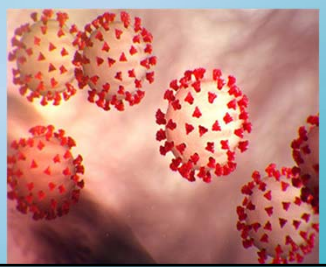
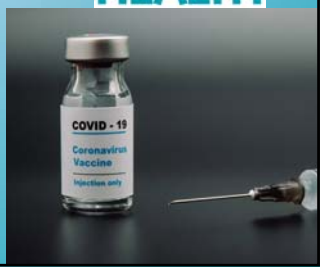
Department of Health

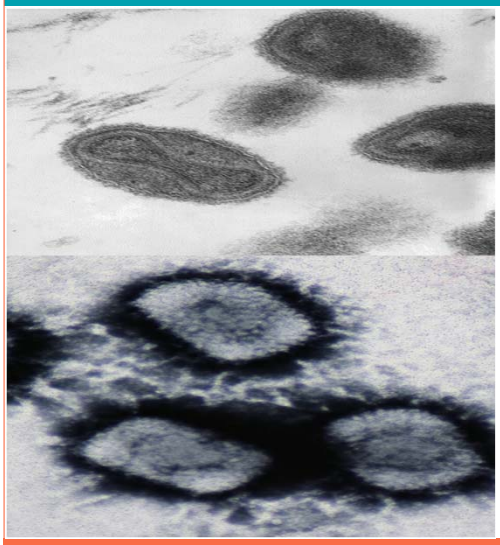
COVID-19 VACCINATIONS

Kenneth A Scheppke, MD, FAEMS
State EMS Medical Director
Florida Department of Health





Vaccination Technology Through The Years



Edward Jenner 1796

The Latin word for cow is vacca, and cowpox is vaccinia; Jenner decided to call this new procedure vaccination.

2

Advances in Medical Technology

- Killed Virus: e.g. Hepatitis A
- Live Attenuated Virus: e.g. Measles – took 10 years to produce
- Genetic manipulation of a benign virus
  - Astra Zeneca
  - Johnson and Johnson
- Piece of a Virus: e.g. Novavax – Purified Spike Protein
- Messenger RNA in a man-made virus-like lipid nanoparticle
  - Pfizer
  - Moderna

3

How did we get a vaccine so fast?

- Smallpox vaccine took thousands of years
- Next major advances took hundreds of years
- Measles live attenuated vaccine took a decade
- The Human Genome project was key for the next major advance

4

Human Genome Project

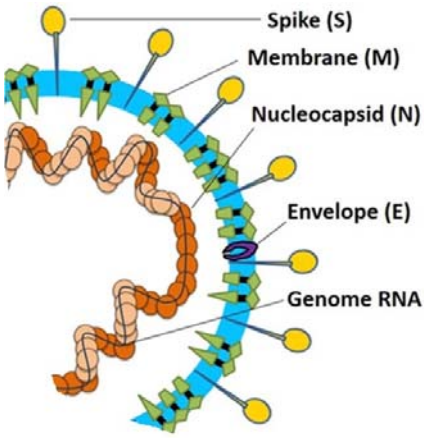
- **3 Billion Dollars**
- **Over 200 Labs in USA**
- **18 other countries**
- **Took 13 years (1990 – 2003)**

- **Currently: Can decode entire human genome in 24 to 48 hours for less than $1k**

5

Comparative Size of Genetic Databases

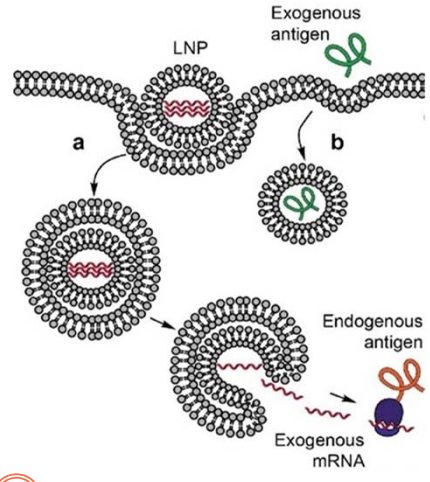
- Human: 6 Billion Bases
- Fruit Fly: 123 Million Bases
- E Coli: 5 Million Bases
- COVID: 30 Thousand Bases



6

Messenger RNA Vaccines

- NOT A VIRUS!!
- mRNA codes for the target protein
- Can be used for infectious diseases and even cancer therapy
- Ultra rapid development process compared to prior vaccination technology
- 63 Days from SARS-CoV-2 genetic decoding to first human vaccine test injection
- Pandemic causes rapid exposure of treatment groups



7

Pfizer-Biontech

- mRNA Vaccine
- Ultracold storage -80C: 6 months
- Refrigerator storage: 5 days
- Room Temperature: 6 Hours
- 44k Study Participants, Diverse background
- Zero safety concerns
- 95% Effective
- Both Antibody and T Cell Immunity
- Possibly 30M Doses by end of 2020

8

Pfizer / Biontech

9

Moderna

- mRNA Vaccine
- **Normal Freezer storage: 6 months**
- Refrigerator storage: 7 days (Maybe 30 days)
- Once opened: 6 Hours
- 30k Study Participants, Diverse background
- Zero safety concerns
- Greater than 94% Effective
- Both Antibody and T Cell Immunity
- Possibly 20M Doses by end of 2020

10

Vaccine Supplies Included?

For centrally distributed vaccines, each kit will contain supplies to administer 100 doses of vaccine, including:

Needles: 25G 1 – 1.5 Inch 105 per kit
Syringes: 1 to 3 mL 105 per kit
Alcohol Prep Pads 210 per kit
4 Surgical Masks per kit
2 Face Shields per kit
Gloves?

11

Astra Zeneca

- AZD1222 Vaccine: Chimpanzee Adenovirus
- Unable to replicate
- Genetically modified to carry the COVID-19 Spike Protein
- Early Results show both Antibody and T-Cell Immune Response
- May be ready for EUA early 2021

12

Johnson and Johnson

- Ad26 Single Shot Vaccine: Adenovirus Vector similar to AZ
- Unable to replicate
- Genetically modified to carry the COVID-19 Spike Protein
- Early Results show both Antibody and T-Cell Immune Response
- Plan to study 60,000 adults 18 years old and older
- May be ready for EUA early 2021

Florida HEALTH

13

Novavax

- NVX-CoV2373: Adjuvanted, recombinant, full-length spike protein manmade nanoparticle vaccine
- No virus, no viral nuclear material, just purified viral spike protein
- Early studies showed both antibody and T cell immunity
- Phase 3 results won't be ready till 2021
- Normal Refrigerator Storage

Florida HEALTH

14

Two Shots – Same Flavor

- Most vaccine candidates require a 2-shot series
- Second shot must be from same manufacturer
- Only J and J is single shot candidate

15

Potential EMS Vaccination Strategies

Drive Through and walk-up Sites

Need a separate supervised waiting lot / area for 15-minute post shot evaluation

16

Mobile Vaccination Teams

Can bring care to populations with limited access to healthcare system

17

Long Term Care Facilities

Mobile EMS Vaccination Teams can augment efforts to provide care to LTC's

18

Rural Hub and spoke model

Share resources among hospital and EMS agencies to expand capability for both

19

Hospital vaccination force multiplier

- Free up nurses for more critical care roles
- Expand capacity of Hospital Vaccination Program
- Can be used as part of Rural Spoke and Hub system

20

What steps for EMS to take now

- Paramedics can provide immunizations per FL Statute 401.272
- Contact your local County DOH
- EMS MD sign MOU with DOH
- Train Medics: CDC Videos
- Checklist of training and keep in records
- Develop Closed or Open POD model

Florida HEALTH

21

https://www.cdc.gov/vaccines/hcp/admin/resource-library.html

Florida HEALTH

22