

# Caring for Respiratory Patients in the Midst of the Pandemic

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HEALTH

# About this Presentation

- Report of facts and experiences
- No judgements about “good” or “bad”
- Discuss the affects of COVID-19 pandemic on patient care in multiple settings
  - Outpatient
  - Inpatient



**COVID-19  
RESPONSE**

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# Current Statistics (as of Tuesday, 07/06/2021)



Coronavirus Cases:

**185,089,334**

Deaths:

**4,003,573**

Recovered:

**169,418,159**

 United States

Coronavirus Cases:

**34,599,187**

Deaths:

**621,346**

Recovered:

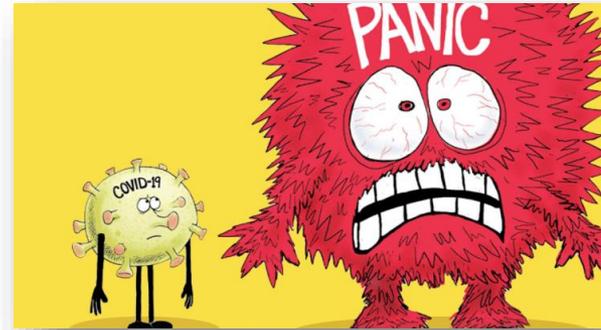
**29,111,883**



# Outpatient/Inpatient Commonality

- **Fear**

- Patients fear staff
- Staff fear patients
- Patients fear the health systems
- Patients fear the government including public health systems
- Development of *Coronaphobia*



- **Anxiety**

- Astronomical increase in phone calls
  - Do I have it?
  - Will I get it?
  - Am I at high risk?
  - If I get COVID-19 will I die?
- COVID-19 Anxiety Syndrome
  - Compulsive symptom checking
  - Avoiding leaving the house even when health risk is minimal
- There is no societal training for how to cope with a pandemic



# Outpatient/Inpatient Commonality

- **Outpatient Personal Protective Equipment**

- Masks
  - N-95 vs surgical
- Face shields

- **Social and Behavioral Changes**

- No more ...
  - Hand shaking
  - Hugs
- New greetings ...
  - Fist bumps
  - Elbow bumps



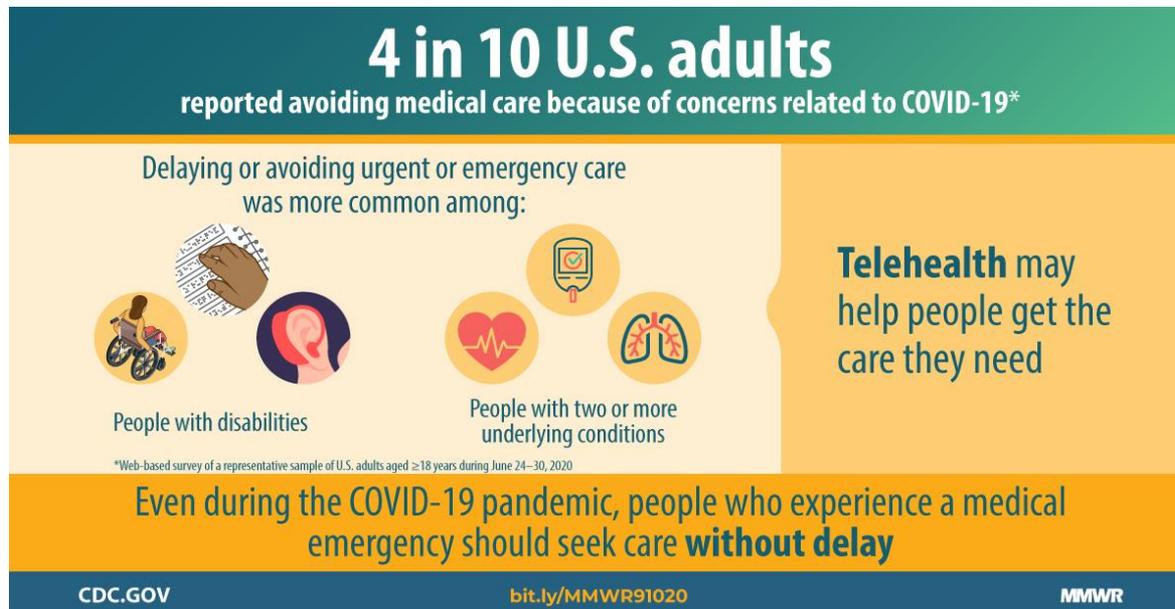
# Outpatient/Inpatient Commonality

- **Inpatient Personal Protective Equipment (PPE)**
  - Low risk areas
    - Non-COVID-19 patient floors
  - High risk areas
    - COVID-19 Wards
    - COVID-19 ICU



# Outpatient/Inpatient Commonality

- **Deferred or delayed care**
  - Cancel preventive maintenance and follow up appointments
  - Return to clinic hesitancy
  - Higher threshold for seeking care
  - Does not present to the clinic/urgent care/emergency department despite severe symptoms



# Outpatient/Inpatient Commonality

- **Misdiagnosis, Missed diagnosis or Delayed Diagnosis for Non-COVID Conditions**
  - “Collateral damage” or “Collateral harm”
  - At the time of the announcement of the pandemic
    - Emergency department visits dropped ~42-45%
    - Diagnosis of MI dropped by 42%
    - Diagnosis of strokes dropped by 52%
  - Later research shows that ~50% of individuals delayed or deferred care
  - Routine health maintenance including mammograms, CT lung cancer screening, colonoscopies, PAP smears, etc. were deferred for up to 1 ½ years
- **Examples**
  - Misdiagnosis
    - Diagnosis of SARS-CoV-2 pneumonia, when the etiology of the radiographic findings was bacterial pneumonia
  - Missed Diagnosis
    - Presented with shortness of breath and chest pain, but the chest pain was discounted secondary to it being in the peak of the pandemic.
    - Physician so focused on shortness of breath forgot about the chest pain after ruling out COVID-19 infection and sent the patient home because the chest pain
    - Diagnosis was an acute myocardial infarction
  - Delayed Diagnosis
    - Increasing cough, dyspnea on exertion and weight loss
    - Wouldn't come to the clinic for evaluation/treatment due to COVID-19 pandemic and missed lung cancer screening
    - Diagnosed with advanced stage small cell carcinoma of the lung



# Outpatient/Inpatient Commonality

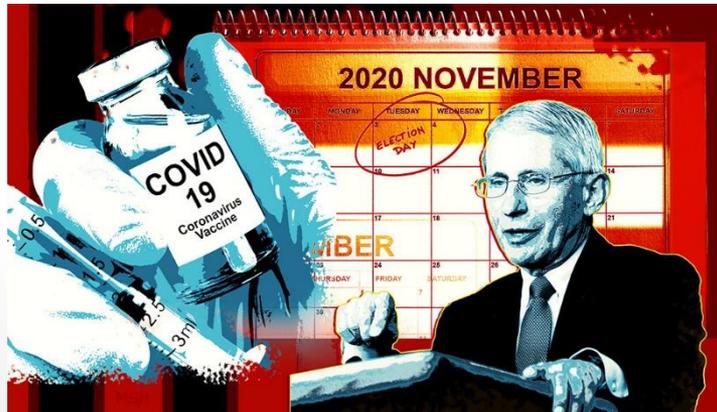
- **Effects of masks/handwashing and social behaviors**
  - Initiation and continuation of mask wearing and social distancing
    - Decrease/Elimination of seasonal viral variations
      - Minimal to no influenza season
      - Minimal to no RSV season
      - Minimal to no human metapneumovirus season
  - Elimination of masks and social distancing
    - Recent emergence of parainfluenza 3
    - Recent emergence of rhinovirus/enterovirus



# Outpatient/Inpatient Commonality

- **Medicine becomes political**

- Mask wearing
  - Give me a doctors note so I don't have to wear a mask
- Quarantine and Stay-at-Home Orders
  - Give me a doctors slip so I don't have to go to work because my employer isn't careful
  - My employer wants me off work for 14 days, tell them it is OK for me to return now
- Medication Promotion without Evidence
  - Give me a prescription for hydroxychloroquine or I will post a bad review for you on the Sanford website
- Conspiracy theories
  - You're making more money by patients dying in the hospital (from the conspiracy that hospitals are inflating actual numbers)
  - COVID-19 doesn't really exist
- Vaccine hesitancy





Caring for patients in the outpatient setting

# OUTPATIENT

# Outpatient Perspectives

- **Testing and Diagnostics**

- Disease state

- Ramping up for COVID-19 testing
  - In clinic
  - In hospital
  - Drive through
  - At home
- Accuracy

- Diagnostic testing

- Pulmonary function testing
  - Is it safe to perform (patient, staff, equipment)
- Minimally invasive pulmonary procedures
  - Bronchoscopy and EBUS (Endobronchial ultrasound)



# Outpatient Perspectives

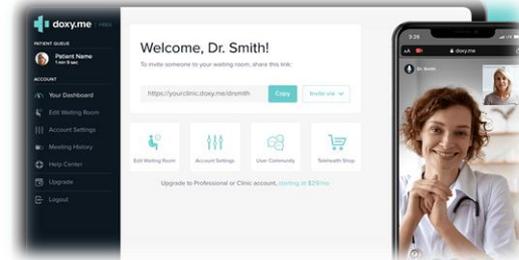
- **Flexibility in Patient Care**

- Increased flexibility in Health and Human Services rules, regulation and guidance
  - Originating site requirement was suspended
    - Can receive telehealth services from anywhere (including homes)
  - No HIPAA penalties for clinicians during good-faith provision to telehealth
    - Can use Skype or FaceTime, without fear of penalty
  - Established patient requirement not enforced
- Expansion of telehealth through 1135 Medicare waiver

- Phone visit

- Video visits

- Some states waived licensure requirements for telehealth



# Outpatient Perspectives

- **Treatments in the Outpatient Setting**

- Vitamin C
- Vitamin D
- Zinc
- Dexamethasone
- Ivermectin

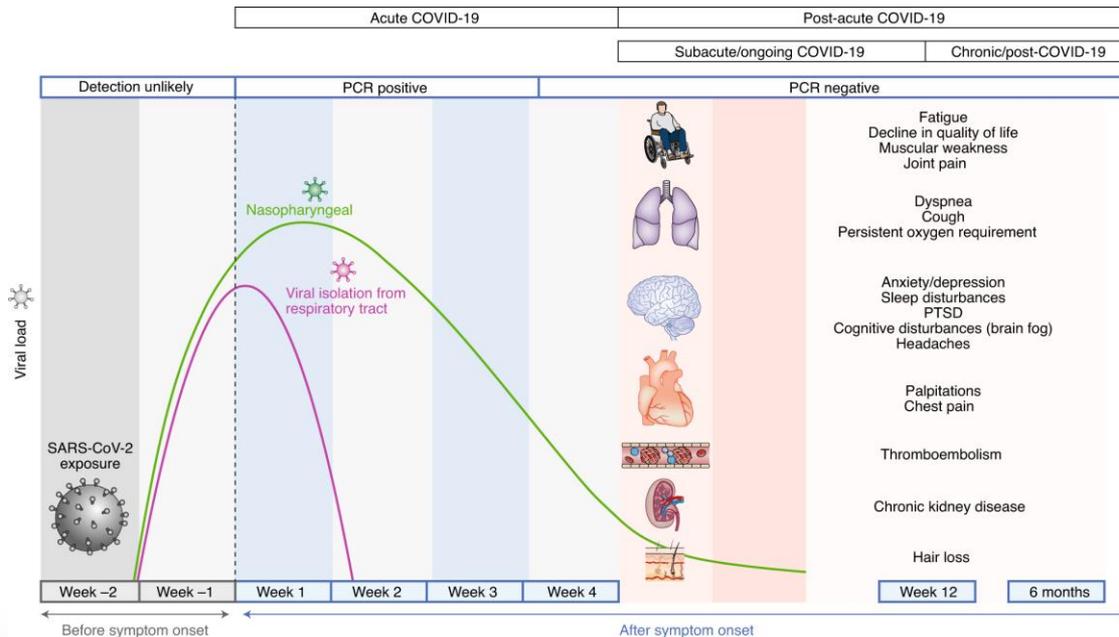
- **Monitoring in the Outpatient Setting**

- Home pulse oximetry
- Nursing well checks



# Outpatient Perspectives

- **Post-COVID Syndrome**
  - Four Common Pathways
    - Illness and full recovery
    - Illness with prolonged full recovery
    - Illness with prolonged partial recovery
    - Illness with continued decline



# Outpatient Perspectives



- **Long-Haulers Symptoms**

- Fatigue/Malaise
- Chronic cough
- Dyspnea
  - New onset asthma
- Joint pain
- Chest pain
- Myalgias
- Persistent/Recurrent headache
- Tachycardia
- Persistent loss of smell and taste
- Depression/Anxiety
- Persistent fever
  - Seen in organizing pneumonia
- Dizziness
- Memory and concentration problems
- Exacerbation of the above symptoms with activity

- **End-Organ damage**

- Interstitial lung disease
  - Increase referrals for lung transplant
  - New category of lung transplant
- Cardiomyopathy
- End-stage renal disease
  - Requiring hemodialysis
- Stroke
- Guillain Barre Syndrome
- Accelerated Alzheimer's disease
- Accelerated Parkinsons





Caring for patients in the inpatient setting

**INPATIENT**

# Inpatient Perspectives



- **Quarantine and Loneliness**

- New visitor policies
  - No visitors on COVID-19 units
  - Staff despair and concern over scared and dying patients
- Decreased interaction with staff
  - Secondary to PPE requirements
    - Removal, change, cleaning
  - Higher acuity patients requiring more care
  - Fatigue and burnout



# Inpatient Perspectives

- **Learning Curve**
  - What interventions to use?
    - Early intubation vs late intubation
    - Steroids
      - Dexamethasone vs Methylprednisolone
    - Convalescent plasma
    - Remdesivir (Veklury)
    - Tocilizumab (Actemra)
    - I-SPY trial
  - What interventions to avoid?
  - Changes in process and procedures
    - Negative airflow rooms
    - Intubation box
    - Clinical guidelines for tracheostomy
    - Determination of resources
      - # ventilators
      - # BiPAP machines
      - # heated high flow devices

DISEASE SEVERITY	PANEL'S RECOMMENDATIONS
Not Hospitalized, Mild to Moderate COVID-19	For patients who are not at high risk for disease progression, provide supportive care and symptomatic management (AIII). For patients who are at high risk of disease progression (as defined by the FDA EUA criteria for treatment with anti-SARS-CoV-2 monoclonal antibodies), use one of the following combinations: <ul style="list-style-type: none"><li>• Bamlanivimab plus etesevimab (AIIa)</li><li>• Casirivimab plus imdevimab (AIIa)</li></ul>
Hospitalized but Does Not Require Supplemental Oxygen	There are insufficient data to recommend either for or against the routine use of remdesivir. For patients at high risk of disease progression, the use of remdesivir may be appropriate.
Hospitalized and Requires Supplemental Oxygen	Use one of the following options: <ul style="list-style-type: none"><li>• Remdesivir<sup>a,b</sup> (e.g., for patients who require minimal supplemental oxygen) (BIIa)</li><li>• Dexamethasone<sup>c</sup> plus remdesivir<sup>a,b</sup> (e.g., for patients who require increasing amounts of supplemental oxygen) (BIII)<sup>d,e</sup></li><li>• Dexamethasone<sup>c</sup> (e.g., when combination therapy with remdesivir cannot be used or is not available) (BI)</li></ul>
Hospitalized and Requires Oxygen Delivery Through a High-Flow Device or Noninvasive Ventilation	Use one of the following options: <ul style="list-style-type: none"><li>• Dexamethasone<sup>c</sup> (AII)<sup>d</sup></li><li>• Dexamethasone<sup>c</sup> plus remdesivir<sup>a,b</sup> (BIII)<sup>d,e</sup></li></ul> For patients who were recently hospitalized <sup>d</sup> with rapidly increasing oxygen needs and systemic inflammation: <ul style="list-style-type: none"><li>• Add tocilizumab<sup>b</sup> to one of the two options above (BIIa)</li></ul>
Hospitalized and Requires Invasive Mechanical Ventilation or ECMO	<ul style="list-style-type: none"><li>• Dexamethasone<sup>c</sup> (AII)<sup>d</sup></li></ul> For patients who are within 24 hours of admission to the ICU: <ul style="list-style-type: none"><li>• Dexamethasone<sup>c</sup> plus tocilizumab<sup>b</sup> (BIIa)</li></ul>

Rating of Recommendations: A = Strong; B = Moderate; C = Optional  
Rating of Evidence: I = One or more randomized trials without major limitations; IIa = Other randomized trials or subgroup analyses of randomized trials; IIb = Nonrandomized trials or observational cohort studies; III = Expert opinion



# Inpatient Perspectives

- **Learning Curve**

- Markers of success and failure
  - Following inflammatory markers on a daily basis
    - Macrophage activation syndrome
      - Previously found mostly in children with rheumatologic disorders
      - Marker for active or impending cytokine storm or “hypercytokinemia”
      - Monitor ferritin levels
        - Concern with levels  $\geq 3500$
        - No patients survived with levels  $\geq 10,000-12,000$
  - Following d-dimer on a daily or regular basis
    - Adjust anticoagulation based on increasing or decreasing levels
- Skin breakdown monitoring
  - Patients on BiPAP for weeks (dependent for survival)
    - Prevention of skin breakdown
  - Patients on MV for weeks
    - Monitoring face, ears, tongue, knees, etc.



# Inpatient Perspectives

## • Complications

- Secondary affects of steroids
  - Cushing's syndrome, adrenal insufficiency, heart failure
- DVT and PE
  - Need for anticoagulation
    - Too much and the patient hemorrhages, too little and the patient clots
- ARDS
  - Increased need for paralytic therapy and prone positioning
  - SARS-CoV-2 treatment was outside of standard accepted guidelines
- Pneumothorax
- Profound ICU and critical illness weakness
  - Secondary to paralytic therapy and long-term high dose steroid use
- Rapidly developing acute kidney injury with complete failure
  - COVAN (COVID-associated nephropathy), collapsing glomerulonephropathy
- Acute cardiac injury
  - Rapid new onset cardiomyopathy with systolic heart failure, now onset arrhythmias, new onset acute MI
  - Sudden cardiac death
- Increased rate of secondary infections and septic shock
- Acute hepatic injury

## Adverse effects

- Occur with prolonged use of high doses
- Cushing's disease

### Psychiatric

- Sleep disturbance/activation
- Mood disturbance
- Psychosis

### Skin/soft tissue

- Cushingoid appearance
- Abdominal striae
- Acne
- Hirsutism
- Oedema

### Neurologic

- Neuropathy
- Pseudomotor cerebri

### Cardiovascular

- Hypertension



### MSK

- Osteoporosis
- Aseptic necrosis of bone
- Myopathy

### Endocrine

- Diabetes mellitus
- Adrenal cortex suppression

### Immunologic

- Lymphocytopenia
- Immunosuppression
- False-negative skin test

### Ophthalmic

- Cataract
- Narrow-angle glaucoma

### Developmental

- Growth retardation

The conditions with the highest risk (the most common complications of COVID-19) included:

- **pneumonia**, which around 27.6% of all and 81% of people in the ICU had
- **respiratory failure**, which around 22.6% of all and 75.3% of people in the ICU had
- **acute kidney failure**, which around 11.8% of all and 50.7% of people in the ICU had
- **other sepsis**, which around 10.4% of all and 54.1% of people in the ICU had

# Inpatient Perspectives

- **Fatigue and Stress**

- Long hours
  - Pulmonary physicians working 14 days in the ICU without time off, then going right into clinic or pulmonary consults working up to 19 days without time off
  - Nurses working regular shifts plus extra shifts to staff the floors and ICU
- Increased need for staffing
- Repurposing staff



**NIH** National Institute of Mental Health

## ANXIETY

Panic attacks are discrete episodes, with an abrupt beginning and specific end.

### SYMPTOMS

- Rapid heart rate
- Feelings of impending doom
- Feelings of being out of control
- Abdominal cramping

## COVID-19

If you develop these symptoms, call your doctor or visit [cdc.gov/coronavirus](https://www.cdc.gov/coronavirus).

### SYMPTOMS

- Fever
- Dry cough
- Trouble breathing
- Extreme fatigue

### OVERLAPPING SYMPTOMS

- Chills
- Shaking
- Sweating
- Chest pain
- Hot flashes
- Shortness of breath

# Inpatient Perspectives

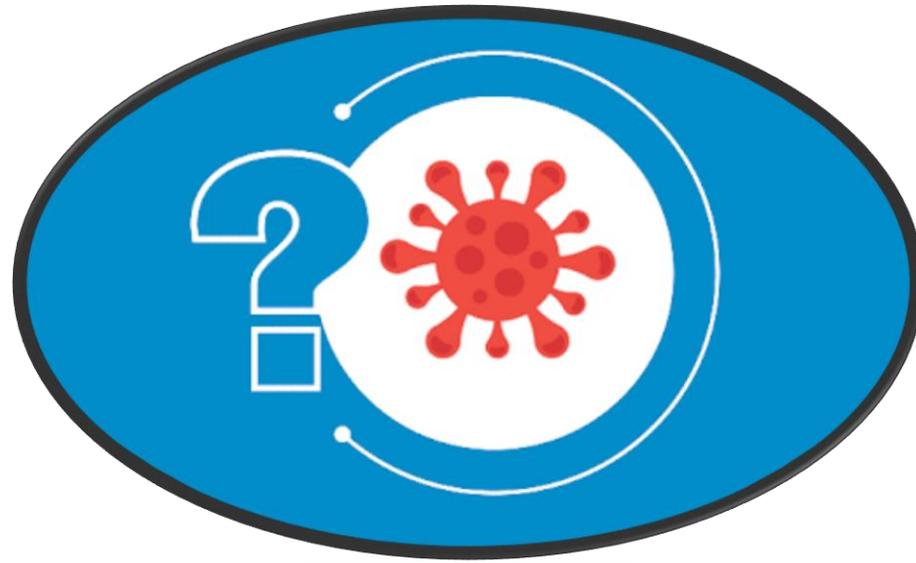
- **Clinical behavior and comfort levels**
  - Persistent low oxygen levels on the floor
    - *“Oh, their sats are only in the mid-80’s!”*
  - Comfort with sicker patients on the floor
    - *“No, they don’t need to go to the ICU yet, they are only on heated-high flow at 60 L/min flow and 95% FiO<sub>2</sub>, it’s not like they are BiPAP dependent”*
  - Heated high flow and BiPAP continuously on the floor
  - Prone positioning
  - When do patients need to go to the ICU?
    - Dealing with asymptomatic hypoxic patients



# Inpatient Perspectives

- **Death, Dying and Coping**
  - Substantial increase in ARDS
    - High intensity patients with frequent interventions
  - Substantial mortality and morbidity
    - Now treating secondary to tertiary conditions and complications
    - Longer the hospital stay more likely a patient is to develop a nosocomial complications
    - Difficulty with families coping with complex medical decision making when they are not present
  - Increased frequency of deaths
    - Increased in-hospital mortality rates despite standard of care





Questions and Answers

PRESENTATION END