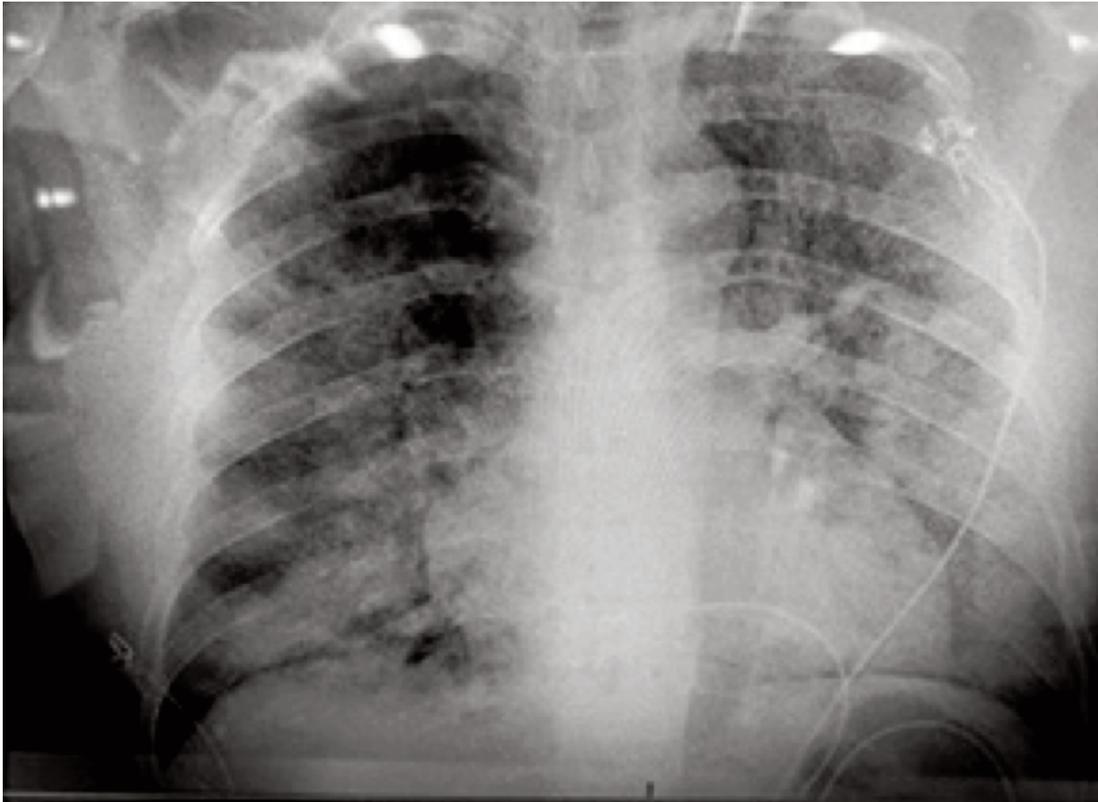


COVID-19 Summary: What I learned working in NYC. How we can better fight this disease and help patients.

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-The disease kills by causing severe pneumonia that starts in the lower lobes of the lungs then spreads throughout. Areas of pneumonia are visible (white) on chest x-ray. The lungs are normally completely black.



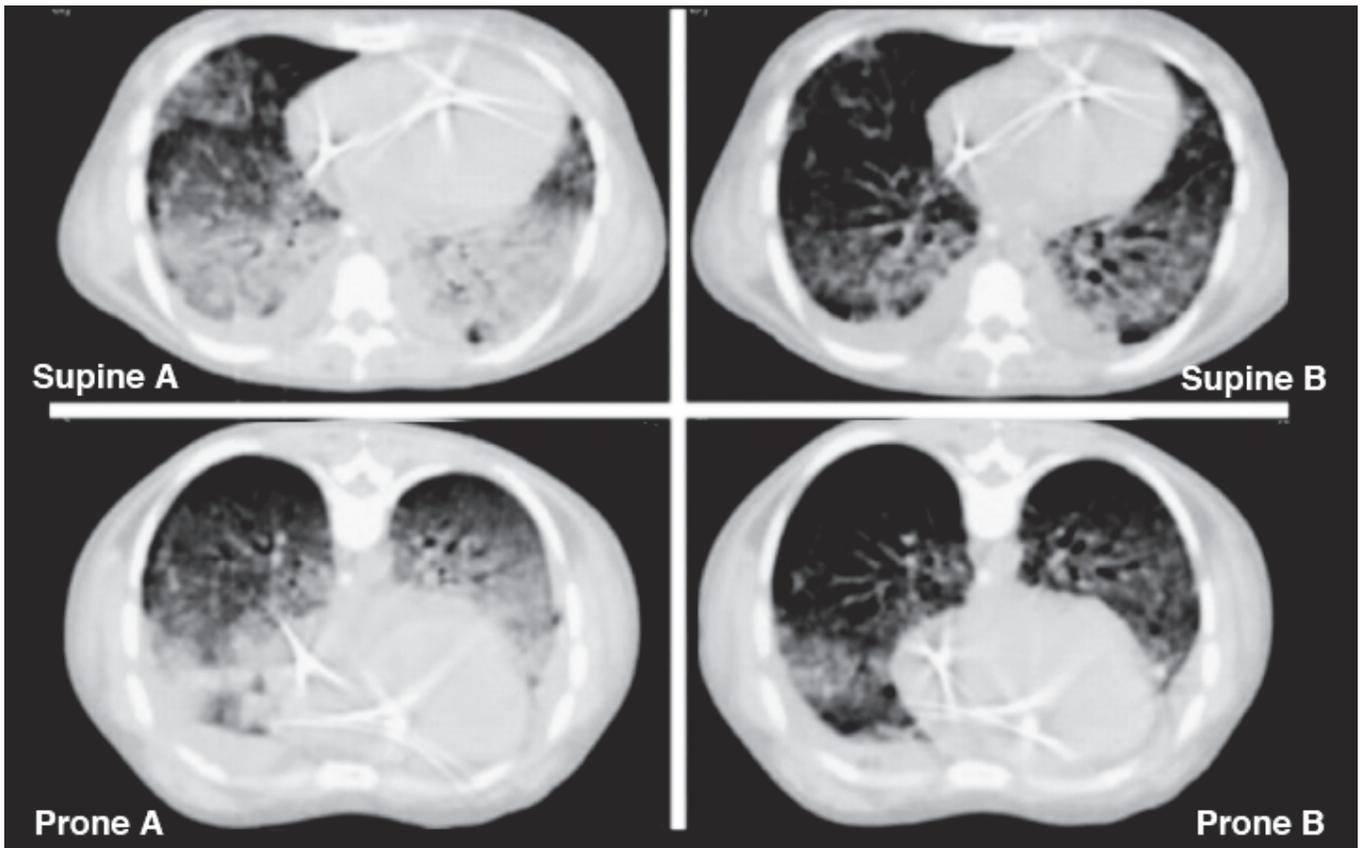
-COVID affects surfactant and causes collapse of the small air sacs in the lungs (alveoli), markedly decreasing the surface area of the lungs available to absorb oxygen.

-Patients often present late in disease process with severely low oxygen saturation. Normal oxygen saturation is 96-100% at sea level in healthy persons. Severe pneumonia with COVID can cause saturations to fall as low as 50%; patients commonly present with oximetry readings in 70's and 80's.

-Severely ill patients often require a ventilator, but in NYC hospitals we are finding the majority of patients with COVID pneumonia can be managed with much less invasive techniques that can rapidly correct oxygenation and reduce the work of breathing.

-***THE DECISION TO INTUBATE MUST BE MADE BY CLINICIANS CARING FOR PATIENTS AT THE BEDSIDE. BOTH INTUBATION AND NON-INTUBATION STRATEGIES REQUIRE CLOSE MONITORING OF PATIENTS.***

-The disease process and hospitalization often involves a 1-3 week course, even if intubation and mechanical ventilation is not needed.



-CT scans show the effect of proning—white areas of lungs (where alveoli are collapsed) are decreased by turning the patient onto their stomach. Top images: patient is on back, i.e. supine. Bottom images: when patient is lying on their stomach, i.e., prone. With the heart down on the sternum (prone) the posterior lower lung segments are not compressed the way they are in a supine position. The areas of black (where the alveoli are open) are increased in a prone position.

-Humans facing severe oxygenation challenges always position themselves as prone as possible—whether biking over the Alps, or climbing the highest mountains on the planet.





-The fastest animals on the planet all run prone. Aerobic capacity is optimized, by maximizing lung volume and area for oxygen absorption.

-COVID patients improve their oxygenation with supplemental oxygen, and by turning to a prone position, their oxygenation often improves even more. Their work of breathing is frequently lessened, and their respiratory rates improve. They commonly report being more comfortable.

-I have seen patients come in with saturations of 50%, rise to 75-80% with nasal cannula and face mask oxygen, and then go up to 95% when positioned prone (on the same amount of oxygen).

-Positioning maneuvers including proning, turn to left side, right side, and sitting upright in a chair-- help open areas of the lungs and improve oxygenation. Patients are now routinely doing this (as part of their treatment plan) in NYC hospitals and elsewhere. Below is the awake proning instruction sheet for Elmhurst Hospital, Queens NYC.

Instructions for patients with cough or trouble breathing:

Instrucciones para pacientes con tos o dificultad para respirar:

Please try to not spend a lot of time lying flat on your back! Laying on your stomach and in different positions will help your body to get air into all areas of your lung.

¡Por favor, trate de no estar mucho tiempo acostado sobre su espalda (boca arriba)! Acostarse sobre su estómago (boca abajo), y en diferentes posiciones, le ayudará a su cuerpo a que le llegue aire a todas las áreas de sus pulmones.

Your healthcare team recommends trying to change your position every 30 minutes to 2 hours and even sitting up is better than laying on your back. **If you are able to, please try this:**

El grupo de sus cuidadores de salud le recomienda tratar de cambiar de posición entre cada 30 minutos y 2 horas, y aún permanecer sentado es mejor que estar acostado de espalda. **Si puede, por favor, intente esto:**

1. 30 minutes – 2 hours: lying on your belly
30 minutos – 2 horas: acostado sobre su estómago (boca abajo)
2. 30 minutes – 2 hours: lying on your right side
30 minutos – 2 horas: acostado sobre su lado derecho
3. 30 minutes – 2 hours: sitting up
30 minutos – 2 horas: sentado
4. 30 minutes – 2 hours: lying on your left side; then back to position #1.
30 minutos – 2 horas: acostado sobre su lado izquierdo; y luego vuelva a la posición # 1

PHOTOS BELOW TO DEMONSTRATE THIS:

LAS FOTOS DEBAJO DEMUESTRAN ESTO:

1. 30 minutes – 2 hours: laying on your belly
1. 30 minutos – 2 horas: acostado sobre su estómago (boca abajo)



2. 30 minutes – 2 hours: laying on your right side
2. 30 minutos – 2 horas: acostado sobre su lado derecho



3. 30 minutes – 2 hours: sitting up
3. 30 minutos – 2 horas: sentado



4. 30 minutes – 2 hours: lying on your left side
4. 30 minutos – 2 horas: acostado sobre su lado izquierdo



Then back to Position 1. Lying on your belly!
Luego, vuelva a la posición 1. ¡Acostado sobre su estómago (boca abajo)!



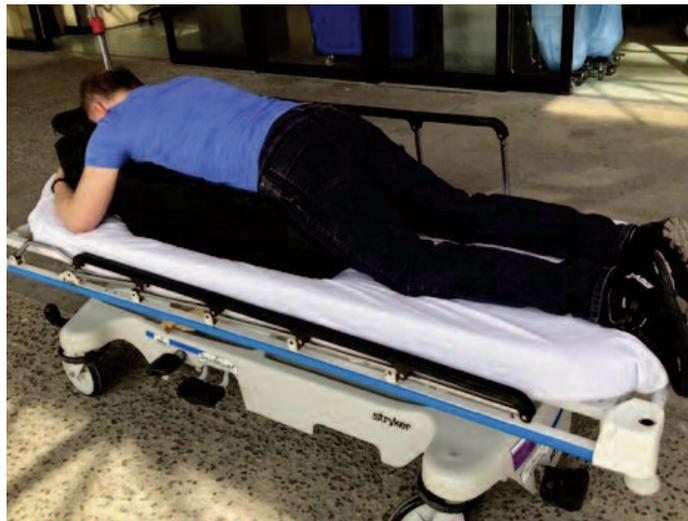
-There is evidence that improving oxygenation and decreasing the work of breathing may prevent progression of respiratory deterioration in COVID patients.

-Patient positioning maneuvers can open up alveoli, improve oxygenation and decrease the work of breathing. It is a fundamental part of treatment for all patients with COVID pneumonia, those awake as well as those intubated on ventilators.

-Prone is relatively easy for thinner patients, although it is not comfortable on a standard stretcher mattress. Many larger patients cannot tolerate prone, due to difficulty breathing (from their belly impinging on their chest excursion) or from back discomfort.

-This is the first time in medical history that awake prone and patient positioning maneuvers are an integral part of treatment for an enormous number of patients.

-A prone mattress (originally designed as a massage mattress for pregnant women) makes prone much more comfortable and achievable--even in obesity or pregnancy. It has allowed patients to prone that could otherwise not tolerate doing so. The mattress is lightweight, easily fits on a hospital



Top left: Author holding the prone mattress, made by Earthlite, 760-599-1112. Email at: dealerorder@earthlite.com.

Above: Patient with COVID pneumonia in NYC emergency department using prone mattress.

Left: Mattress demonstration on a hospital emergency department stretcher.