



What's Inside:

- 3 research summaries
- Q&A with PA student
- Crack the case
- August Awareness Month

Likelihood ratios (LRs) are based on mid-range values for sensitivity and specificity. Sensitivities, specificities, LRs, and Kappas (when available) are provided.

Physical sign	Underlying condition	Sensitivity (%)	Specificity (%)	Kappa	+LR	-LR
S ₃ gallop	Ejection fraction <30%	78	88		6.5	0.25
All augmenting maneuvers	Mitral regurgitation, hypertrophic obstructive cardiomyopathy, ventricular septal defect	68-100 (mean, 84)	75-100 (mean, 87.5)		6.72	0.183
Hepatojugular reflux	Heart failure	24	96		6.4	0.853
Femoral arterial bruit	Peripheral vascular disease (PVD)	20-29 (mean, 24.5)	95		4.9	0.79
Percuss spleen before palpating	Splenomegaly	58	92	0.63	7.25	0.457
Murphy sign	Cholecystitis	50-97 (mean, 73.5)	80		3.68	0.331
Forced expiratory time	Chronic obstructive pulmonary disease (COPD)	25	95	0.70	5	0.789
Wheezes	COPD	15	99.6	0.69	37.5	0.85
Abnormal foot pulses	PVD	79	86		5.64	0.244
Kernig sign	Meningitis	5	95		1	
Goiter size	Thyroid disease	70	82	0.74	3.89	0.366
Great toe extensor weakness	Lumbar disk herniation	50	70	0.65	1.67	0.714
Centralateral straight leg raise	Lumbar disk herniation	25	90	0.74	2.5	0.833
Medical history	Lumbar disk herniation	95	88		7.92	0.057

Figure 1: Statistically supported physical exam techniques¹

The Dermatology Workforce Supply Model: 2015-2030³

Many researchers have predicted a physician shortage in medicine in the next few decades, with dermatology as no exception. However, with the addition of PAs/NPs, will the number of dermatological providers catch up with U.S. population growth and demand? This study takes a close look at estimated trends in the dermatology workforce in order to determine whether there will be a clinician shortage in the field.

In order to gauge the most likely scenarios, the researchers constructed three models for dermatology physician growth and two models for PAs/NPs. The three models projected how low, current, and high growth trends in residency positions will affect the number of dermatology physicians. The two models looked at physicians only and physicians with PAs/NPs. The researchers used a stock and flow projection model, which adds new providers and subtracts exiting providers from the current amount of providers. (cont. pg. 3)

Why the history and physical examination still matter¹

While the history and physical exam are staples for a medical diagnosis, laboratory testing and imaging have become remarkably more abundant and accessible, resulting in physical exam skills to be deemphasized in medical education and practice. In 1963, a study was conducted that determined that 88% of all diagnoses were made with a brief history and a focused physical exam. This argument was later strengthened by a study that found that 82% of patients in their study were diagnosed by a specialist simply after reading a referral letter and taking a history. In this same study, lab tests determined diagnosis only in 4 out of 80 patients. More recently, a 2011 study determined that more than 80% of newly admitted internal medicine patients could be diagnosed on admission using clinical skills as a sufficient tool for diagnosis, and lab and imaging tests diagnosed the patient less than 10% of the time. (cont. pg. 2)

Understanding Middle East respiratory syndrome²

As we move into the Fall 2020 semester and begin to focus in on more in-depth microbiology and related disease processes, it is important for us to keep in mind how these affect not only patients individually, but the community and public health as a whole. In recent months, we have witnessed just how quickly a virus, like SARS-CoV-2, can move throughout the population and how imperative it is to have solid health-care infrastructure and health awareness. Respiratory viruses in particular, such as the coronavirus, respiratory syncytial virus, influenzae virus, and rhinovirus, can spread quickly through the air as they become aerosolized from coughing and sneezing. They also can be highly mutagenic, allowing them to evade our immune systems, diminish vaccine effectiveness, and even cause global pandemics. As we continue to learn more about the novel 2019 coronavirus (COVID-19) that has spread throughout the globe, we should be reminded that not too long ago in 2015, we faced a similar health scare from another novel coronavirus causing Middle Eastern Respiratory Syndrome (MERS). (cont. pg. 2)

Why the history and physical examination still matter¹

(cont. pg. 1)

The history and physical exam have been devalued as laboratory testing and imaging have been more accurate and accessible. Providers have begun leaning more towards ordering tests and patients have even started to expect and demand diagnostic testing. These patterns have been seen in medical training as physical diagnosis skills, once a staple in medical training, have been devalued with the decline of use in practice. This snowballs into more of a decline in the use of physical skills and the overuse of diagnostic testing.

Not only is the history and physical exam important for diagnosis, but it is also an opportunity for the patients to gain the providers trust. This article emphasizes the fact that good bedside skills are the most valuable to a clinician in order to establish trust and obtain an accurate patient history. It is also a toolset that is available to every provider upon arrival of the patient.

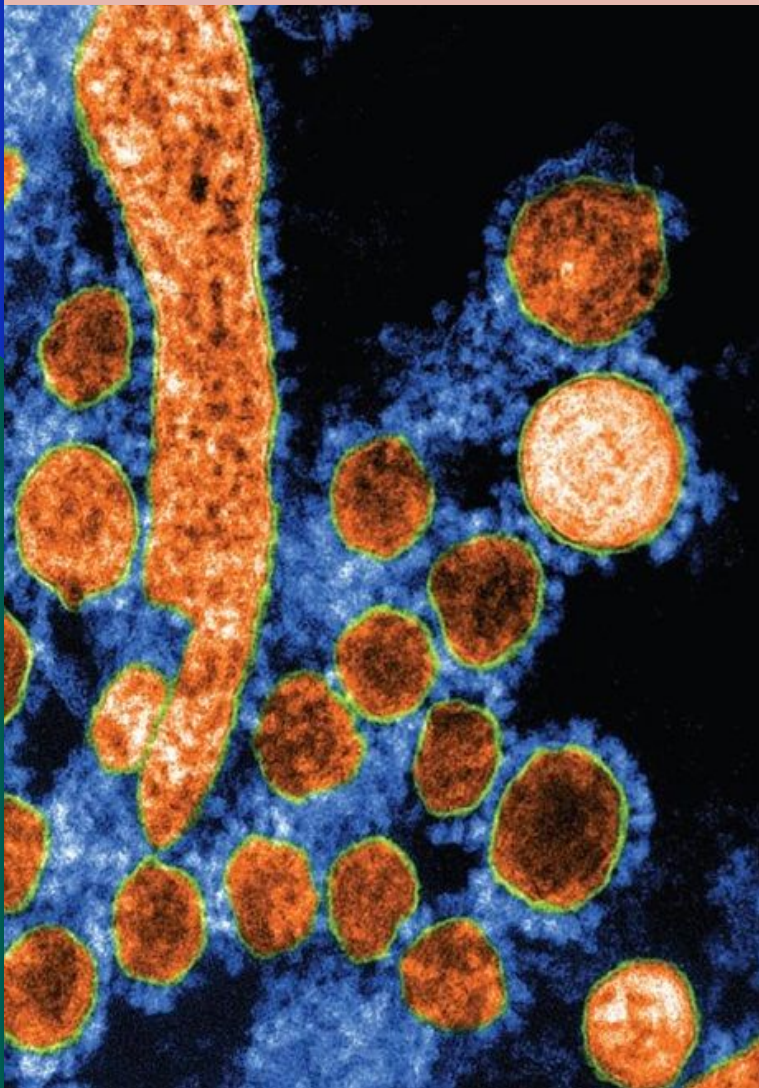


Figure 2: color-enhanced transmission electron micrograph showing MERS-CoV²

Understanding Middle East respiratory syndrome²

(cont. from pg. 1)

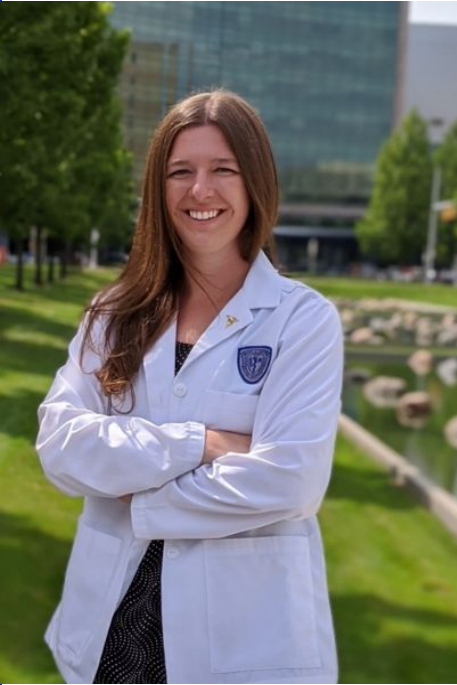
The large coronavirus family consists of related RNA viruses that circulate within the human population (typically causing the common cold), and those that live amongst animals. When significant mutations (recombination) and cross-species transmission occurs (animal-to-human), severe respiratory disease can manifest. The primary source of the MERS coronavirus is believed to have been bats and camels in the Middle East, with people acquiring the infection from these animals leading to human-to-human transmission via the respiratory route. Like COVID-19, the clinical manifestations of MERS ranged from asymptomatic cases to rapidly progressing respiratory illness and systemic disease. Common symptoms included fever, myalgias, sore throat, cough, and dyspnea. People also experienced headache, nausea, dizziness, vomiting, and diarrhea. In severe cases, pneumonia, ARDS, renal failure, DIC, and pericarditis were reported. Laboratory findings were largely non-specific that included thrombocytopenia and lymphopenia. Patchy lung infiltrates and occasional pleural effusion were found on radiographic imaging. The treatment for MERS, much like with early COVID-19, was largely supportive because antiviral therapy and other therapeutics take time to develop and utilize in safe, effective manners. With air travel and the ability for the infection to spread across countries and continents so quickly, the virus always seems to be far ahead as our science, medicine, and knowledge tries to catch up.

The lessons we learned from MERS and continue to learn from COVID-19 largely fall under the public health landscape. When early signs of a possible pandemic arise, we need to take preventive health measures as soon as possible to diminish the amount of infection infiltrating throughout our communities. These include slowing down air travel (especially from highly-infected regions), wearing protective clothing and equipment (i.e. masks and eye-wear), maintaining hand-hygiene, and very importantly keeping track of community spread. We all must feel a sense of responsibility to protect not only our own health, but that of our family members, friends, and the general public. By setting good examples, communicating, listening to health professionals, and respecting the severity of the situation, we can do a much better job in the future of combating disease spread and ensuring that the tragic loss of life we have experienced from yet another coronavirus pandemic does not happen again.



Q&A with PA Student

This Q&A features Rachelle Fair and focuses on her experience with research and current projects.



What was your experience getting involved in research before PA school and how did that help lead you into choosing a career as a PA?

I did a research project on Long Term Care Facilities (LTC's) and their Emergency Preparedness as part of my gerontology certificate for my capstone project. I developed a survey, piloted it at a few LTC's, and presented my findings at a statewide conference. I developed critical thinking skills and learned the importance of collaboration in patient care. I observed the multitude of moving parts in healthcare and the challenges it poses for patients and families. I wanted to help patients not only with their health but also through educating patients and their families. This shaped by desire to be a PA. I realized I wanted more of a hands-on experience with patients and more time with patients to educate and empower them.

What is your knowledge of PAs being involved in research and how has that changed throughout school?

Prior to PA school, I did not realize the opportunities for research that would be open to me as a future PA. Our program has taught me that PAs are an integral part to the research community, both in medicine as well as in public health. I also didn't realize the amount of opportunities we have as students to get involved with research when I applied to PA school.

Is there a favorite topic or field of medicine that interests you the most that you would like to contribute to from a research perspective?

I am interested in pursuing family medicine after graduation, where I can continue to work with patients on health literacy and educating patients in preventive health to improve outcomes. I am also interested in wilderness medicine.

Briefly describe your research experiences during PA school (i.e. iSCTL, Capstone, etc.) and how you feel they will impact your career as a PA?

The Paul Ambrose Scholars Program is offered through the Association for Prevention Teaching and Research (APTR). My project is focusing on health literacy and providing an informative short lecture series at the Lakeside Men's Shelter in Cleveland on a variety of common health conditions and how to prevent/manage them. The idea for my research project came when I volunteered at the shelter one evening for the Knock Your Socks Off event. Through the process of creating and implementing my project I am learning so much about how to communicate with patients on a level that they understand and the variety of barriers that many patients face when it comes to access to care. I wrote a resolution for the AAPA student committee to work on teaching PA students more about social determinants of health and how to address these disparities when working with patients. The resolution was accepted and is a project I am fortunate enough to work on as a member of the AAPA Advocacy and Policy Student Board Committee. Being able to work on health disparities education with other PA students will help me interact with my future patients better, as well as help me build my communication, teamwork, and advocacy skills.

In addition to Paul Ambrose, I am helping with a need's assessment for the Westerly Project through the Student Run Health Clinic Outreach Committee. The Westerly is a senior living facility that Neighborhood Family Practice (NFP) works with.

How do you believe PA advocacy in medical research can benefit the profession?

There are still many misconceptions among healthcare systems as to what our capabilities are and where our scope of practice lies. If more PAs conducted medical research, I feel it would further our profession by showing we too are interested in studying the outcomes of how we practice and how to improve those outcomes, no matter what field we are in or who is on our team. I think it would also help administrative as well as healthcare professionals to realize our full potential and capabilities.

The Dermatology Workforce Supply Model: 2015-2030³

(cont. Pg. 1)

The researchers concluded that the growth of dermatology providers will outpace U.S. population growth in all models but remain unsure whether the number of providers is enough to meet demand. The addition of PAs/NPs working in a team-based model with physicians however will help mitigate any shortages. Some limitations to the study included variability in average retirement age, physician burnout, and productivity.

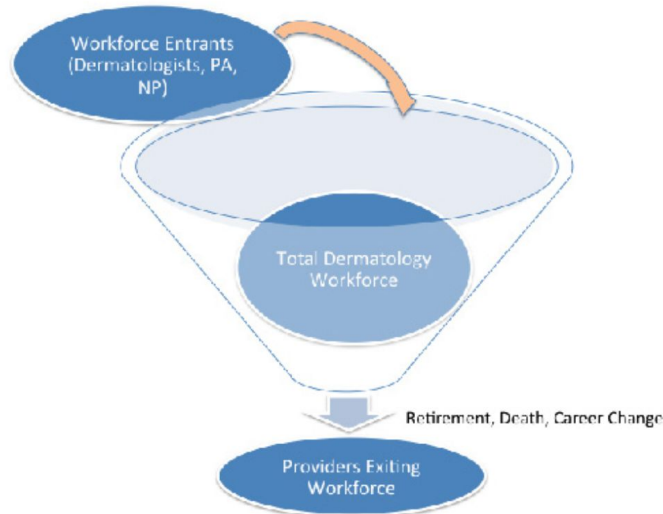


Figure 1. Stock and Flow Model for U.S. Dermatology Workforce

Figure 3: Stock and Flow model³

Crack the Case



A middle-age man biking along a main road is hit by oncoming traffic and thrown off his bike. Upon arrival at your ED, it is reported by paramedics that he has a large amount of widespread bruising, suffered both major and minor lacerations, a possible broken leg and arm, and an unknown amount of head trauma. Fortunately, he is conscious and hemodynamically stable with a BP of 128/78, HR of 80 bpm, O2 of 97%, and a RR of 18 breaths per minute. You have him taken for an immediate head CT, and during the examination a code blue is called with the EKG displaying a dangerous arrhythmia. Given his recent history of trauma, what is a likely reason for this deadly arrhythmia occurring so suddenly?



Be the first to email the correct answers and win a prize! Email: aaron.harvey@case.edu

Summary References and Links

- https://journals.lww.com/jaapa/Fulltext/2016/03000/Why_the_history_and_physical_examination_still_7.aspx?sessionEnd=true
- https://journals.lww.com/jaapa/Fulltext/2015/07000/Understanding_Middle_East_respiratory_syndrome.12.aspx
- <https://escholarship.org/uc/item/840223q6>

August Awareness



World Breastfeeding Week 2020

<https://waba.org.my/wbw/>



National Immunization Awareness Month



<https://www.cdc.gov/vaccines/events/niam/index.html>

Psoriasis awareness month

<https://www.healio.com/news/dermatology/20200807/qa-psoriasis-awareness-month-a-time-to-educate-learn#:~:text=August%20marks%20Psoriasis%20Awareness%20Month,of%20people%20across%20the%20world.>

