Arizona HOSA

SYNAPSE

August 2022

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CATARACT AWARENESS MONTH

WHAT ARE CATARACTS AND WHAT HAPPENS TO THE BODY?
According to Mayo Clinic, a cataract is the clouding of a normally clear lens of the eye. When a person has cataracts, they often cannot see clearly and feel like they are looking through a fog. It is a slow process and eventually takes a big toll on one's eyesight.

SIGNS AND SYMPTOMS:
- Diplopia
- Sensitivity to light
- Fading and yellowing of colors
- And more!

HOW IS IT TREATED?
- Eyeglasses
- Surgery

STATISTICS
- Cataracts affect an estimated 24.4 million Americans aged 40 or older.
- About 63% of Arizonans are vaccinated against COVID-19.
- Spinal Muscular Atrophy is so rare that the estimated incidence is 1 in 6,000 to 1 in 10,000 live births.

AUGUST AWARENESS MONTH HOT TOPICS:
- Cataract Awareness Month
- National Immunization Awareness Month
- Spinal Muscular Atrophy Awareness Month

PICTURES!? 

Normal Eye
Cataract
**IMMUNIZATION AWARENESS MONTH**

- **WHAT ARE IMMUNIZATIONS?**
  - Immunizations, many times given as a vaccine, in simple terms save lives. They are meant to kill off a certain disease and its cells. In many cases, there are times when a vaccine is given with a tiny amount of cells from a disease with the purpose of having the body’s immune system react and be alert for them in the end causing an individual to be immunized. They aren’t cures but they can decrease the severity of the diseases when they hit.

- **FOR WHAT REASONS?**
  - Immunizations protect you from dangerous diseases.
  - They are often needed for entrance into school or day care and they may be needed for employment or for travel.
  - When immunization rates drop below a certain level, preventable diseases show up again. Often, these diseases are hard to treat. For example, measles outbreaks still occur in the U.S.

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**SPINAL MUSCULAR ATROPHY AWARENESS MONTH**

- **WHAT IS SMA?**
  - Spinal muscular atrophy (SMA) is a group of hereditary diseases that progressively destroy motor neurons—nerve cells in the brain stem and spinal cord that control essential skeletal muscle activity such as speaking, walking, breathing, and swallowing, leading to muscle weakness and atrophy. Motor neurons control movement in the arms, legs, chest, face, throat, and tongue. When there are disruptions in the signals between motor neurons and muscles, the muscles gradually weaken, begin wasting away and develop twitching (called fasciculations).

- **WHAT ARE THE DIFFERENT TYPES?**
  - SMA type I, also called Werdnig-Hoffmann disease or infantile-onset SMA, is evident usually before 6 months of age.
  - SMA type II, the intermediate form, usually show their first symptoms between 6 and 18 months of age although some can present earlier.
  - SMA type III (Kugelberg-Welander disease) develop symptoms after 18 months of age and can walk independently.
  - Individuals with SMA type IV develop symptoms after 21 years of age, with mild to moderate proximal muscle weakness and other symptoms.
10 Mental Health Tips for Back to School

1. GET REST!!
   Good amount of sleep = 8 hours

2. Get Active

3. Plan Ahead

4. Eat Well

5. Find time for self care

6. Stay hydrated

7. Don't procrastinate important and huge assignments/projects

8. Connect with others
   If you are having a difficult time in class, ask for extra help.

9. Join clubs you find exciting and interesting.
OVERVIEW

These talented folks can be found anywhere ranging from hospitals to even doing fieldwork with local police departments. Forensic Toxicologists have a main purpose: to find out what toxins caused death. They use tissue samples, hair follicles, and even nails to help them point out what toxin it is.

This is Anne Chapel, a Board Certified Toxicologist. This is a quick video where she answers a few questions about how some toxins work in the body. Watch here: https://www.youtube.com/watch?v=0YLno_k3034

EDUCATION

1. High School Diploma
2. Bachelor's Degree in Chemistry or Biochemistry
3. Master's (or Doctorate's) in Forensic Science
4. *OPTIONAL* Board Certification

SKILLS

- Advanced knowledge of the human body
- Affinity for Chemistry
- Out-of-the-box thinking
- Attention to detail
- Ability to follow exact procedure
WHAT IS A HEAT STROKE?
A HEAT STROKE IS A HEAT-RELATED MEDICAL EMERGENCY CAUSED BY OVERHEATING OF THE BODY DUE TO EXPOSURE TO HOT TEMPERATURE OR INTENSIVE PHYSICAL ACTIVITY.

SYMPTOMS OF A HEAT STROKE:
- CONFUSION
- DIZZINESS
- NAUSEA
- FLUSHED OR REDDENED SKIN
- MUSCLE WEAKNESS OR CRAMPS
- HEADACHE
- RAPID HEART BEAT

WHAT TO DO?
LIVING IN A HOT STATE LIKE ARIZONA, IT IS IMPORTANT TO KNOW WHAT TO DO WHEN OTHERS OR YOU ARE HAVING A HEAT STROKE. IF SOMEONE IS EXPERIENCING A HEAT STROKE, CALL 911 AND BRING THEM TO A COOL LOCATION. SPRAY THEM WITH COLD WATER. PLACE COLD TOWELS ON THEIR NECK, ARMPITS, AND GROIN. IF THE PERSON IS CONSCIOUS, OFFER THEM WATER, A DRINK WITH ELECTROLYTES OR A BEVERAGE WITHOUT CAFFEINE.
Maithili Khandekar is a Third Year Medical Student at the University of Arizona College of Medicine-Tucson. She is from Phoenix, Arizona, but she moved to Tucson for college and has stayed there since! She is still figuring out what specialty she wants to pursue, but she is leaning towards Anesthesiology. In her free time, she loves to hike, dance, play tennis, and travel!!

**Interview with Maithili Khandekar**

**University of Arizona College of Medicine-Tucson Student**

**ABOUT MAITHILI**

Maithili Khandekar is a Third Year Medical Student at the University of Arizona College of Medicine-Tucson. She is from Phoenix, Arizona, but she moved to Tucson for college and has stayed there since! She is still figuring out what specialty she wants to pursue, but she is leaning towards Anesthesiology. In her free time, she loves to hike, dance, play tennis, and travel!!

**FREQUENTLY ASKED QUESTIONS BY PRE-MEDICAL STUDENTS**

**How rigorous is medical school compared to college?**
Medical school is definitely way more rigorous than college; I’ve heard so many of my classmates say that the amount of material that’s covered in a 4 year degree can be covered in a semester in medical school. There’s definitely higher expectations of needing to know more than just the physiology; we learn pathology, pathophysiology, treatments, prevention methods, etc. It can absolutely be overwhelming at first and it takes time to figure out what works for you in terms of studying but I always suggest that people experiment with different study methods (ex: flashcards, practice questions, writing notes, etc) to find out what works for them! There’s also tons of resources available for studying so definitely utilize that. Time management also becomes very important when you’re juggling various leadership roles and studying.

**Do you have any suggestions for extracurriculars as a pre-medical student?**
I always encourage people to pursue extracurriculars that they are interested in, even if not directly medicine-related! It’s absolutely important to have clinical/shadowing opportunities that give you exposures to healthcare so that you start to become familiar with the environment/lifestyle but it’s equally important to develop skills that can come with other sorts of extracurriculars such as tutoring, sports, leadership activities, etc. You will definitely get asked about your extracurriculars in med school apps/interviews, so it’s important to be passionate about them and be able to explain why you chose to pursue it/what you got out of the activity. I used to give campus tours to prospective students and even though it wasn’t really a “pre-med” activity, it was a great experience and I met people from all over the country and worked on my public speaking skills!

A lot of people tend to choose hospital volunteering or scribing as ways to get involved to understand hospital/private practice dynamics which is important but I would also recommend trying to get some direct patient care hours in- lots of places have free/low-cost clinics that accept undergraduates/medical students as volunteers and pair them up with volunteer physicians! Not only is it a great experience and a supportive environment for learning, you get to really form connections with patients and interact with them.
How did you balance your schoolwork, extracurriculars, and social life?

It’s definitely difficult but it really is up to you to decide how much effort you put into each; some people have significant responsibilities towards their families or something else where it takes up a lot of time and thus have to plan around that. If not, it becomes a matter of priority and you have to decide what’s more important to you at that point in time. There was definitely at least a year where I had spread myself too thin and held numerous leadership positions, was teaching dance regularly, had overcommitted myself to research, and was struggling to balance schoolwork, MCAT studying, seeing my family, and getting my med school application done in time for application season. After that year was done, I had to really re-evaluate my capabilities and needed to step away from a club while getting the rest of my priorities in order. Just know, it’s okay to say no!! Yes, time management is incredibly important because med school is insanely busy and you have to learn how to juggle things but taking time for yourself is just as important. My organization skills became really good during this part- I actively use all of my calendars, reminder apps, and write things down all the time so that I know where I’m supposed to be/what I’m doing for the day.

Do you have any tips on any component of the medical school application?

This is going to sound super cliché but the truth is, just be yourself! Almost everyone who applies to medical school is a competitive applicant on paper but we really want to see your personality and what you learned from the experiences!! We want to see that you did things you were passionate about- and pro tip: if there’s something unique on the application (medicine-related or not), we’re more inclined to ask you about it during interviews to see what sets you apart!! Honestly speaking, in almost every interview I had, we talked about dance and the classes that I taught instead of my research experience or scribing. For interviews, go over basic questions that everyone from every school will ask you (etc: why doctor, why this school, etc) but don’t memorize a script! It’s very easy to tell who has memorized an answer and who’s having an actual conversation with the interviewer.

For the MCAT, try different study methods and see what works for you! Just because someone you know got a high score by using one study method doesn’t mean that it’ll work for you. There’s tons of study resources out there including review books, flashcards (ex: anki), powerpoint lectures, practice questions like qbank, uworld. Personally, I went through each of the Kaplan books, used Khan Academy videos for topics that I struggled with and then did all of the AAMC Qbank + practice tests until I felt confident. I also looked up the topic every time I got a question wrong so that I wouldn’t make the same mistake again. Start early for studying & make a distinct plan!

Is there anything that you think you should have done differently?

Probably not, honestly. Looking back, I feel like I had a variety of experiences that I was able to build on for my application and just help me learn in general; I didn’t focus just on pre-health clubs or activities and I tried to broaden my range through classes and other extracurriculars. I met some great people, especially some great mentors, that I still keep in contact with today. If I really had to pick something, I would probably have added a second major (or at least a minor) in political science had I had more time. I’ve always thought the intersection between medicine & law, specifically health policy, has always been interesting and it is a field that I would like to explore further in my future.

How should a pre-medical student spend their summers?

Totally up to you! Since summers are usually the only time that most pre-med students have full days available, many of them do volunteer work, global health trips, or research, or work full-time. For me, it was always super important to take a few days, recharge, spend some time with my family, and travel as well so I always made sure to allocate time for vacation during my summer experiences. There was one summer where I was taking classes full-time, other summers where I interned at a medical clinic part-time & traveled, and other summers where I did research full-time. Whatever you choose to do, make sure to set your expectations for what you hope to achieve right at the beginning of the experience so that you can make the most of it and that your supervisors know what you are looking for. If you’re looking for research, there are so many funded experiences that are available for undergraduates, usually your school or AAMC has a list that you can apply to!
Located on the seventeenth chromosome. The TP53 plays an important role as the body’s "guardian genome." This gene, one that is located in every nucleus in every cell of the body is the gene that can help catch early forms of cancer.

The two key hallmarks of cancer are limitless replicative potential and insensitivity to antigrowth signals during the malalignment transformation of a normal cell. More and more evidence has been suggesting that the malignant version of p53 (mutp53) is cancer causing.

So while TP53’s job is to determine the likely hood of the cell’s ability to live on. If TP53 produces more of the p53 protein when the protein is mutated. The protein will demonstrate the two hallmarks of cancer instead of suppressing tumors. Scientists have connected the dots and have started using genetic testing to identify cancer before it starts to reek havoc on the body of millions of cancer patients.

The TP53 gene is incharge of creating the p53 protein that acts as a tumor suppressant. When the body is presented a stressor, like radiation, toxic chemicals or ultraviolet light. The TP53 gene helps determines if the cell affected can continue to live or if the cell needs to be terminated.

Sources: Frontiers in oncology.org : Medline plus TP53 gene
A pair of cats and their kittens can have as many as 420,000 kittens in 7 years. That is a great reason to spay/neuter your cats!

- If your pet is vomiting
- If your pet's stool is not a normal color or consistency

Parvovirus is a disease that is highly contagious in dogs and is a required vaccine. Parvo is most common among puppies that haven't been vaccinated yet. Parvovirus is passed from dog to dog mainly from feces contamination.
1. What would you sing at karaoke night?
2. If you could have any superpower, what would it be?
3. Is your glass half full or half empty?

Charity Mattingly
1. Zero to Hero- Hercules
2. Understanding animals
3. Half full!

Aurora Marshall
1. Bohemian rhapsody- Queen
2. Telekinesis
3. HALF FULL!

Hannah Woodruff
1. Big green tractor- Jason Aldean
2. The power to persuade others
3. Always half full!

Edly Montoya
1. What makes you beautiful- One Direction
2. Time traveling
3. Half full!
Clarissa Magdaleno
1. Man! I feel like a woman! - Shania Twain
2. Psychic abilities
3. Half full duhh!

Jairo Flores
1. Love in the dark - Adele
2. Ability to read minds
3. HALF FULL!

Ira Puranik
1. Starships- Nicki Minaj
2. Accurately predict the future
3. Half full!

Alia Hernandez
1. Somebody to love- Queen
2. Flight
3. Half full!

Meghana Tripuraneni
1. Unstoppable- Sia
2. Reading minds
3. Always half full!
Arizona HOSA

2022 HOSA Leadership Camp

September
13-15, 2022

Join us for the ultimate HOSA leadership experience!
Registration

$150.00 PER ATTENDEE

LOCATION
Pine Summit Camp
800 E Wolf Creek Rd, Prescott, AZ 86303

REGISTRATION INFORMATION
Registration Opens: July 25, 2022
Registration Closes August 26, 2022
Register in the HOSA Membership System

COST
$150.00 per attendee
Cost includes 5 meals, lodging, and conference materials

THINGS TO PACK
Bedding (i.e. blanket, pillow, sleeping bag/bed sheet)
Toiletries
Color Team Gear (instructions to come closer to camp)
Comfortable walking shoes
HOSA Shirts/Polos and appropriate jeans or shorts
Sweatshirt or jacket for night activities
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