

THE CUTTING **EDGE**

SPECIAL COVID EDITION: April 13th, 2020

EMERGENCY DEPARTMENT NEWSLETTER

Practice Alerts!

Proning Patients with COVID: Does it actually work?

- There is limited research on proning COVID patients
- Practitioners across the US are proning potential COVID patients based on previous research with Acute Respiratory Distress Syndrome (ARDS)

In this review of large randomized trials and meta-analyses, the authors state "prone position in conjunction with a lung-protective strategy, when performed early and in sufficient duration, may improve survival in patients with ARDS."

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4848155/>

- Keep in mind there are contraindications and potential complications with proning patients!

Absolute Contraindications

*Refer to the article for a comprehensive list

- Unmonitored or significantly increased intracranial pressure
- Unstable vertebral fractures

Check out this image of what happens in the lungs when a patient is prone!



“Prone positioning allows the heart to lay on the sternum and the compressive force of the heart on dorsal lung regions to be eliminated.”

Another article on proning:

<https://www.nejm.org/doi/full/10.1056/NEJMoal214103>

Check out page 4 for proning case studies and steps on how to do it!

You failed to hoard enough TP!



Vitally Important!



COVID Basics

- COVID-19 a.k.a. "SARS-CoV-2" is a positive-sense, single stranded enveloped RNA virus that's genetically similar to the SARS Coronavirus of 2002
- A "positive-sense" virus is immediately translated to the host cell => immediate infection
- "RNA replicase" copies the genetic material in the cell to replicate and increase number of viral cells in the body



carrier of Coronavirus > *mutated* > transmitted to Pangolin > *mutated* > transmitted to humans

*check out page 2 for more details on how SARS-CoV-2 infects the body

New Additions to Resus Rooms!

1. White board
2. List of frequently used meds with starting rates, titration, ranges
3. Dirty bin outside rooms for dropping items that need to be cleaned
4. Room cabinets organized with specific equipment needed for resus (i.e. art line & CVC kits, morgue bag)

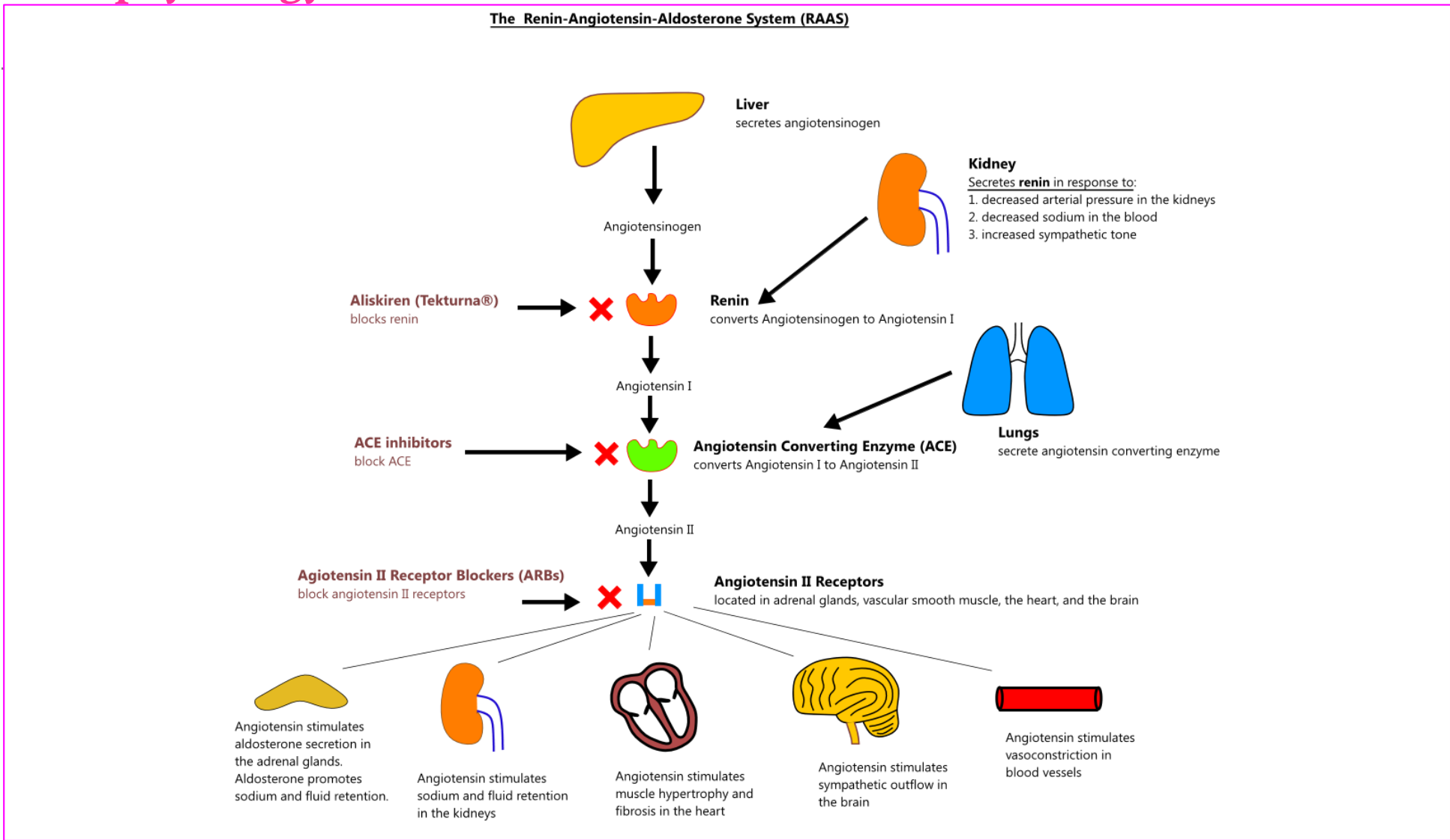
In this issue:

Debunking

Spike Protein

Proning

Pathophysiology of COVID Infection



- The COVID virus binds to a specific receptor called Angiotensin Converting Enzyme -2 (ACE2) to infect cells (found in pulmonary blood)
- ACE (angiotensin-converting enzyme) inhibitors and ARBs (angiotensin receptor blockers) block angiotension in the cascade

Result:

- Arteries dilated => lowers blood pressure
- Opens coronary arteries => increases blood flow to heart

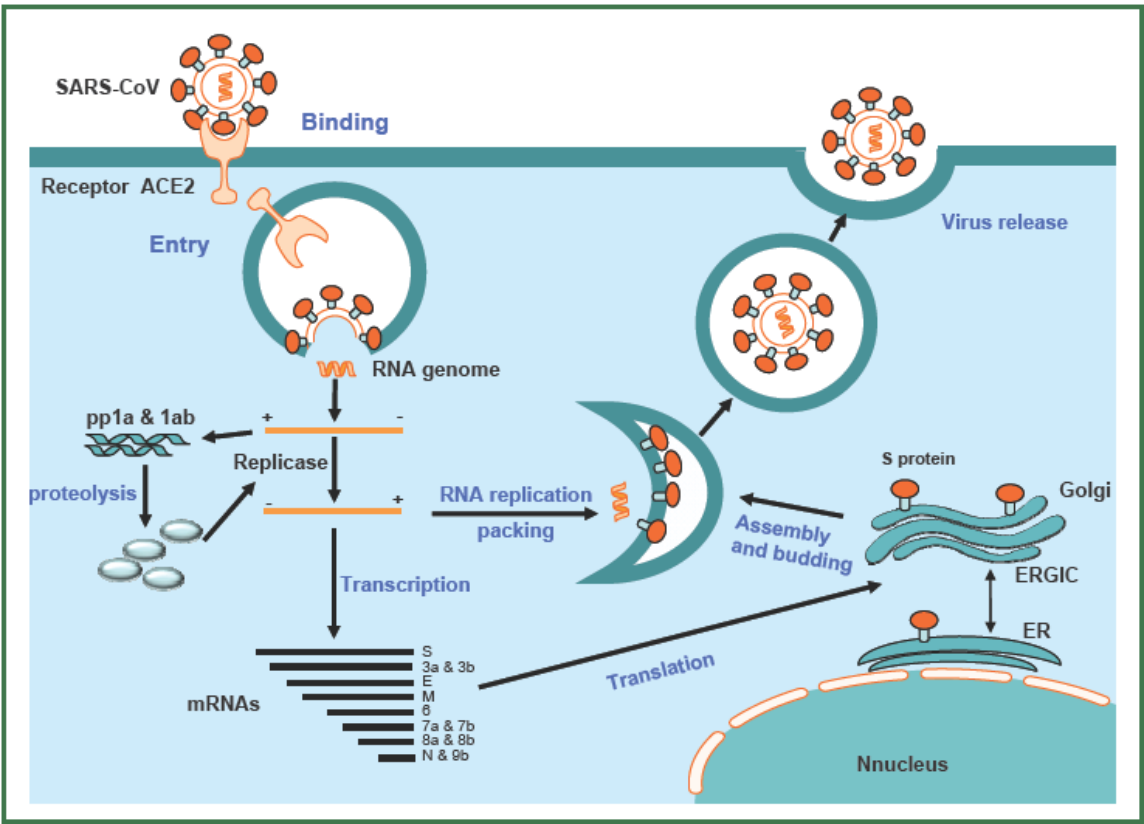
Hypothesis: ACEI's and ARBs increase expression of ACE2 making patients taking ACEI's and ARBs more susceptible to getting infected with COVID

❖ No clinical evidence has proven this! Some studies suggest the increase in ACE2 could be protective against COVID.

Bottom line: Patients should not stop their BP meds until more research is conducted!

Check out this article for detailed information on this topic: <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa329/5811880>

What's happening inside the cell?



- Angiotensin Converting Enzyme -2 (ACE2) is located all over the body, but has large presence in the lungs
- ACE2 regulates blood pressure
- A virus needs to enter a cell to replicate and spread
- The “spike” on the Coronavirus connects with a spot on the surface of a cell

Process:

- “Spike” on SARS-CoV-2 virus particle binds with ACE2 protein receptor on cell
- Enters cell and replicates
- New virus particle then released from cell
- SARS-CoV-2 kills cells in lungs
- Immune system responds trying to kill virus
- Infection reaches air sacs in lungs and fluid and pus accumulate (leads to pneumonia)
- Lungs become inflamed, fluid leaks into lungs, and patients end up with difficulty breathing

Debunking Myths...

Does Ibuprofen Worsen COVID Symptoms?

It's highly unlikely that ibuprofen is related at all to COVID symptoms.

- Discussion first started when the French government put out an alert about ibuprofen and COVID. Then the French Prime Minister tweeted, "taking anti-inflammatory drugs (ibuprofen, cortisone, etc.) could be an aggravating factor of the infection."
- Previous studies show individuals with other chest infections, such as pneumonia, experienced worsened symptoms and prolonged illness after taking a non-steroidal anti-inflammatory drug (NSAID), including ibuprofen
- This conclusion cannot be transferred to COVID

Conclusion:

- Ibuprofen and other NSAIDs help manage fever and pain, which may mask severity of symptoms and delay someone seeking treatment
- Another theory is that NSAIDs are an anti-inflammatory (it's in the name of the drug class!). Taking them can interfere with the body's immune response => **This has not been proven for ibuprofen**

Does Blood Type Affect Your Risk of COVID?

The short answer is no.

- There has only been one study showing the effect of blood type on risk for COVID
- It was an observational study – they looked at patient charts and did not do any intervention (*observational studies are a low level of evidence so it is not advised to make changes to practice based on this type of research*)
- The study included 3 hospitals, all in China, and sample size was 2,173

Results:

- Blood type A was associated with a higher risk for acquiring COVID compared to non-blood type A groups
- Group O was associated with a lower risk for acquiring COVID
- **Not enough evidence to conclude blood type effects risk of COVID**



The researchers even comment in their study, "This is the first observation of an association between the ABO blood type and COVID... it would be premature to use this study to guide clinical practice."

Treatment

Some Research Under Investigation

Chloroquine: (anti-malaria medicine)

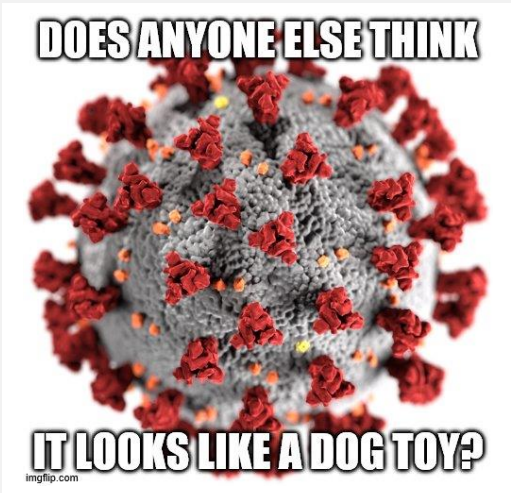
- In vitro data suggests that chloroquine inhibits SARS-CoV-2 replication
- Has not been reproduced in animal models
- Not safe for treating COVID-19 at this time!

<https://www.sciencedirect.com/science/article/pii/S0166354220301145?via%3Dihub>

Vaccine:

- A particular protein called "spike protein" helps induce immunity against the virus
- Learned from research on SARS and MERS

<https://www.visualcapitalist.com/every-vaccine-treatment-covid-19-so-far/>



Proning: Case Studies & Steps

Case Study 1

61 y.o. male
PMH: CAD, polyarthropathy, and dyslipidemia

Presentation:

- Increasing SOB and dry cough for past 2 weeks
- Started getting fevers, went to urgent care, diagnosed with pneumonia, discharged with 10 days of doxycycline - completed 2 days prior to arrival to ED
- Traveled to California in mid-January

Assessment:

- Persistently tachypneic, increased work of breathing
- On 6L nasal cannula
- Speaking partial sentences
- O2 sats < 80%
- Chest x-ray: multifocal pneumonia

Proning Intervention:

- RR from 40s-50s down to 30s
- O2 sats 91-93% on 6L NC to 99%
- Rolled over to collect ABG, O2 sats back down to 92% and RR increased

Case Study 2

87 y.o. female
PMH: HTN, hyperlipidemia, asthma, bronchiectasis, lung cancer 10 years ago with upper left lobectomy

Presentation:

- SOB started yesterday
- No recent travel, has been mostly staying at home

Assessment:

- O2 sats 84% on 5L nasal cannula
- Chest feeling tight, increased SOB
- RR 50s

Proning Intervention:

- O2 sats up to 97%
- RR 28
- Proning is uncomfortable, but tolerable per patient

*Patient must be relatively stable to self-prone

Chat with the ED practitioner if you think your patient might benefit from proning!

Proning Steps

Prior to turning:

1. Assess patient’s vital signs
2. Obtain extra pillows to use for positioning
3. Perform tasks that would be difficult to address while the patient is prone (e.g. IV site change, specimen collection)
4. If spontaneously voiding, encourage / assist patient to void prior to procedure
5. Ensure all lines tubes and drains are secure.
6. Reposition lines, tubes and drains
 - a. Relocate lines, tubes, and drains located above the patient’s neck up toward to the head of the bed, such as oxygen cannula.
 - b. Relocate lines, tubes, and drains located below the patient’s neck toward the foot of the bed.
 - c. Remove any monitoring equipment unnecessary for the duration of the turn prior to repositioning (e.g. blood pressure cuff, etc.)
7. Assist patient to prone position – see image below “swimmers position”
8. Place pillows under patient’s shins to raise the ankles off bed and maintain dorsiflexion position
9. Put bed in reverse Trendelenburg position – see image below

Notes:

- ✓ ECG leads may remain on the anterior chest if patient if moving independently and keeping pressure off chest. ECG leads may be placed on the posterior chest if causing pressure or discomfort (See Image B).
- ✓ Instruct patient to use call light and notify RN if they return to supine position or have difficulty repositioning
- ✓ Reposition patient every 2 hours to prevent pressure injury



Swimmers Position



Reverse Trendelenburg



Stress ↑ ⇒ IQ ↓

No question is dumb! It’s proven that when our brains are under stress that we cannot think clearly. Forget the starting dose of a med? Forget how to put in an IV? These things happen when we’re under stress! Don’t feel dumb asking simple questions that you normally know how to answer. It’s happening to all of us right now!



We all know how exhausting it can be caring for a critically ill patient. And on top of that, we’re in full PPE!

Check in on your colleagues if they have been in an iso room for >30 minutes. Offer to give them a break so they can get a drink of water and cool off.

If you’re in a room and starting to feel dizzy, over-heated, etc., tell a buddy so they can swap spots with you!



How to use the new white boards in the resus rooms...

- ✓ Write items, meds, equipment needs on board in room
- ✓ Hold up board to staff outside room
- ✓ Avoid opening door to ask for things!



Need to send labs from a resus room?
It can wait a few minutes!
Take the time to properly label the tubes and stabilize the patient before handing labs to person outside room.





