

COVID 19 Seminar pptx - PowerPoint

Villoro, Gonzalo

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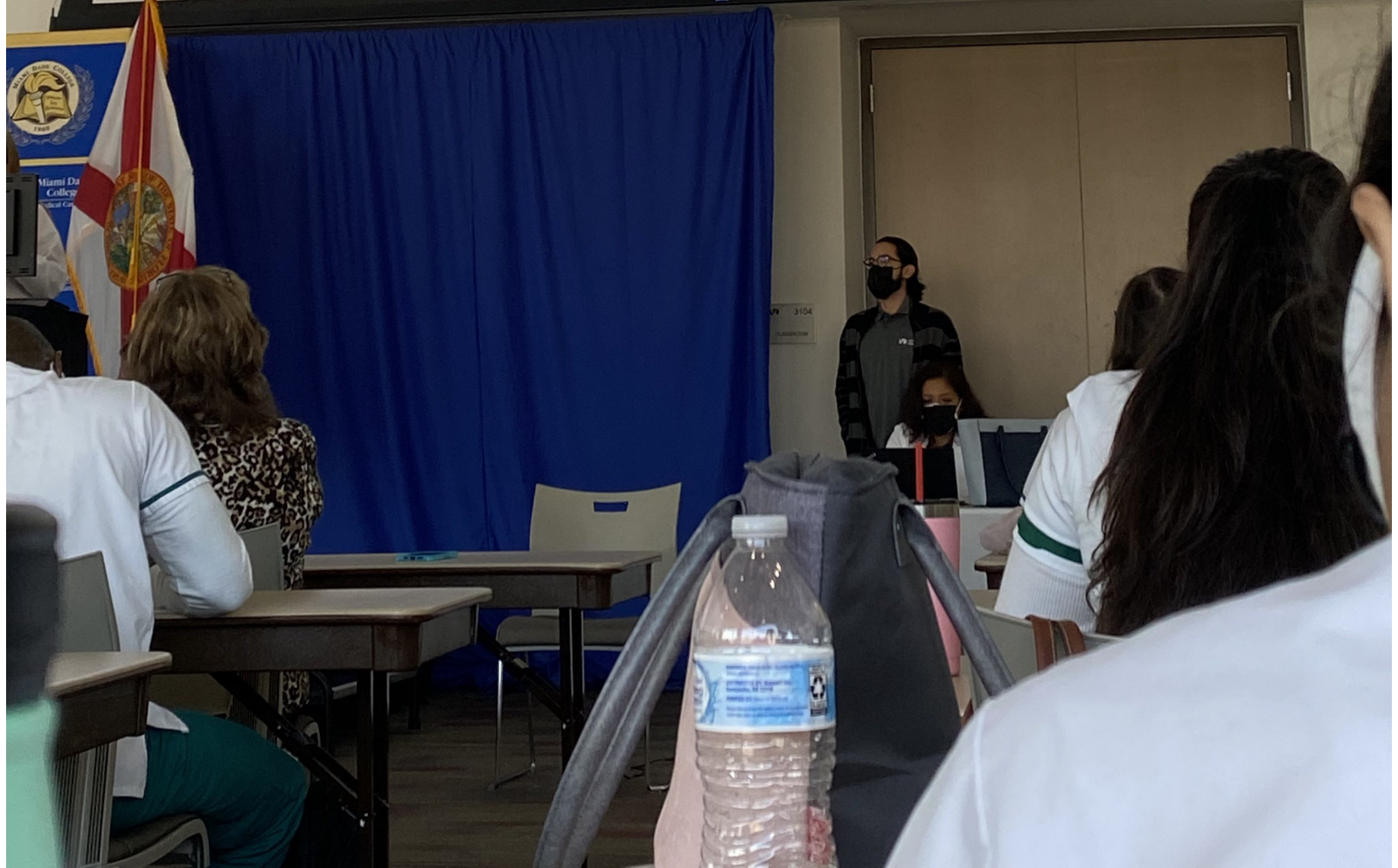
Host response to SARS-CoV-2

- ▶ The symptom of patients infected with SARS-CoV-2 ranges from:
 - minimal symptoms
 - severe respiratory failure
 - multiple organ failure.

Notes Comments

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Immune responses

- ▶ The release of the virus and another substances are recognized by neighboring epithelial cells:
 - endothelial cells and alveolar macrophages triggering the generation of
 - pro-inflammatory cytokines
 - chemokines
 - These proteins attract to the site of infection, promoting further inflammation:
 - Monocytes
 - Macrophages
 - T cells

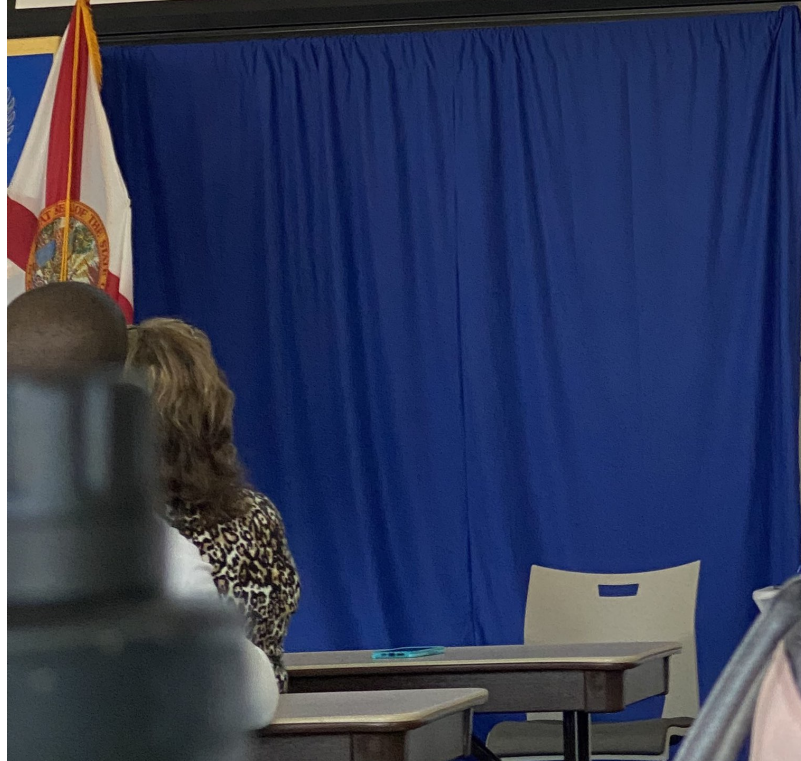


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Immune responses

- ▶ The release of the virus and another substances are recognized by neighboring epithelial cells:
 - In a defective immune response this may lead to further accumulation of immune cells in the lungs
 - causing overproduction of pro-inflammatory cytokines
 - ✓ which eventually damages the lung infrastructure.
 - The resulting cytokine storm circulates to other organs
 - leading to multi-organ damage.
 - In addition, non-neutralizing antibodies produced by B cells
 - may enhance SARS-CoV-2 infection through antibody-dependent enhancement (ADE),
 - ✓ further exacerbating organ damage.

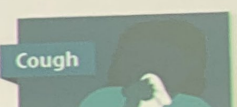


Clinical Manifestations

- ▶ Symptoms may appear 2-14 days after exposure to the virus:
 - Cough
 - Shortness of breath or difficulty breathing
 - Fever
 - Chills
 - Muscle pain
 - Sore throat
 - New loss of taste or smell

If you have these symptoms, please see the front desk immediately.

Patients with COVID-19 may have these symptoms:



We may ask you to wear a mask or use tissues to cover your cough, and offer you a separate space to wait.

Thank you for helping us protect other patients and staff.



For more information: [cdc.gov/COVID19](https://www.cdc.gov/COVID19)



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Mode of transmission SARS-COV2

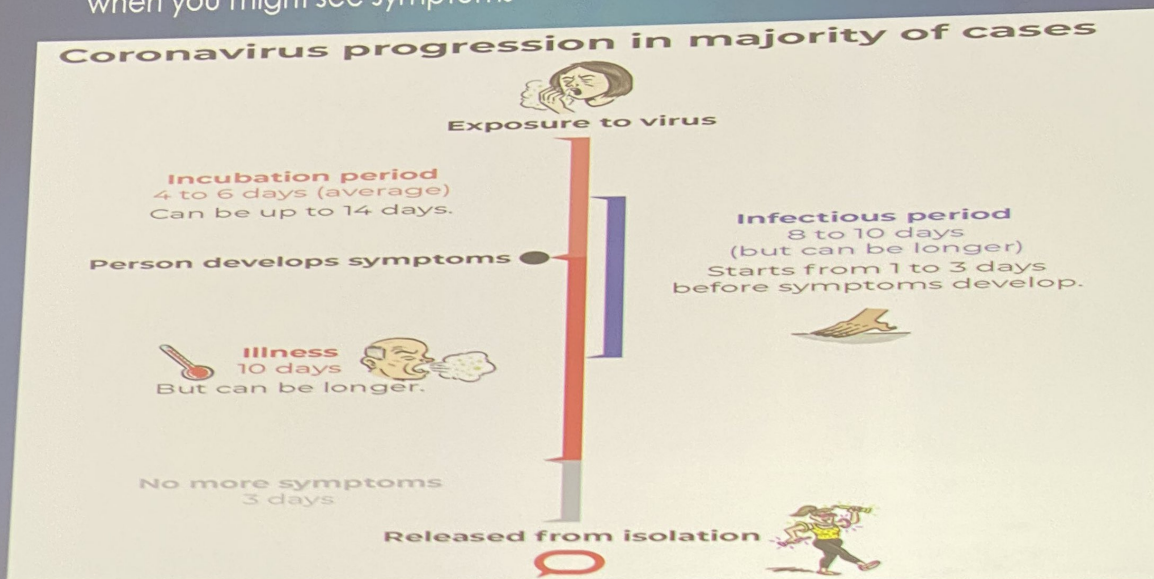
- ▶ Primarily respiratory droplets produced when the infected person:
 - Speaks
 - Coughs
 - Sneezes
- ▶ Droplets can land in:
 - Mouths
 - Noses
 - Eyes



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Incubation period

- ▶ it is the number of days between when you're infected with something and when you might see symptoms



Transitions

Animations

Slide Show

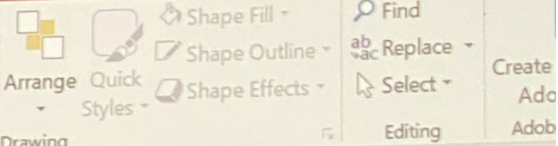
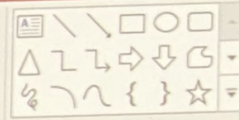
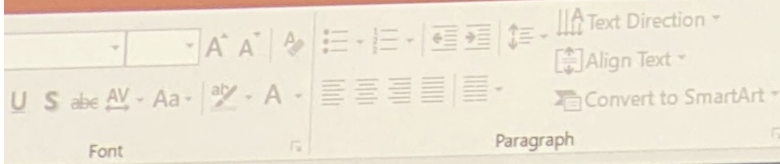
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SARS-CoV-2 Variants

- ▶ A variant is a different version of a virus - all viruses change and mutate so this is not unusual.
- ▶ So far thousands (> 3,000) of new variants have been found across the world, but health experts are currently focused on few versions
- ▶ Sometimes when a virus makes copies of itself, it can mutate - or change - a bit.
 - ▶ The virus with these changes or mutations is then called a 'variant' of the original virus.
 - ▶ The virus mutates approximately every 11-15 days.

Notes

Comments



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SARS-CoV-2 Variants

- ▶ Most of the variants of concern contain mutations in the receptor-binding domain (RBD).
- ▶ These mutations are responsible for increased viral infectivity, virulence, and immune evasion potency.
- ▶ https://cov-lineages.org/lineage_list.html

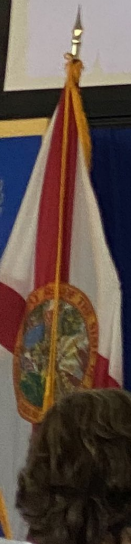


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SARS-CoV-2 Variants

- ▶ The US government SARS-CoV-2 Interagency Group (SIG) developed a Variant Classification scheme that defines three classes of SARS-CoV-2 variants:
 - ▶ Variant of Interest
 - ▶ Specific genetic markers that are predicted to affect transmission, diagnostics, therapeutics, or immune escape.
 - ▶ Evidence that it is the cause of an increased proportion of cases or unique outbreak clusters.
 - ▶ Limited prevalence or expansion in the US or in other countries.
 - ▶ Mu variant



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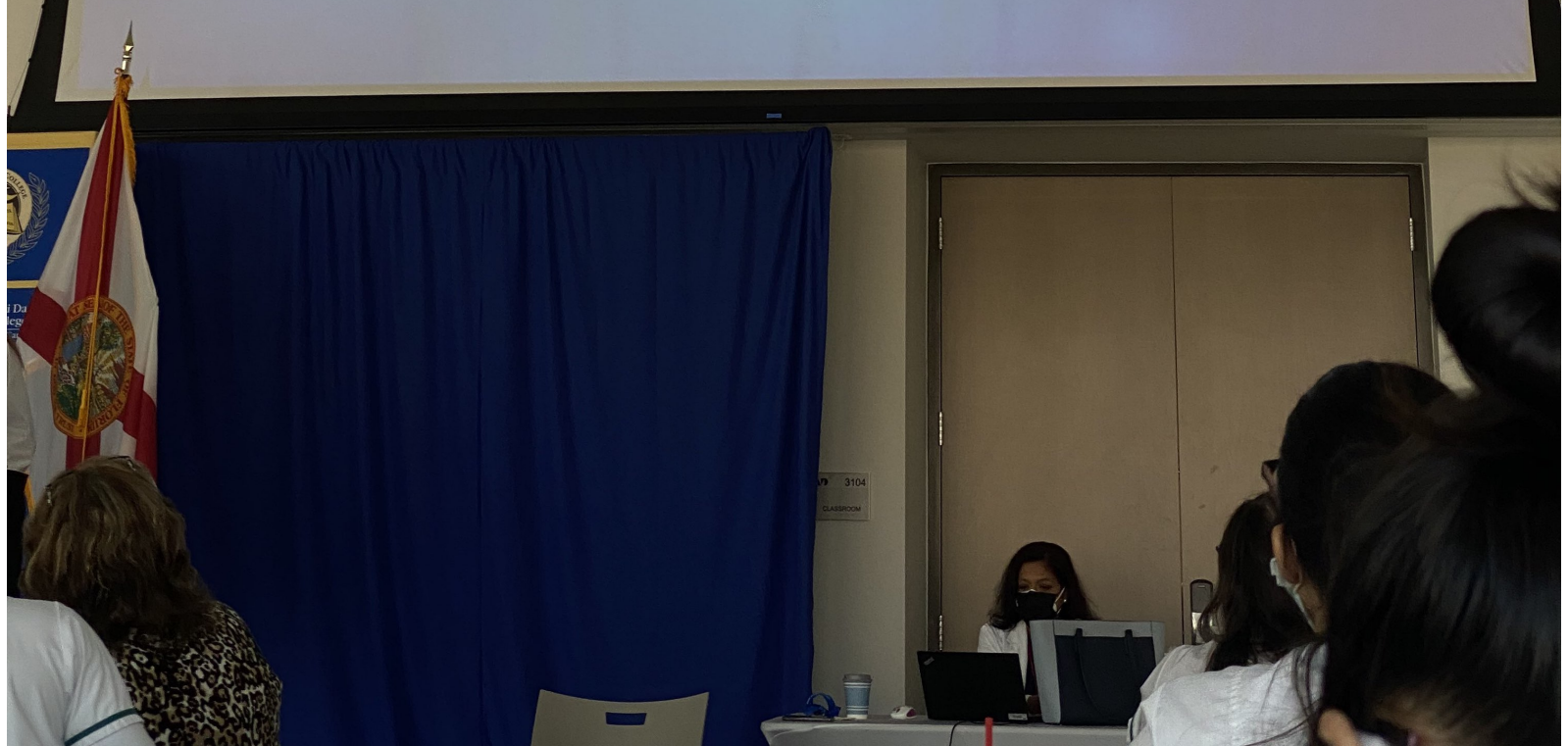
SARS-CoV-2 Variants

- ▶ The US government SARS-CoV-2 Interagency Group (SIG) developed a Variant Classification scheme that defines three classes of SARS-CoV-2 variants:
 - ▶ Variant of Concern
 - ▶ Evidence of impact on diagnostics, treatments, or vaccines
 - ▶ Widespread interference with diagnostic test targets
 - ▶ Evidence of substantially decreased susceptibility to one or more class of therapies
 - ▶ Evidence of significant decreased neutralization by antibodies generated during previous infection or vaccination
 - ▶ Evidence of reduced vaccine-induced protection from severe disease
 - ▶ Evidence of increased transmissibility
 - ▶ Evidence of increased disease severity
 - ▶ The Alpha, Beta, Delta, and Gamma variants circulating in the United States



SARS-CoV-2 Variants

- ▶ The US government SARS-CoV-2 Interagency Group (SIG) developed a Variant Classification scheme that defines three classes of SARS-CoV-2 variants:
 - ▶ Variant of High Consequence
 - ▶ Impact on Medical Countermeasures (MCM)
 - ▶ Demonstrated failure of diagnostic test targets
 - ▶ Evidence to suggest a significant reduction in vaccine effectiveness, a disproportionately high number of vaccine breakthrough cases, or very low vaccine-induced protection against severe disease
 - ▶ Significantly reduced susceptibility to multiple Emergency Use Authorization (EUA) or approved therapeutics
 - ▶ More severe clinical disease and increased hospitalizations



Non-Pharmaceutical Intervention Containment and Suppression

- ▶ Quarantine:
 - An intervention that separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick.
- ▶ Isolation:
 - Separation of sick people with a contagious disease from those who are not sick.
- ▶ Social distancing:
 - A public health practice that aims to prevent sick people from coming in close physical contact with healthy people in order to reduce opportunities for disease transmission.

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Understanding How Vaccines Work

- ▶ Vaccines help develop immunity by imitating an infection.
- ▶ This type of "infection" cause the immune system to produce T-lymphocytes and antibodies.
 - ▶ Sometimes, vaccines can cause minor symptoms, such as fever.
 - ▶ Such minor symptoms are normal and should be expected as the body builds immunity.
- ▶ Once the imitation infection goes away:
 - ▶ The body is left with a supply of "memory" T-lymphocytes, as well as B-lymphocytes that will remember how to fight that disease in the future.
 - ▶ It typically takes a few weeks (2 weeks)for the body to produce T-lymphocytes and B-lymphocytes after vaccination. T
 - ▶ Therefore, it is possible that a person infected with a disease just before or just after vaccination could develop symptoms and get a disease

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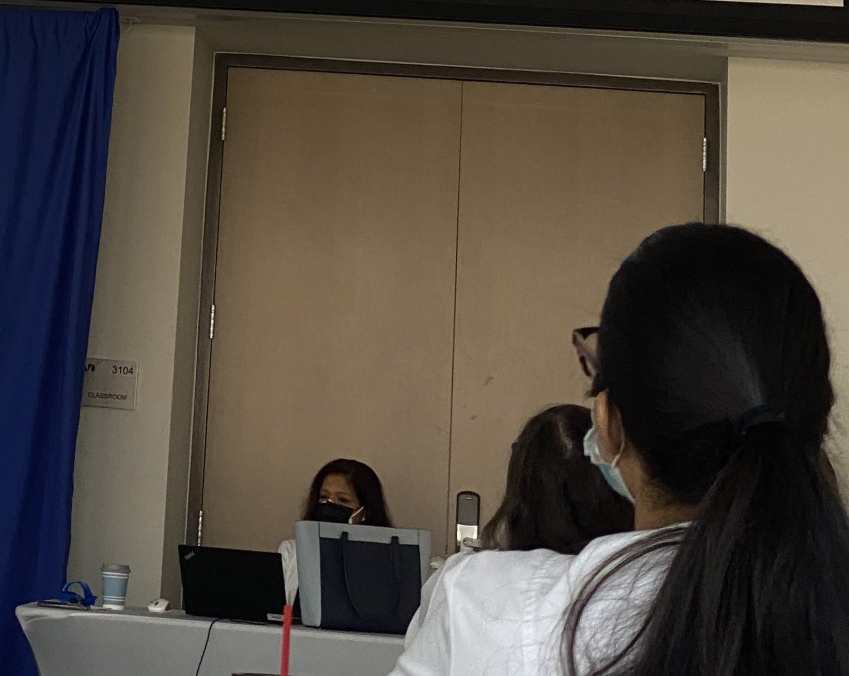
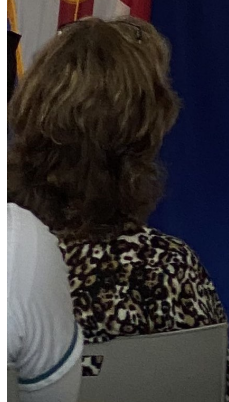
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Types of Vaccines

- ▶ Live, attenuated vaccines fight viruses and bacteria.
 - ▶ Contain a version of the living virus or bacteria that has been weakened so that it does not cause serious disease in people with healthy immune systems.
 - ▶ Measles, mumps, and rubella vaccine (MMR) and varicella (chickenpox) vaccine.
- ▶ Inactivated vaccines also fight viruses and bacteria.
 - ▶ These vaccines are made by inactivating, or killing, the germ during the process of making the vaccine.
 - ▶ Polio vaccine
 - ▶ Often, multiple doses are necessary to build up and/or maintain immunity.

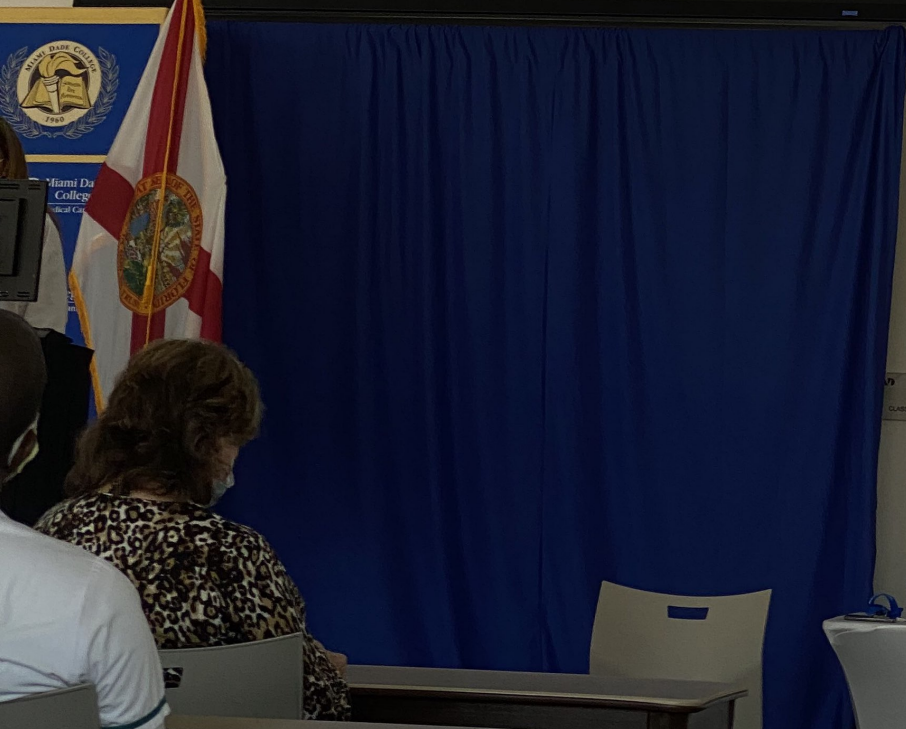
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Types of Vaccines

- ▶ Toxoid vaccines prevent diseases caused by bacteria that produce toxins
 - ▶ Toxins are weakened so they cannot cause illness.
 - ▶ The DTaP vaccine contains diphtheria and tetanus toxoids.
- ▶ Subunit vaccines include only parts of the virus or bacteria,
 - ▶ Only the essential antigens
 - ▶ Side effects are less common
 - ▶ Pertussis (whooping cough) component of the DTaP vaccine

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Types of Vaccines

- ▶ Conjugate vaccines fight a different type of bacteria.
 - ▶ These bacteria have antigens with an outer polysaccharides.
 - ▶ Connect (or conjugate) the polysaccharides to antigens that the immune system responds to very well.
 - ▶ Haemophilus influenzae type B (Hib) vaccine.

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Monoclonal Antibody

- ▶ Antibodies are proteins that the immune system produces to fight viruses, like SARS-CoV-2—which causes COVID-19.
- ▶ Monoclonal antibodies are produced in a lab but they function like the ones found in the body naturally.
- ▶ Use the lab-made antibodies to treat people who test positive for COVID-19 and have mild to moderate symptoms.
- ▶ These monoclonal antibodies target the "spike" protein of the SARS-CoV-2 virus, which it uses to bind to and enter human cells.
- ▶ By attaching to the spike protein, the antibodies block the entry of the virus into these cells.

Monoclonal Antibody

- ▶ Adult patients (over age 16) must meet the following criteria:
 - ▶ Weigh at least 88.19 lbs.
 - ▶ Must have tested positive for COVID-19 within the last 10 days
 - ▶ Mild to moderate symptoms
- ▶ Have one of the following additional criteria:
 - ▶ Body mass index (BMI) more than or equal to 35
 - ▶ Chronic kidney disease
 - ▶ Diabetes
 - ▶ Immunosuppressive disease or receiving immunosuppressive treatment
 - ▶ People over 65
 - ▶ People over 55 with underlying conditions such as obesity, kidney disease, cardiovascular disease and immunodeficiency.
- ▶ **Casirivimab and imdevimab are not authorized for patients who are hospitalized or require oxygen therapy due to COVID-19.**

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