An Clinician View From Inside The COVID ICU

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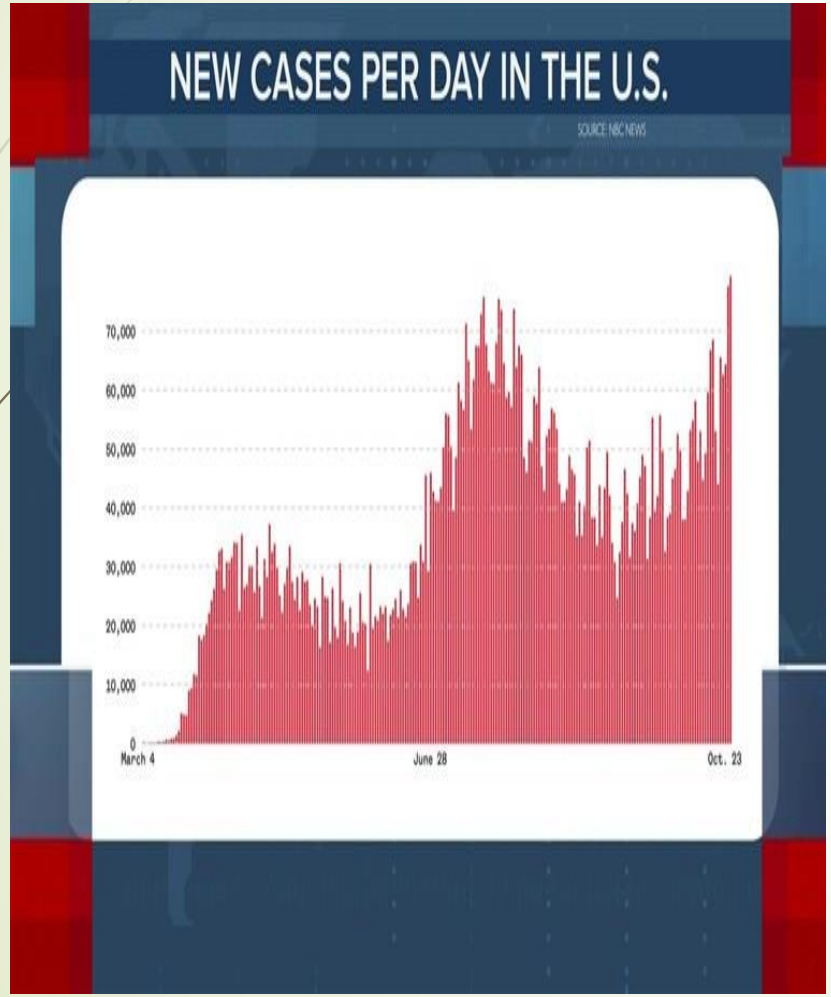
Learning Objectives

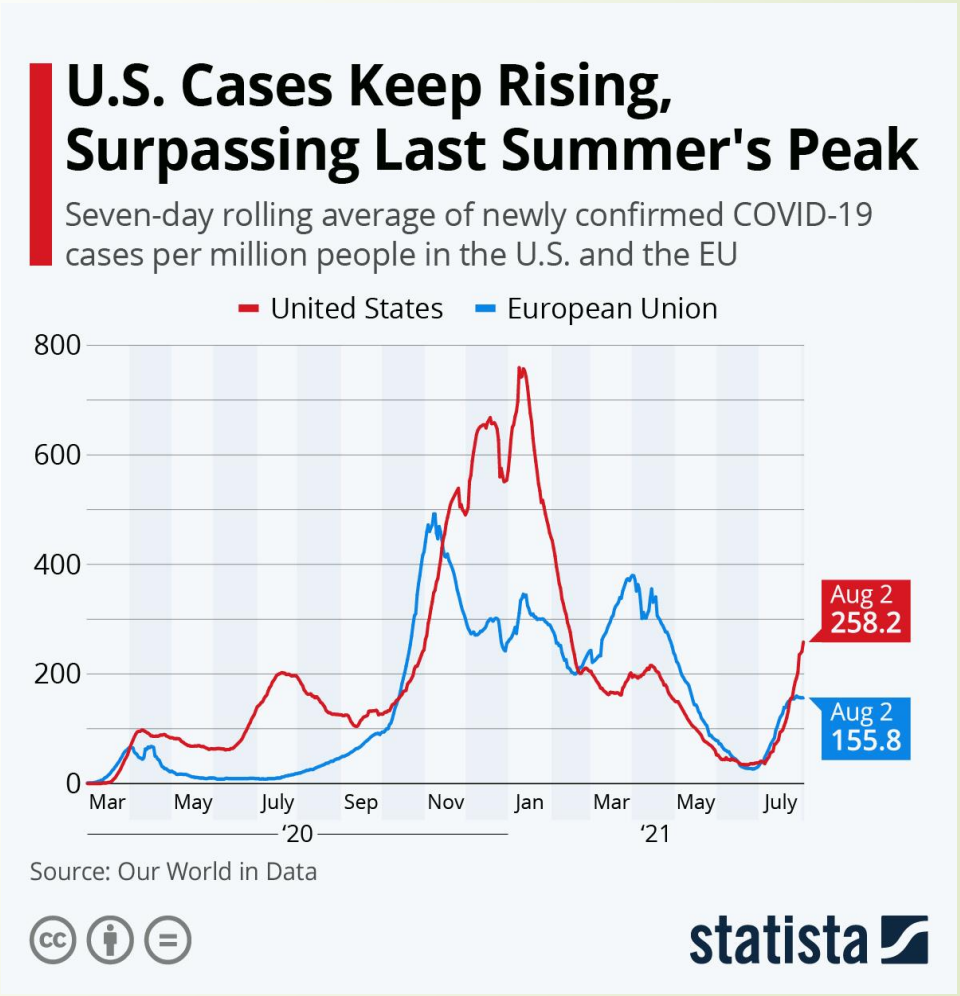
- Summarize Key Milestones in the Spring 2020 Covid Surge versus the Winter 2021 Surge, Locally and Throughout the US.
- Review a First-Hand Account of Events which Occurred in a Covid ICU.
- Critique and Evaluate Strengths and Weaknesses in the Response Locally and Throughout the US.
- Review Some Lessons Learned.
- Furnish Selected Related Resources.

Disclaimer:

This presentation is a chronological summary of a front-liner's view from a Covid ICU of a major medical center in the Northeast during the surge in the Spring of 2020. It includes a combination of facts and **anecdotal** observations entered into a journal kept during this time.

The Covid 19 Surge Pattern





The Beginning: Monday Feb 24, 2020

- 7:30 AM- Patient on 100% NRM and 60 lpm on HFNC is in Bed 10 of MICU is being ruled out for Covid. The attending physician indicates that if the patient needs to be intubated, he and I will be donning "moon suits" and doing the intubation. When I asked where the moon suits are, he said he was not sure but would find out….
- 8:30 AM - Infection control nurse "writes up" another nurse for tying her gown in the front (a practice we had done for 20 years) rather than coaching her on how to do it. Having only 2 N-95's left in the unit, I asked her where we could get more N-95's, she was speechless until she started babbling something about the loading dock.
- Critical Issues:
  - A surge of this type was unexpected and unprecedented…and we were all unprepared in many ways.

Mid-March 2020—Skyrocketing Cases

- Week of March 9th-
  - First three cases of Covid appear. Once sent home from the ER and two housed in MICU.
  - My wife and I split the house. I'm downstairs and she's upstairs. We eat at opposite ends of the dining room table.

- Week of March 16th-
  - US cases increase from 4300 on 3-16 to 64000 on 3-17. That's a 15-fold increase in one day!!!
  - There are currently two intubated Covid patients in MICU.
  - Protocols for donning and doffing continue to change, as do those for transferring Covid patients.
  - Bandanna chatter occurs with some of our leadership quoted as we may have to resort to that. I don't see any of our leadership willing to go into a hot room with a bandana or a reused N=95 no less.

- Critical Issues:
  - Sky-rocketing cases
  - Lack of Sound Guidance

Late March – Resource Limitations

- Week of March 23--12-Bed MICU is full overflowing with 9 intubated Covid patients. Overflow going to CCU.
- A 90 YO demented Covid + patient was intubated in the ER, brought up to CCU and within 1-2 hours terminally extubated. Patient probably never have been intubated and should have been comfort care.
- N-95 shortage means that you put your name on an n-95 and they autoclave it.
- Mixed evidence on autoclaving N-95's. Funny thing is I am yet to see an administrator don an N-95 in the hot zone. Come to think of it, except for our CMO, few administrators have gone into a "hot" ICU.
  - We joke that an N-95 becomes an N-88, then an N-77, etc.. after several rounds of autoclaving.
- Critical Issues:
  - Insufficient Key Protocols for Triaging & Resource Conservation

Late March Continued—ICU's filling Up – Fear Factor Starting to Weigh on Us.

- March 25th --
  - MICU now full with 12 vented Covid patients.
  - 10-Bed CCU increased from 2 vented Covid to 10.
  - 10 Bed CVICU is a new spill over for Covids and now full.
- March 26th –
  - Expressed concern to the RT management team about post-doffing footwear. In particular, socks worn all day in warm and hot zones are often being worn out of the unit and are a potential source of infection spread.
- March 27th- Spoke to Colleagues Operating in other Hospital Systems.
  - ARDs net. High PEEP -- Low VT
  - Proning
  - Consider HME, no heaters, expiratory filters, No shared vents, Extend monitor cable outside the room.
  - Use of NIPPV and HFNC controversial!
- March 31st-
  - **My PAPR shut down in a patient room**. Quick but safe exit from the room.
  - Two intubations, both AW's looked swollen with small glottis visible. **Anesthesiologists are scared shitless.**
- Critical Issues:
  - Resource Issues

Early April—Covids Die Alone

- April 1-
  - NJSRC sends letter to the NJ licensing board against multiple patients on a single vent.
  - I have sent solicitations to numerous media folks and TV channels regarding how RT's are among the unsung heros caring for the sickest Covid patients. So far, no response. I'll keep trying.

April 3rd- Terminally wean SICU bed 1.

- Servo I alarm won't shut off because the screen has been placed out of the room and connection is damaged.
- Patient's wife has to endure her last minutes with her dying husband with a high-pitched alarm blaring. Wanted to hug her but couldn't.
- Most people that die with Covid (terminal wean or otherwise) die alone. ***Seeing that is one of the hardest things for me…***

- **Critical Issues:**
  - Some "recommendations" are strictly theoretical—Multiple patients should not be placed on the same vent!!!
  - Covid Surge is not time for theory. Things are happening too fast!

Early April—Plenty of Food—Not Enough PPE

- April 7th.
  - In MICU. Severe PAPR shortage. Plenty of donated food and Croc's but not enough PAPR's and N-95's.
  - Some are excused from taking care of Covid patients for reasons such as their health or health issues of family members. Creates some tension.
  - Same day, a manager posts his picture with himself in scrubs with a serious look in front of a 980 vent. He is yet to step foot in a Covid ICU, nor donn scrubs.
- April 8th-- Fellow therapist with whom I worked in the SICU the prior week tests positive for Covid. Two ER nurses test positive as do many others including a transporter who eventually dies.
- Critical Issues:
  - Some people seek leadership positions for the wrong reasons!!!
  - Leadership is a big responsibility and even a burden at times.

Mid April—This is Bad…

- April 12 –
  - Overheard nurses talking about the difficulties which front-line health care workers are having, getting tested.
    - Must fulfill criteria(e.g., worked with patients who were positive, fever, loss of appetite, etc),
    - Then directed to Occupational Medicine
    - Then directed you to a website, which directs you to a drive through testing center.
  - If you are out sick, categorizing the source of your getting paid (workman's comp, versus extended illness bank, versus PTO) was an unanswered question. If you are positive but have not worked with Cvid patients, then you use PTO. The lack of clarity on these points and their fluidity are among the ***most stressful issues*** for front-liners.
- April 13 -- ER has Covid + patients who are stable and not in respiratory failure running out of the ER with a sheet over their heads…Seriously!
- April 14-15
  - I realize that I have terminally weaned as many (8) as I have successfully weaned and extubated. The terminally weaned patients mostly die alone.
- The 42 YO father of one coded and died today. Removed vent and INO vent from the room (which is a big deal wiping it down twice from top to wheels with bleach) before wife came. No Consoling Her…She was hysterical.
- Critical Issues:
  - ARDS-Net does not seem to work will with Covid Patients.
  - About a 50% survival once intubated and placed on a vent.

Late April-The Peak…Will This Ever End?

- April 17-- Shared with one of my best friends, Brian, who is an RT manager in Southern NJ that I cry at some point a few times per week; in part out of sadness, part out of pride, and partially not knowing why.
  - Brian said he does too and I suspect that many of us were and still do.
  - A nurse who a respect immensely indicated that she cries in the shower…every day. The more of my colleagues I spoke with, the more I discovered that many were crying, or holding it back regularly.

- Critical Issues:
  - Emotions are wearing thin. Crying may be a good release. No shame in that!!!

Late April Continued—This Could be a Marathon…So Pace Yourself

- April 19 – My wife showed me two video's featuring Hospital staff as Covid Heros. It features mainly hospitals workers who are **not** caring for Covid because they are available to be shown off. Funny thing is we are sooooo busy and isolated in a Covid units, we aren't in many of the photo shoots… Ironic!
- April 20--
  - It was a ***Bad*** morning. Was asked to get ready to start INO on a patient we were supinating from a prone position. I went upstairs to the INO vent and supplies. Two RT's who were excused from direct patient were supposed to be readying equipment…but it was not ready. They claimed they did not know how to set up INO. Failure to train and cross train was readily apparent and hindered those treating Covid patients.
  - There were no more bouffant caps so I took a shoe-guard and put it on my head to protect my hair from gross contamination.
  - Critical Issues:
    - Optics matter…sometimes more than reality.
    - Failure in being proactive in cross training staff.

Late April is Endless…

- April 20-
  - Some of us are starting to wonder openly if we have had Covid and did not know it. Many of us had a "cold " in Feb and so far have not contracted Covid. The number of clinicians taking care of Covid patients and who have contracted it is relatively low and less than other outbreaks such as SARS in 2003.

April 21 –

- Using jury-rigged 840 vent expiratory filters in Servo ventilators because we ran out of Servo-guard filters. ***A Lot of Jury rigging going on.***
- Seems like pregnant women (MICU Bed 1) may do better and recover faster than non-pregnant women. I've seen this twice but other sites have reported it as well.
- Obese men, especially Latino's seem to have a higher predilection for serious disease, in addition to the elderly, diabetics, those with heart disease, etc.

- Critical Issues:
  - Has Covid been around longer than we thought?
  - ***I wonder what Risk Management would say about jury-rigging equipment? Maybe nothing, they were working from home!***

Please Let April End

- April 22 -- 17 vents running in the 22-Bed SICU, two nitrics (INO's) and proning/supinating four patients with one other "loaner" therapist. The loaner did not have a PAPR nor access to the Pyxis. Ridiculous.
- April 23 –
  - Bed 18 almost died (probably did) when we supinated him. His SPO2 dropped to 40% and the PO2 was 21 per an A-line ABG. Dr. M and Dr. S. were in the room with me and after they were fiddling around trying things like good lung down. I asked them to quickly re-prone the patient. We were in the room for 75 minutes.
  - Had a few words with the doctor doing the PEG insertion because he took my PAPR which I had repaired the day before. I needed the PAPR for the proning and bedside trachs. The doctor later apologized.
  - Critical Issues:
    - Insufficient staffing. Vented Covid patients require much more time and need much more care. **4 or 5 such patients to one RT should be maximum.**
    - 50% Survival Once Intubated and Placed on a Vent. My wife knows, ***don't intubate me if I get Covid.***

Confrontation, Frustration and Reflection…Lions and Tigers and Bears…Oh My!

- RT Manager questions me about advising the other RT in the unit that they really should have a PAPR hood, which essentially all of us had by then. That day, we (2 RT's) had 17 mechanically ventilated Covid patients, 2 bedside trachs, 4 patients proning and 4 INO's.
  - He indicated that an N-95 is as good as a PAPR. I said if that is so then he is free to help us prone bed 18.
- The bigger issue was that I had not seen our manager in three weeks because he was out sick, but not Covid related. After expressing that I was glad he was feeling better, I indicated to him that in my view, the first words out of his mouth should have been:
  - 1.) "thank you and your team"
  - 2.) the second words should have been "how can I help you and your team".
- The manager did explain that it was necessary to put a "loaner" RT in the ICU because so many regular therapists could not work in the unit because of their health issues or those of family members.
  - I reminded him that my wife had just finished cancer treatment and I too could have sought to be excused form direct patient care. He then tried to ask how Laurel was doing and I gave him a look and asked if we were done.
  - Reflection: I am thankful that my wife got her surgery accelerated to before Christmas which allowed her to finish her radiation therapy just before the Covid Crisis.

Early May-Light at the End?

May 4. The number of new cases is slowing.

- The census in the SICU remains high, but the incidence of new cases is down.
- Now have Covid 60 vents from a high of 99.
- PICU is going back to being a PICU and the eventual plan is to close Covid units and keep the SICU for Covid…bad for us.

May 5 -- Had a long conversation with my brother Gary.

- I indicated to him that if you get a bad case of Covid, which results in hypoxemic respiratory failure, you'll be on a vent for weeks and a 50% chance you will die.
- If you live, you may have significant multi-system disability.
- I told him ***I do not want to be intubated of it happens to me.***

- Critical Issues:
  - Don't intubate me if I get Covid!
  - I miss my family…..
  - We want this to end….

Early May—More Trouble--Maybe I spoke too Soon!!!

- Ironic, the population is urged to practice ***social distancing*** but we clinicians in the Covid ICU are practicing ***professional intimacy*** (intubation, extubations, trachs, suctioning, etc).

- A vent fails in a Covid patient room after weeks on very high PEEP. In short, the vent was pushed too much and failed. A nursing assistant manager tried to blame my fellow RT. The pulmonary/critical care doctors weighed in and attested that the RT's are doing their jobs well and that what happened was "equipment failure".
- The anesthesiologist Dr. L says to me "Covid owns me"….. My rebuttal to him, "Covid owns us!"
- Critical Issues:
  - Too often, leadership's inclination to do something or blame someone when an incident happens. However, too often it's not the right thing.

Mid-May—I definitely Spoke too SOON

- May 15—13 Hours of Stress!
  - An Ear Nose Throat (ENT) doctor was unable to trach a Covid patient who had been intubated on a vent for three weeks.
  - I was assisting him and a procedure which normally takes 15-20 minutes took 90 minutes.
  - There was an apparent false track in which the ENT doctor tried repeatedly to place the trach.
  - We could ventilate the patient when we partially retracted the trach tube so only the distal tip of the trach tube inserted in the stoma. When he inserted the entire tube, the patient could not be ventilated.
  - After 90 minutes, two additional doctors and I fiberoptically intubated the patient, through a crescent moon shaped glottis with a 6.5 ET tube.

- Throughout the day, one more intubation, two extubations (one terminal), set up three nitric oxides, proned three patients, one code blue.
- My eye-lid started twitching that day and did not stop for five weeks.
- Critical Issues:
  - Straight forward procedures aren't so in Covid Land.
  - Plan for the worse, hope for the best.

Late May—Breathing Room!

- Memorial day Weekend
- First Day in a non-Covid ICU in 10 weeks.
- Felt Weird. Was on edge for the next shoe to drop.
- Intubated my first (non-Covid) patient in about 3 months.
- Actually had a small amount of Down-time.
  - Could read my hospital e-mail. Phewwwww…
- Did not have to do my decontamination ritual for lunch break or before going home. Got home 30 minutes earlier.

June-July-August-Reflection and Debriefing

- Post-Covid Surge organizational survey did not even list “respiratory therapist” as a choice of profession in the demographics portion of the survey. The survey was clearly not designed to obtain Feedback from RTs in mind. Sad, given our prominent role in battling Covid.
- Aug ICU Committee meeting.
  - It’s reported that we only had a very few unplanned extubations, which was phenomenal given the vent days for Covid patients, which was 4-5 times longer than non-Covid patients. Some were proned, which carries with it a risk for tube dislodgment. The head of trauma surgery was very complementary of respiratory therapy and for few unplanned extubations. However, the MICU Medical Director attributed that to prolonged heavy sedation (RASS of -3 or -4). I retorted that many of these patients were eventually woken up so they could be weaned and extubated. Some found the Medical Director’s comment to be dismissive of our fine efforts and even disrespectful.
  - I suggest a post Covid-surge interprofessional debriefing process to identify what worked and fixed what didn’t. It received a mixed reception.
  - Playbooks are devised to help guide us in the event of another surge. However, they were created in a vacuum (at the C-Suite Level) and did not involve front-liners. Therefore they were neither practical nor helpful. They were there for show.
  - Our department decided to garner feedback from RT’s via our own Covid response survey.

Excerpts From the Draft RT Departmental -- Covid Response Survey

Organizational Factors During the Surge (March through June 2020)

1. Staffing was adequate to provide appropriate care to patients during the initial Covid surge.

Strongly Disagree □ Disagree □ Neutral □ Agree □ Strongly agree □ N/A □

2. Important updates were clearly communicated to me by organizational leadership.

Strongly Disagree □ Disagree □ Neutral □ Agree □ Strongly agree □ N/A □

3. Adequate protective equipment and infection control measures, including related supplies and protocols were provided.

Strongly Disagree □ Disagree □ Neutral □ Agree □ Strongly agree □ N/A □

4. Overall, mechanisms were put in place to mitigate employee stress and enhance morale.

Strongly Disagree □ Disagree □ Neutral □ Agree □ Strongly agree □ N/A □

5. Overall, hospital leadership support and response was appropriate.

Strongly Disagree □ Disagree □ Neutral □ Agree □ Strongly agree □ N/A □

Fall 2020 – Good News… Bad News

- Good
  - Our Dept has acquired more ventilators.
  - We have plans to flex personnel, equipment and supplies among hospitals.
  - Contingency plans- Use of "runners" to help RT's in Covid units
  - Better idea of what to expect.
  - Managing expectations and placing "limits" care plans
- Bad
  - N-95's and other PPE are still hard to get.
  - ***Vaccine survey done Dec 2020 lists "Physician, nurse, radiology tech…" but fails to specifically list "Respiratory Therapist" as a choice regarding discipline.***
  - False sense of security—"Playbooks" have been designed without front-liner input.
  - Testing Accuracy- Polymerase chain reaction (PCR) versus antibody testing.
  - Some protocols are still inefficient – Moving vent-patients who require pre-procedure testing.
  - Overall disconnect between leadership and front-liners

Winter 2020-21

- Good
  - Regionally, the rise in severe cases has only gradually increased in 3-4 months.
  - Better job with Palliation and "family" meetings.
  - Better idea of what to expect.
  - *De-escalation after 28 days…*
- Bad
  - N-95's and other PPE are still hard to get.
  - ***Testing is still hard to get and too often inaccurate.***
  - ***Vaccine Roll-out was bumpy at first. Some, including those excused from Covid duty got it right away, others waited.***
  - False sense of security—***bringing a dirty X-Ray or dialysis machines through a clean locker-room.***
  - Post-traumatic stress is yet to fulminate?
  - Still, Overall disconnect between leadership and front-liners

February 2021

- Chief Medical Officer compares data from hospitals within our system which used HFNC with those who did not use HFNC.
- We did not use HFNC, despite some evidence and anecdotal accounts regarding it potential value in treating hypoxemic Covid 19 patients.
- He cites:
  - A comparable rate of eventual intubation in the HFNC and non-HFNC group
  - Lower rate of clinician illness in the non-HFNC group.
- Problem was, he did not seem to adjust for confounders such as:
  - Vastly different staffing levels
  - Different practices of cohorting and not cohorting COVID-19 patients.
- In essence, it was a unfair comparison.

Spring-Summer 2021

- ***Positives:***
  - Our hospital system has finally introduced an ensemble of emotional support resources for staff, based on year long requests and feedback.
  - New long-hauler support system for Covid-19 patients and families.
- ***Negatives:***
  - ***Nurse Manager who never stepped in a Covid patient room won – Best Covid Nurse***
  - ***Delta Variant is Troubling***
    - Vaccine provides a modicum of protection.
    - Exponentially more contagious.
    - Up-tick in Cases
  - N-95's still difficult to get, especially duck-bill models.
  - One of our RT's husband recently contracted Covid and twice presented to our ED/ER, only to be sent home without much of anything. An immedi-center prescribed steroids, which gave him relief.
- ***Neither Positive nor Negative:*** Many of us who served on the front lines indicate that we are forever altered from this experience.

What We have Learned

- Clinical Lessons
  - ***ARDSNet strategies*** of lower tidal volume, plateaus ≤ 30, high PEEP ***were not highly effective***.
  - Pharmacological treatments had limited value (e.g., Remdesivir)
  - Steroids and monoclonal antibodies seem to help!
  - ***Healthcare resources were overwhelmed***.
  - Ethical issues regarding triaging and advocating for Palliative Care…
  - De-Escalation and setting limits on care plans may make sense.
- Governmental and Hospital Leadership Were Tested:
  - ***Exposed both strengths and weaknesses in Leadership Teams***
  - Covid was unprecedented and exposed weaknesses in our Country's leadership. It also revealed a few seemingly effective leaders: Dr. Fauci? Dr. Scott Gotlieb?
  - Good leaders possess formal skills and innate abilities to effectively address crises of many types.
- Societal Response
  - Basic need of safety of our overall population was now in question.
  - The extent to which people truly appreciated the magnitude of the problem varies greatly.
  - Many simply were not willing nor able to do the right thing. e,g, Wear a Mask, social distance.
  - The basic tenants of our society of autonomy and individual freedom may be counter productive to certain aspects of our Covid fight.
    - Wearing a mask or being socially distant is not a political statement.
  - Economic impact is huge and counter to certain safety measures.

More Work to Be Done--Much Yet to Be Discovered About Covid & Our Response

- The overlapping roles and responsibilities of government, our healthcare system and individuals
- Adopting Effective Clinical Protocols.
  - Prevention
    - Vaccines
    - Infection Control
  - Treatments
- **Individual rights versus protecting society**
- **Ensuring proper and realistic infection control and safety measures.**
- **Balancing economic impact and safety.**
- Addressing post-traumatic stress of front-liners
- Do we increase our stock-pile for a once per century event – and/or make some tough ethical decision (rationing care)
- What are the longer-term impacts on society?

Selected References

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