident Command formally starts meeting
- Schools close





Friday March 13,
2020 – First case

- **First in region**
- **Calling patients to say might be exposed**
- **Media storm**



Incident Command

- Extraordinary collaboration
- Communication key
- Daily decisions

Initial tasks

Obtaining adequate PPE and supplies

Visitors

Patient screening

Testing – drive up testing

COVID patient transportation

Employee wellness

Isolation rooms – not enough

Quarantine and Isolation patients and staff

Early tasks

Addressing fear, uncertainty

SWAT team – become trainers

Set up COVID hotline

Planning for surge of patients

Employee paychecks



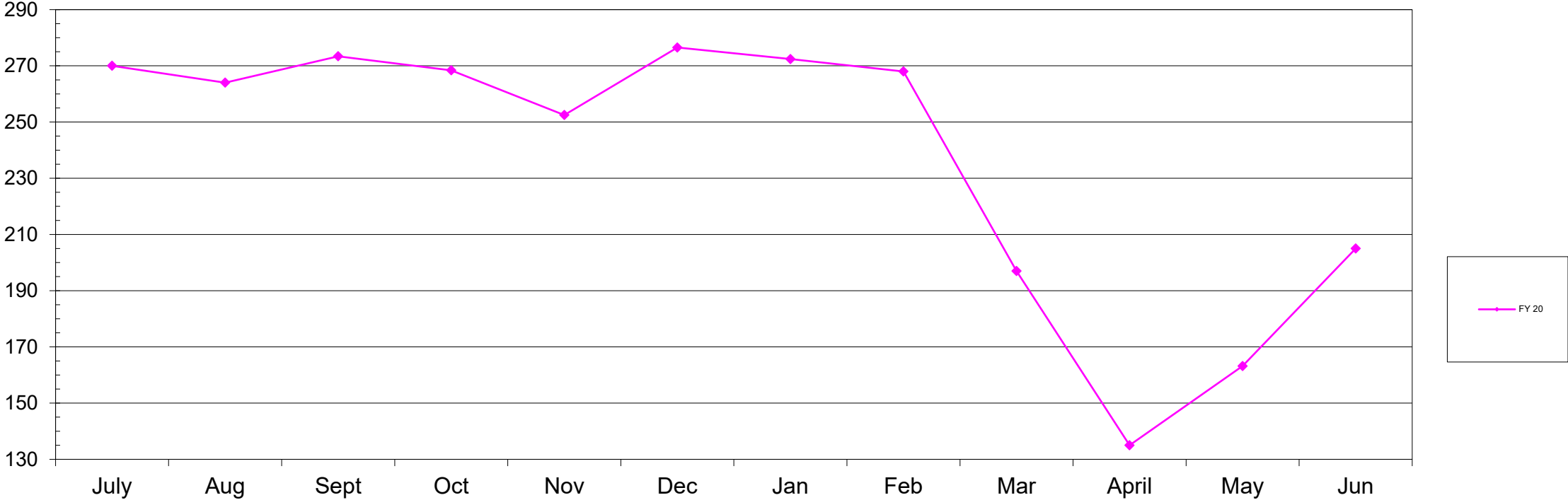
ECC Strategy

- Outdoor screening for patients
- Separate hallway for them to use to get into the ECC
- Separate section of the ECC that was treated for PUI



ECC volumes

Covenant HealthCare Emergency Care Center Average Daily Patient Census



Too scared to get care

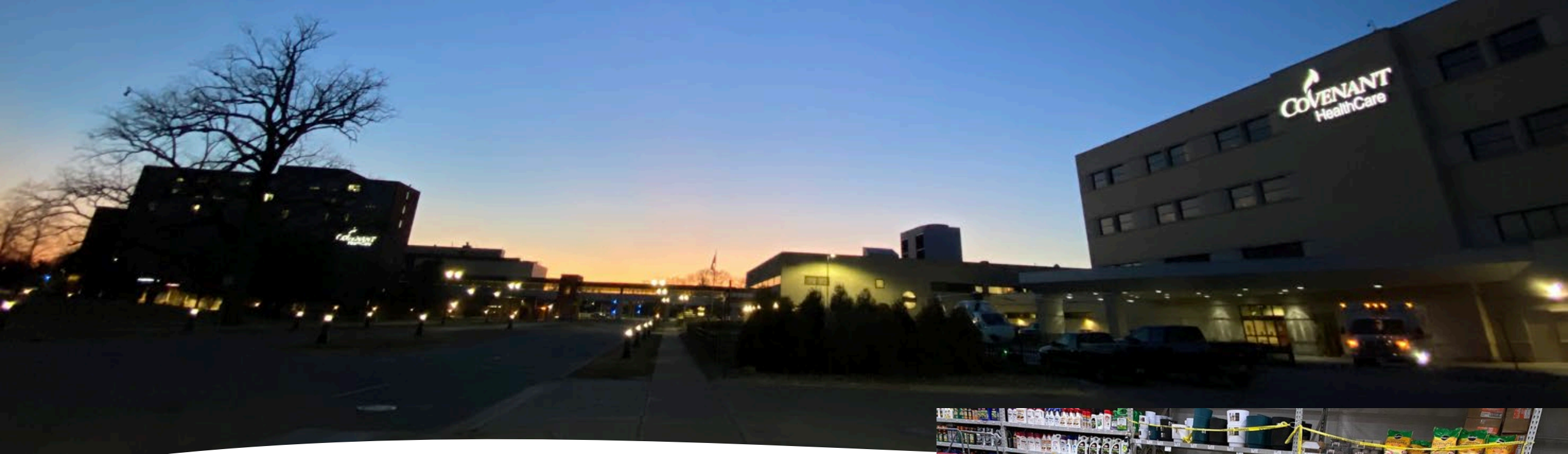
EMS reported a 60% increase in home arrests

ECC physicians seeing a dramatic increase of deaths due to COVID and other conditions

Nursing homes

- High rates of hospitalization
- Death
- Long term plans





Statewide Stay-at-Home Order – March 24

- Empty roads
- Essential worker letters



COVID Information



Myths

- Hairdryer
- Essential oils and vitamins
- Fake disease
- Make up diagnosis for money
- Inject cleaning supplies
- Masks don't make a difference
- Drinking alcohol not protect you
- Adding pepper to soup



Trusted Sources

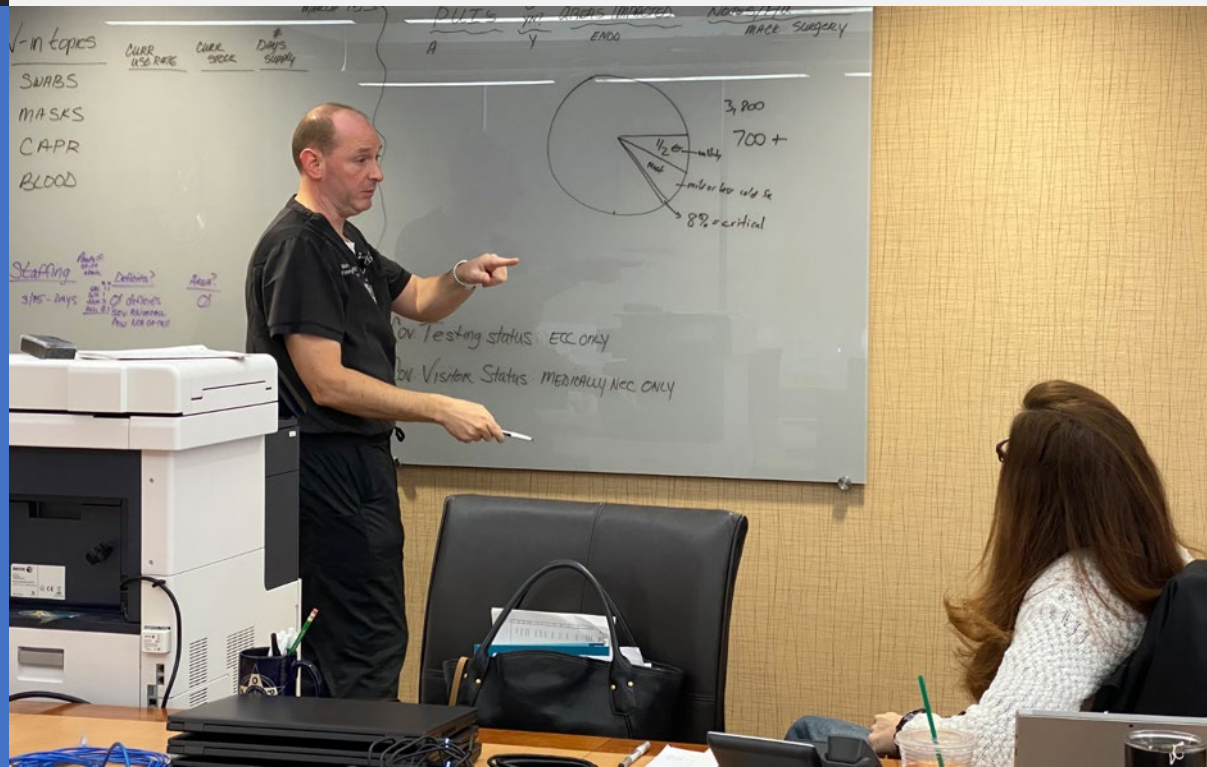
- Colleagues
- Online pre-print articles
- WHO
- CDC
- National news





Diamond Princess Cruise

- Quarantined 2 weeks
- 3711 passengers/crew
- 712 infected
- 14 died = 2% mortality



Washington Choir

After choir practice with one symptomatic person,
87% of group developed COVID-19



● index case ● 32 confirmed and 20 probable cases ● unaffected person

COVID-19 spreads easily

- Avoid groups
- Stay at least 6 feet apart
- Wear face coverings



Donated food and supplies



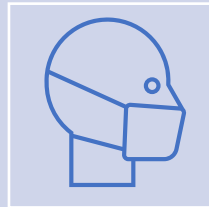
Quarantine from family

- Sleep rooms and showers for staff who would like to stay on campus vs going home and/or shower before leaving
- McNally opens up for staff to use as a self-quarantine option
- 4/6/2020 - Supporting Covenant Employees Updated Self Quarantine Options at local hotels

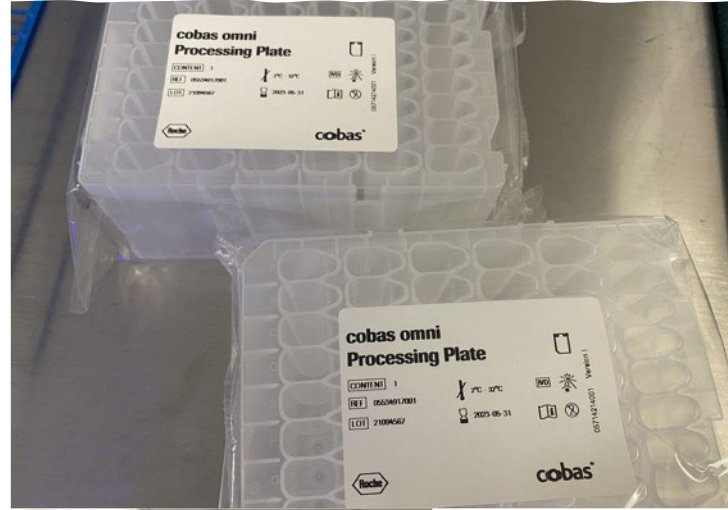
Masks?



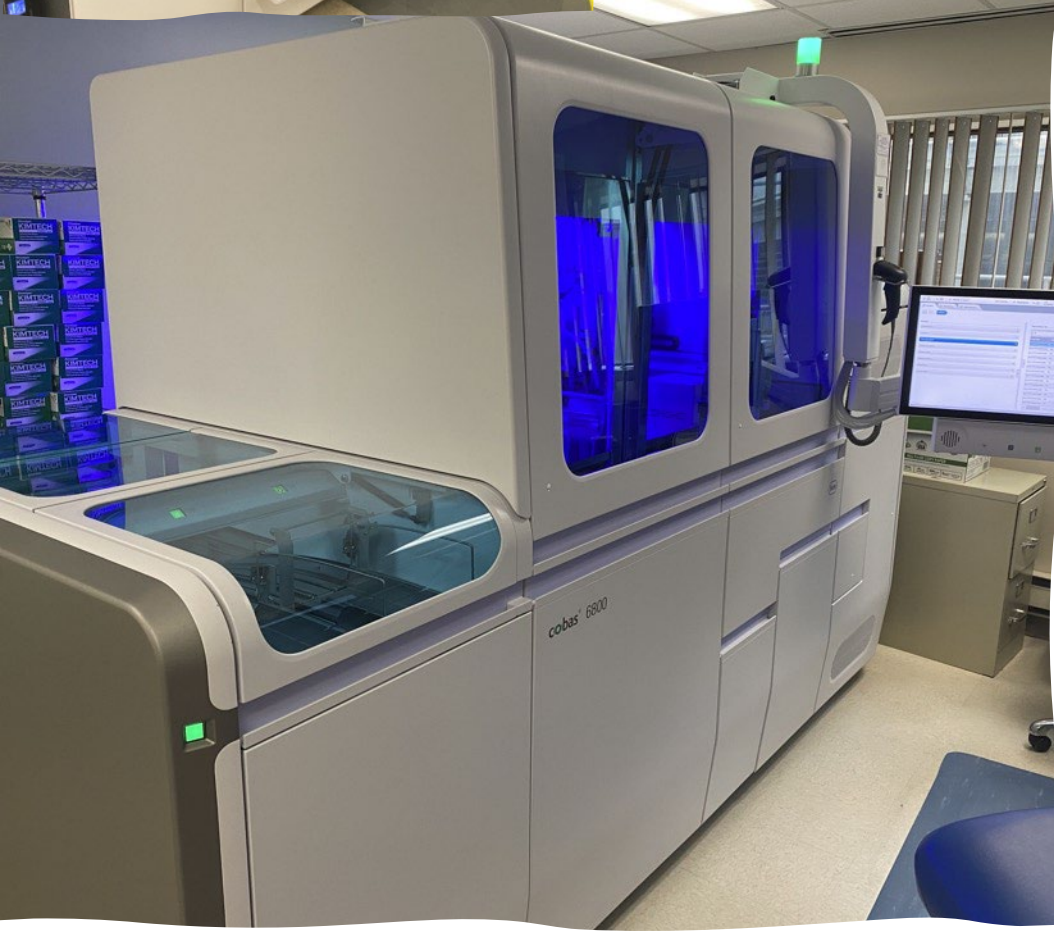
4/2/2020 = 2 weeks



Covenant implements
mandatory masking for all
employees



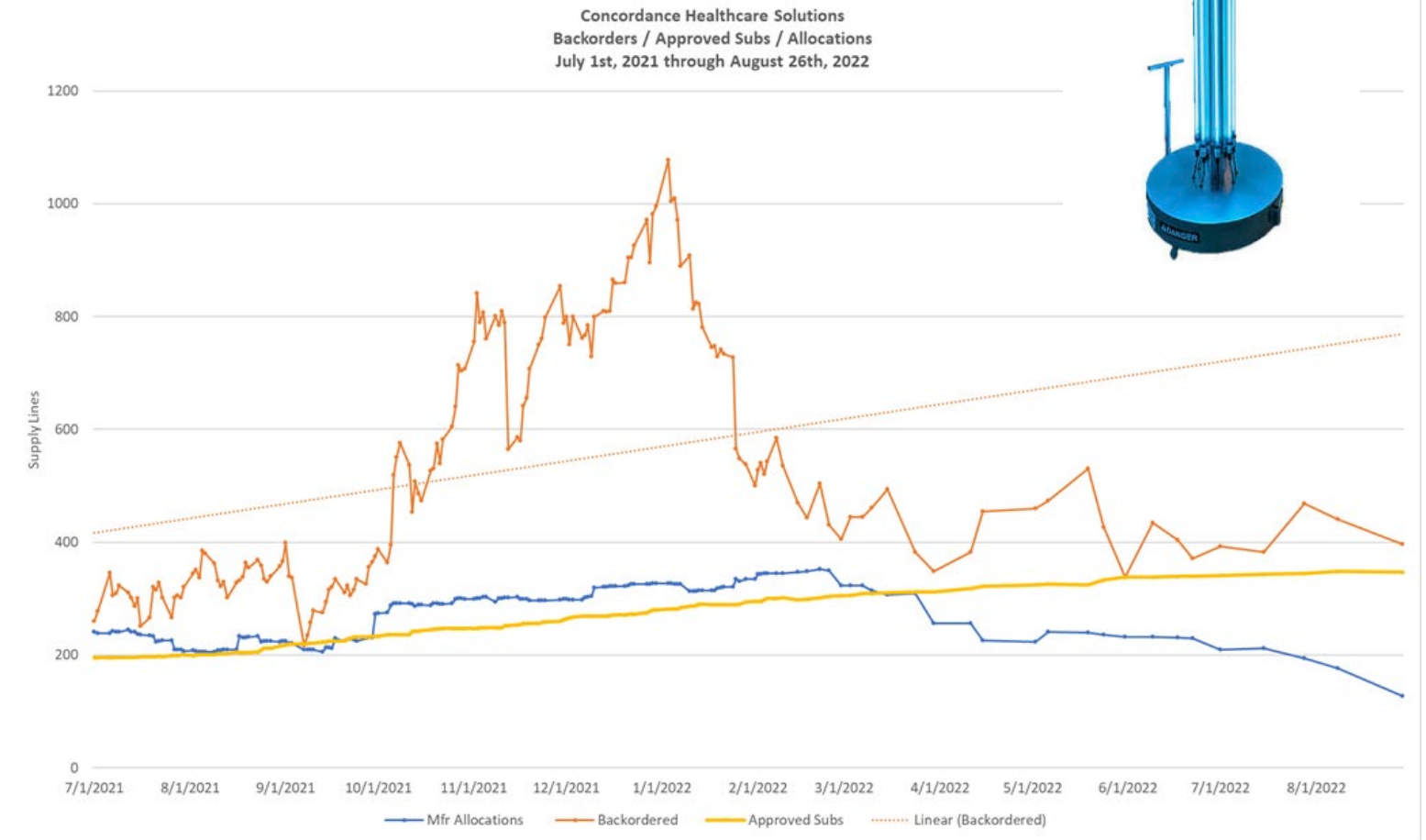
Testing



- First Test live in the lab within 35 days (Cepheid)
- Turnaround time of 90-minutes
- Second test Roche - can result 300-400 per day

Shortages of supplies

- UV re-sterilize N-95
- Gowns
- Testing supplies
- Amazon, E-bay, direct order from China
- Local community
 - Dow – hand sanitizer
 - Face shields
 - Masks





Sunshine

- 4/22/2020 at 6:23 pm - Daily Update “HERE COMES THE SUN” COVID-19 SUCCESS CELEBRATION
- 4/24-29/2020 - Spring surge hits its peak with 80 patients being treated inpatient at Covenant
- 6/12/2020 - The final stay at home order expired.
- 6/23/2020 – Two covid units remain open

Teamwork



COVID illness

Part One

- Typical viral illness
- Most contagious 2 days prior until about 3-5 days after symptoms

Part Two

- Body eliminates the virus = done
- OR Virus continues and body has exaggerated response

Treatments

High flow oxygen

Intubate appropriately

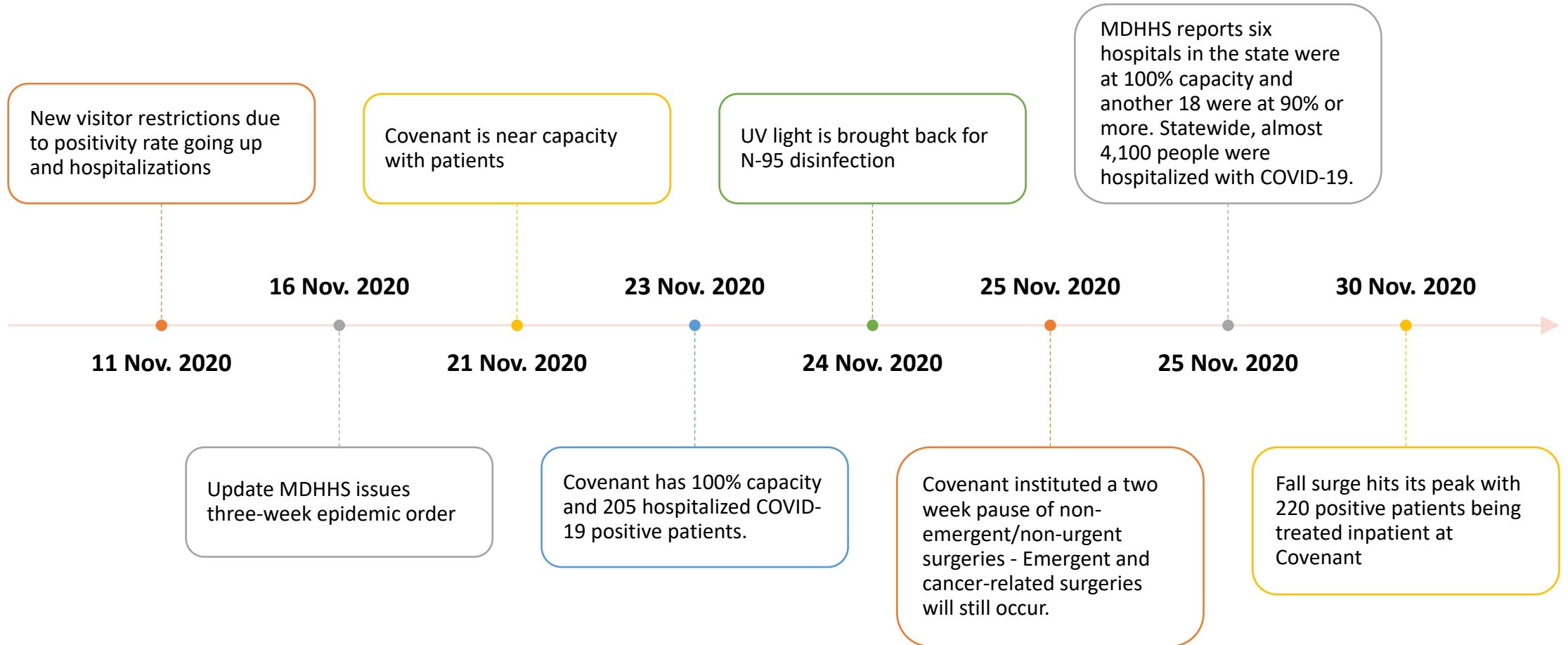
Prone positioning

Steroids

Remdesivir

Baricitinib/Tocilizumab

Here we go again 😞



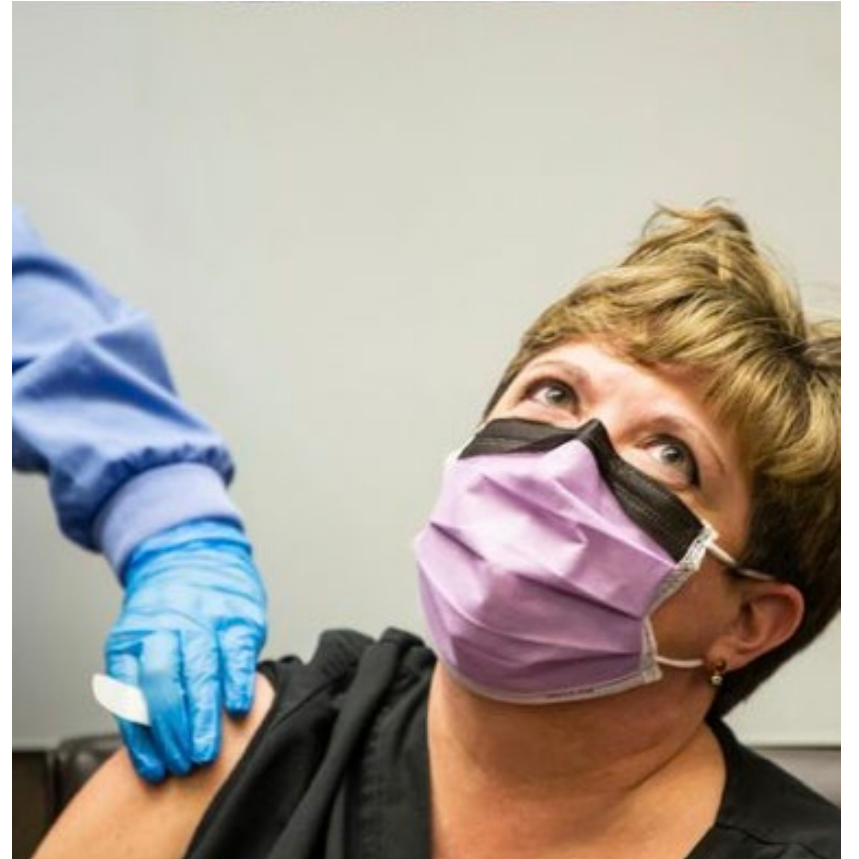


Fall/winter 2020

- Vaccine coming soon
- Large regional spike - 220 patients (350 adult beds)
- Run out of High flow oxygen pressure
- Running out of ventilators – creative use

Vaccine – Dec 17, 2020

- Vaccine – finally defeat this
- More resistance / falsehoods
 - Microchips inserted
 - Makes infertile
 - COVID not real
 - Not believe caregivers (cyclic vomiting marijuana)
 - Die in 3 years
- Ask for vaccine just before intubating



Second winter (2021/22)

- Public less willing to distance, mask, vaccinate
- Staffing is a concern
- Department of Defense doctors and nurses

Covenant HealthCare COVID-19 Inpatient Tracker			
12/14/2021 11:31	Inpatient	Discharge	Total
Patients	78	3,590	3,668
Code	19	480	499
Episode	14	91	105
LOS			9.85
Out	1		
Resolved Patients	31		
Discharge Disposition		Patient Detail	
Expired	549	Patients Out	
Home	2,016	Expired Patients Last 24 hours	1
Nursing Home	596	Patients Discharged in Last 24 hours ²	7
Transfer - Other Level	800	Patients with Resolved Infections	7
Hospice	50	Positive Patients Added in Last 24 hours ¹	12
Transfer - Acute Hospital	83		
AMA	45		
Total Discharges	4,139		

If people saw what they did every day, many workers in Covenant's Covid ward said, they might behave differently.

"Unless you are up in that unit working side by side with me seeing the true devastation of the virus and what it physically does to the human body, how can you appreciate it? How?" said Jamie Vinson-Hunter, a respiratory therapist.

It was almost exactly a year ago when doctors and nurses at Covenant and other hospitals were among the first people to get a coronavirus vaccine. For many of them, it was a moment of optimism when it seemed that the emergency response to the coronavirus might soon end. For a time, it seemed possible: For one day in June, there were no patients at Covenant with active coronavirus infections.

Doctors and Nurses Are 'Living in a Constant Crisis' as Covid Fills Hospitals

Hospitalizations across the country have increased 20 percent in two weeks, taxing already exhausted health care workers as the United States confronts the Omicron variant.

Quotation of the Day: Despair Sets In as Cases Bury Hospital Staffs



Dec. 18, 2021

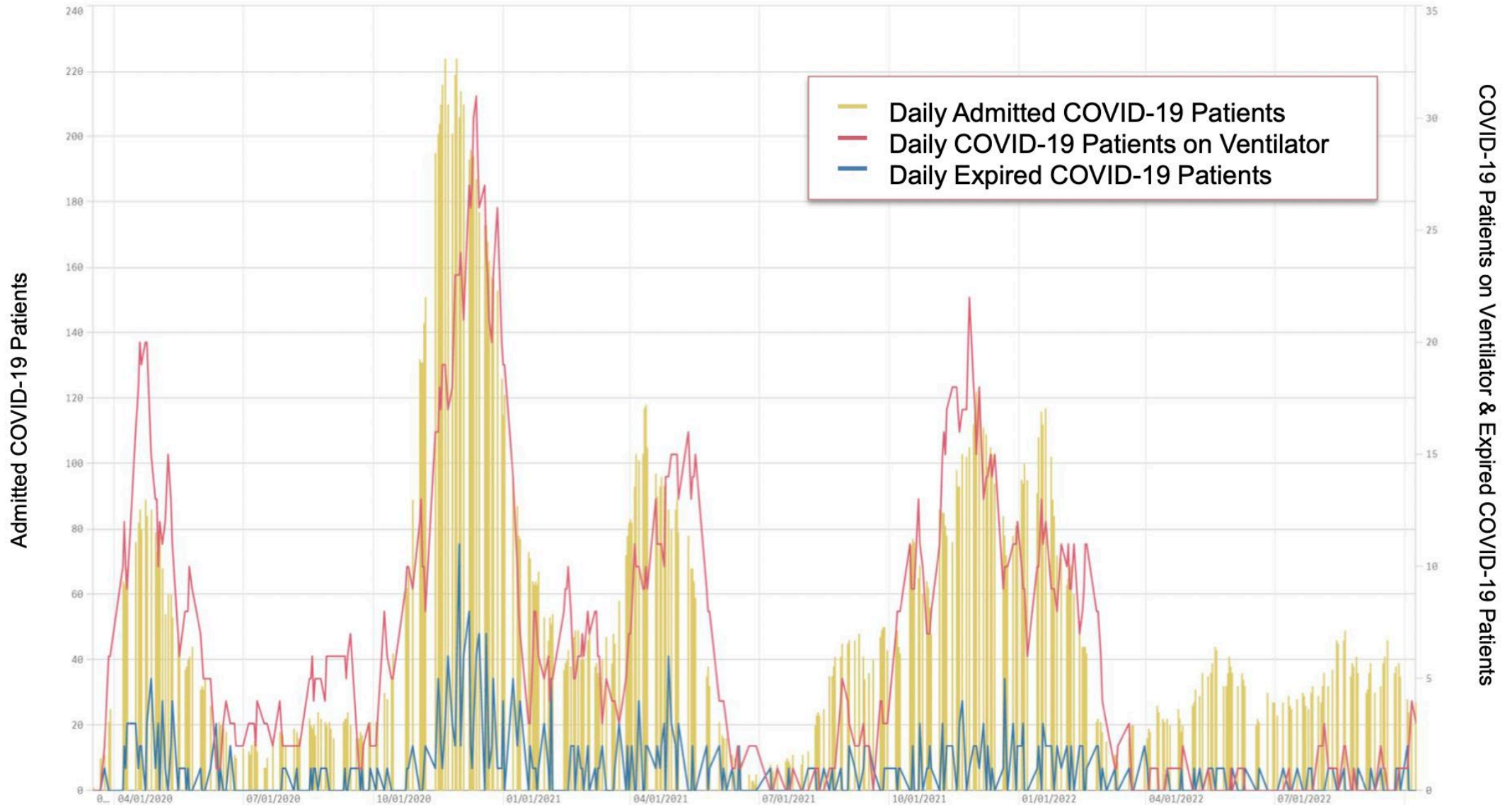
“Living in a constant crisis for 20 months-plus is a little overwhelming.”

[DR. MATTHEW DEIBEL](#), the medical director for emergency care at Covenant HealthCare in Saginaw, Mich. The hospital is grappling with a shortage of beds and staff.

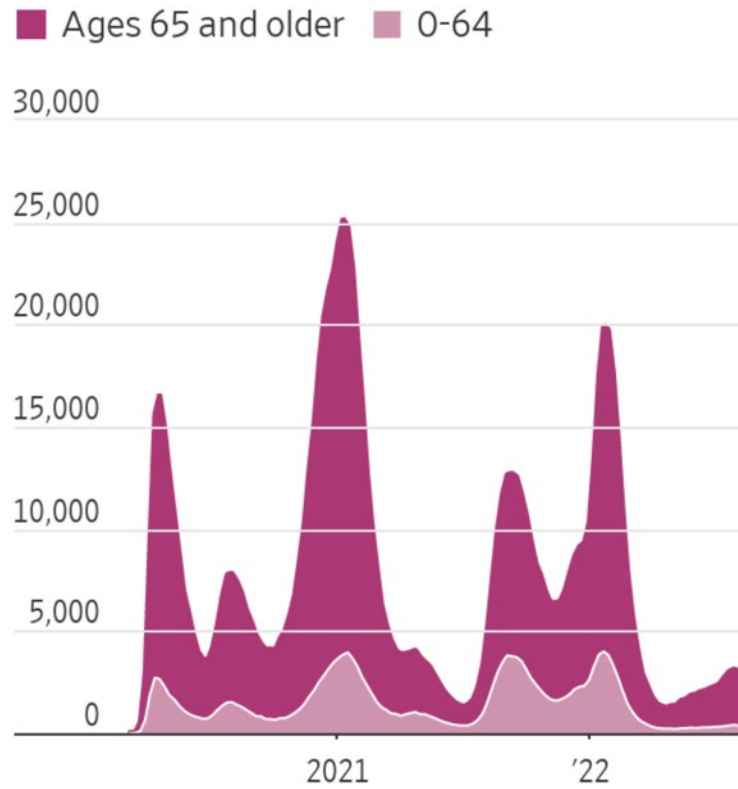
A version of this article appears in print on Dec. 18, 2021, Section A, Page 3 of the New York edition with the headline: Quote of the Day. [Order Reprints](#) | [Today's Paper](#) | [Subscribe](#)

Covenant HealthCare - COVID-19 Trends

Daily Admitted Patients, Patients on Ventilator & Expired Patients – 10/10/22



Covid-19 deaths, weekly, by age group



Source: WSJ analysis of Centers for Disease Control and Prevention data

Covenant by the numbers

Over 5,000
COVID patients
from 56 counties

89% survival of
hospitalized
patients

80,000 tests

63,000 vaccines

54,000 COVID
Patient Days

66,000 COVID
Hotline calls

13,000 Virtual
visits

COVID Deaths

Saginaw = 1,012

Michigan = 38,919

US = 1,062,564

World = 6,557,203

Long COVID

- Scottish Study 100k people
 - 42% not fully recovered at 6-18 months
 - 5% no recovery
 - Prognosis worse with severe COVID
 - Vaccine is protective
- Symptoms
 - All organ systems, variable
 - Brain fog, breathlessness, fatigue, palpitations, chest pain
- Affects 7-23 million Americans – 1 million no longer able to work



Mental Health

- Anxiety
- Depression
- Sleep problems
- Substance abuse



Respiratory System

- Cough
- Low blood oxygen
- Shortness of breath



Kidney

- Acute kidney injury
- Chronic kidney disease



Gastrointestinal

- Diarrhea
- Acid reflux
- Constipation



Skin Disorders

- Rash
- Hair loss



Blood Disorders

- Anemia
- Blood clots



Nervous System

- Stroke
- Headaches
- Memory problems
- Loss of smell and taste



Cardiovascular

- Arrhythmia
- Palpitations
- Heart failure
- Acute coronary disease



Metabolic/Endocrine

- Obesity
- Diabetes
- High cholesterol



Musculoskeletal

- Joint pain
- Muscle weakness

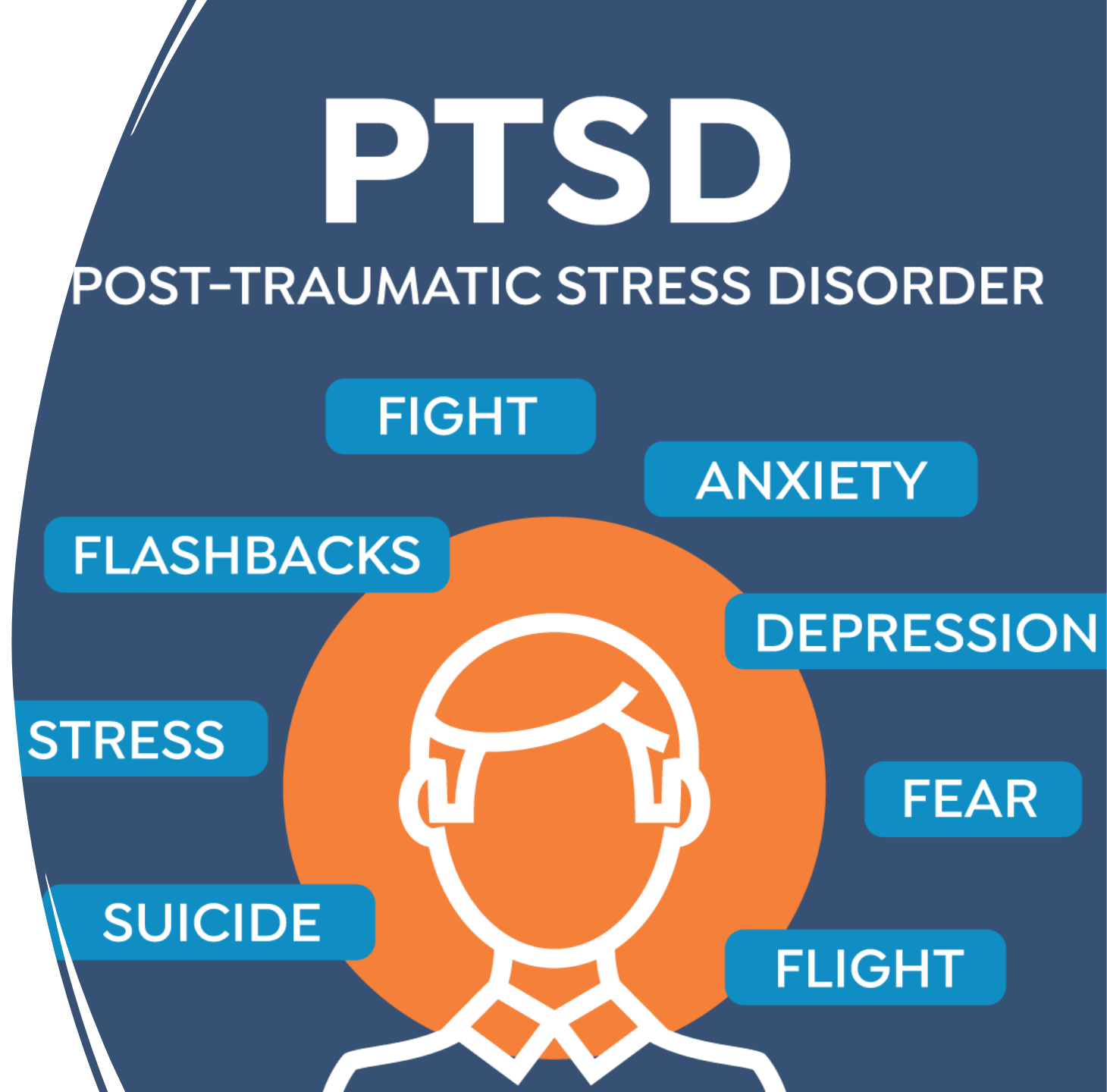


General

- Fatigue
- Malaise
- Mitochondrial dysfunction

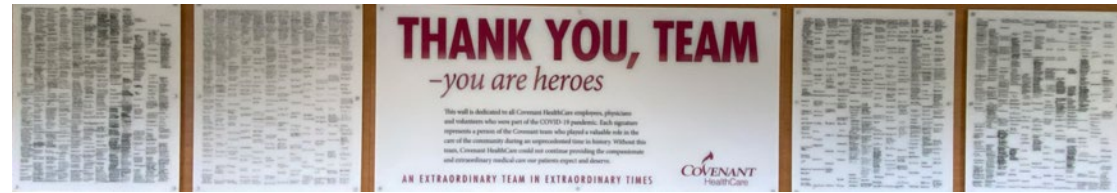
Repercussions

- PTSD
 - Unprecedented amount of death
 - Isolation
 - Families not able to say goodbye in person
- Financial struggles for healthcare
- Significant staffing shortages



Recognition

- Signature board
- Pillars at entrances
- Carrie Hennig, RT
- Kevin Jarzabkowski, supply chain



Hope, healing and honor.

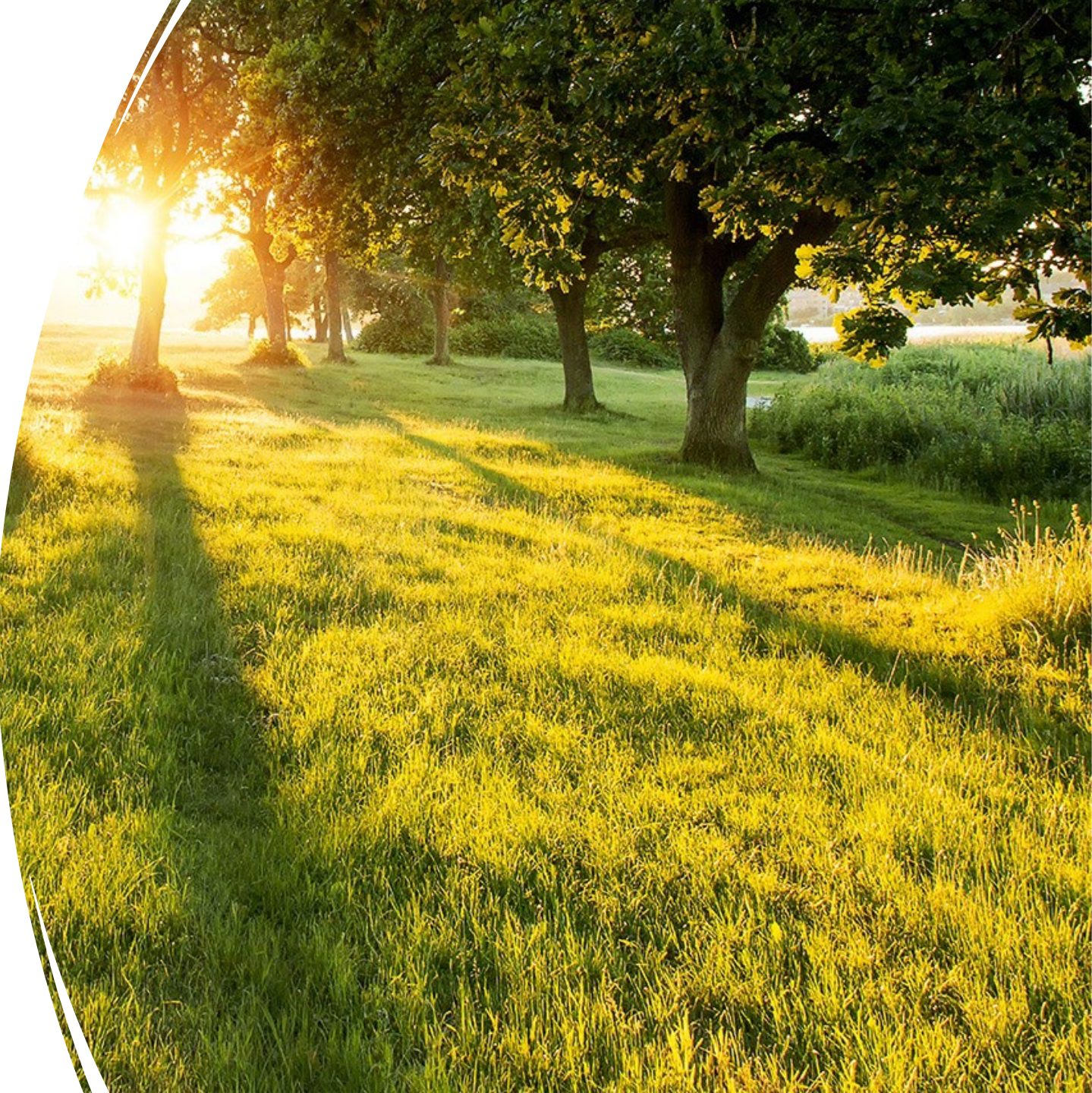
PILLARS OF LIGHT

Commemoration at Dusk
Wednesday, September 28 | 8pm
700 Cooper, Saginaw

[LEARN MORE](#)

Future?

- Vaccine boosters – join other respiratory illnesses
- Flu, RSV, Pneumococcal pneumonia
- Fall/winter cycles
- Variants?
- Seeing a few cases every day in ECC
 - Most discharge
 - Admitted usually not ICU or intubated
- Treatments
 - Paxlovid
 - Evusheld q6mo
 - Other?



Thanks

- Questions?
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 - (989) 971-1439
 - mdeibel@chs-mi.com