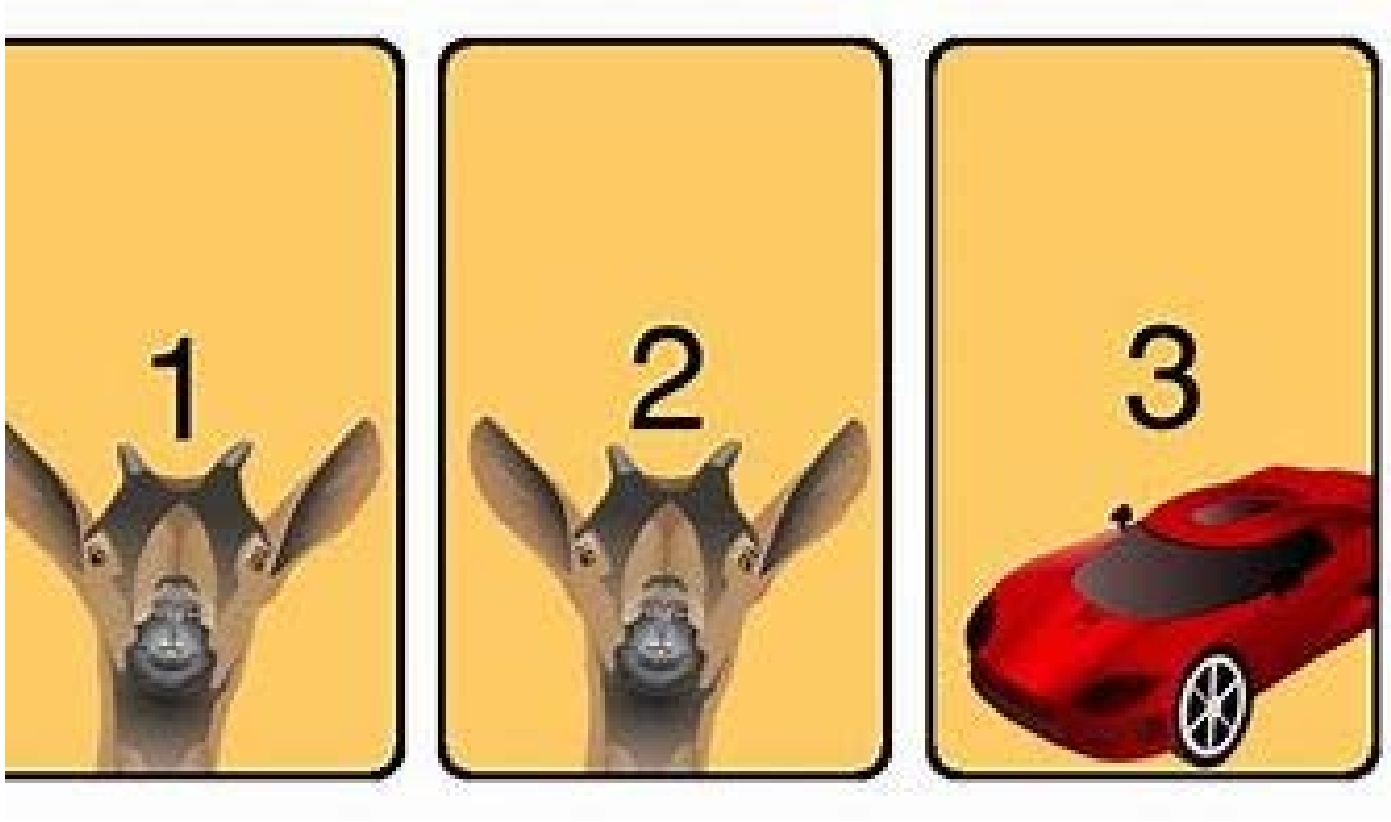
# COVID -19 Treatment & Prevention

Version 9.0

November 24th 2020

# Take your pick. . .



# Curtain #1

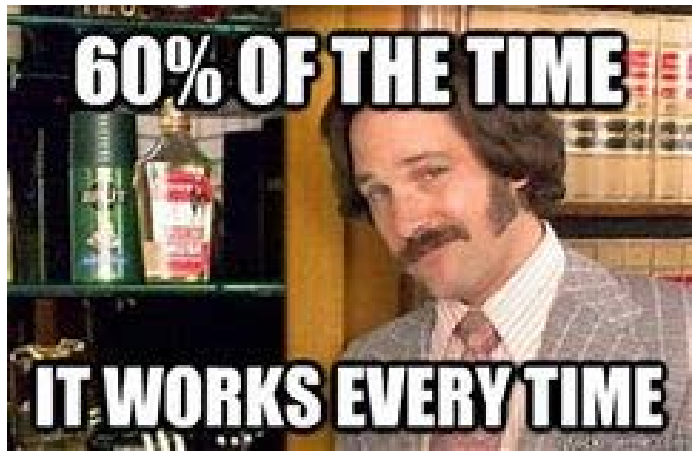
- Pfizer & BionTech (2 dose series @0 &21days)
  - mRNA-based COVID-19 vaccine candidate, BNT162b2
  - *95% effective (*p<0.0001) *beginning 28 days after the first dose;*
    - *170 confirmed cases of COVID-19 were evaluated,*
      - *162 observed in the placebo group (10 severe)*
      - *8 in the vaccine group (1 severe)*
  - *Efficacy was consistent across age, gender, race and ethnicity demographics;*
    - *observed efficacy in adults over 65 years of age was over 94%*
  - *43,000 participants enrolled;*
    - *no serious safety concerns observed;*
    - *Grade 3 adverse event greater than 2% in frequency*
      - *fatigue at 3.8% and headache at 2.0%*
  - *PRODUCTION CAPABILITY*
    - *50MILLION DOSES IN 2020 & 1.3 BILLION 2021*
    - *Storage @ (-94 degrees Fahrenheit)*

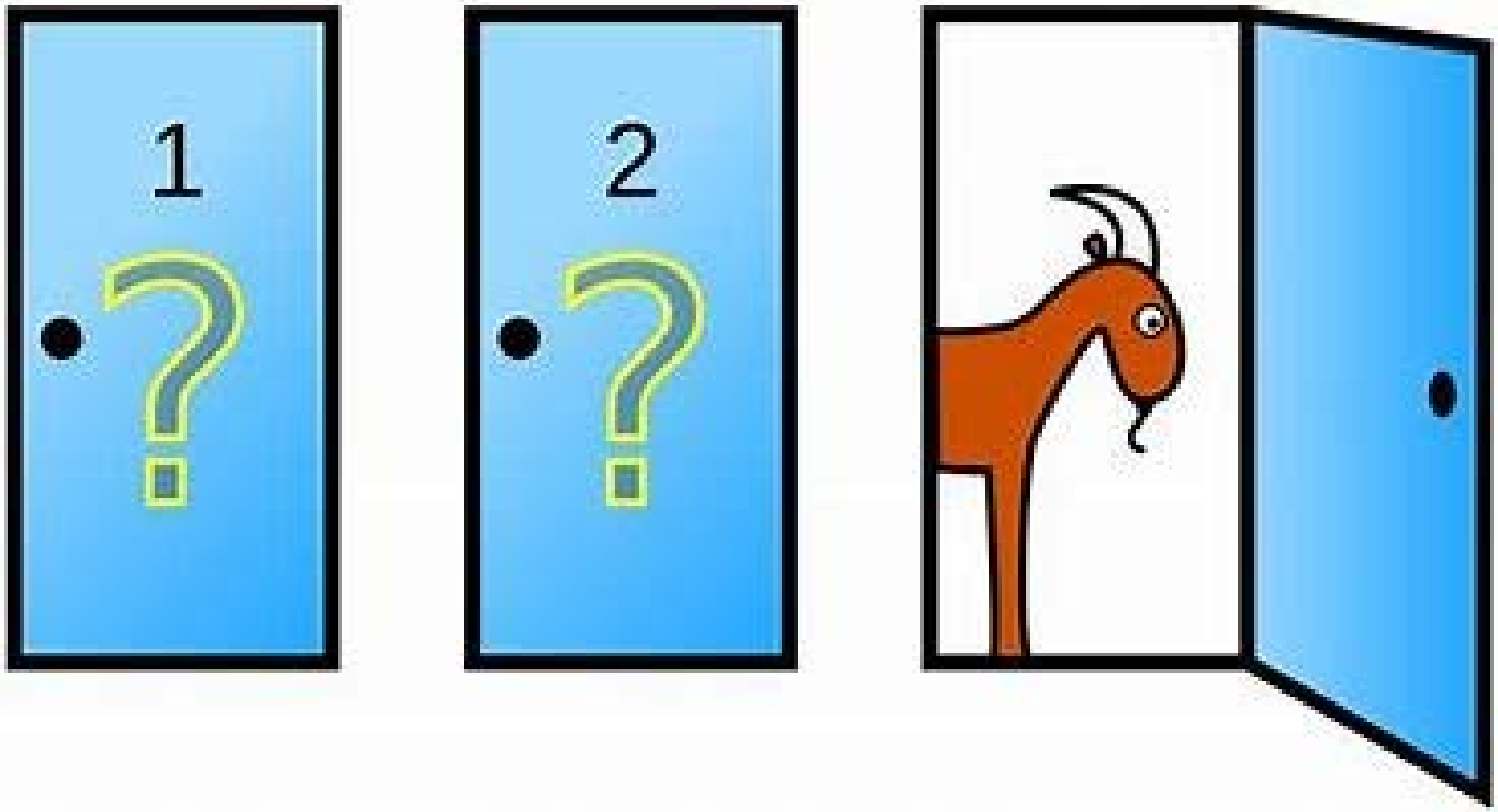
# Curtain #2

- Moderna(2 dose series)
  - COVID-19 vaccine candidate, mRNA-1273
  - *94.5% effective (statistically significant);*
    - *95 confirmed cases of COVID-19 were evaluated,*
      - *90 observed in the placebo group (11 severe)*
      - *5 in the vaccine group (0 severe)*
  - *COVE Trial 30,000 participants enrolled;*
    - 37% of trial volunteers are from racial and ethnic minorities.
    - Grade 3 (severe) events greater than or equal to 2%
      - injection site pain (2.7%),
      - second dose included fatigue (9.7%), myalgia (8.9%), arthralgia (5.2%), headache (4.5%), pain (4.1%) and erythema/redness at the injection site (2.0%).
      - These solicited adverse events were generally short-lived.
  - *PRODUCTION CAPABILITY*
    - 500 million to 1 billion doses in total for 2021
    - stable at 36 to 46 degrees Fahrenheit for up to 30 days.
    - six months at minus 4 degrees Fahrenheit.

# Curtain #3

- Astra Zeneca Vaccine (2 dose series)
- New Vaccine type
  - viral-vectored vaccine --***AZD1222***
  - uses an adenovirus that has been modified to include genetic material from the SARS-CoV-2 virus
  - introduces the immune system to the spike protein, which sits on the exterior of the virus.
- Reduced the risk of symptomatic Covid-19 by an average of 70.4% (p<=0.0001)*;*
  - *131 CASES observed in the VACCINE group (0 severe)*
  - IF ONLY 70% effective how can this be offered when options #1 &2 are >90%
- Strange but true. . .
  - Two full doses of the vaccine appeared to be only 62% effective at preventing disease (n=8,895),
  - A one- half dose, followed by a full dose, was about 90% effective. ( n= 2,741)
- *11,363 participants enrolled;*
  - *no serious safety concerns observed;*
  - *No reported Grade 3 adverse events %*
- *PRODUCTION CAPABILITY*
  - Could produce 3 billion doses in 2021
  - refrigeration temperatures for up to six months

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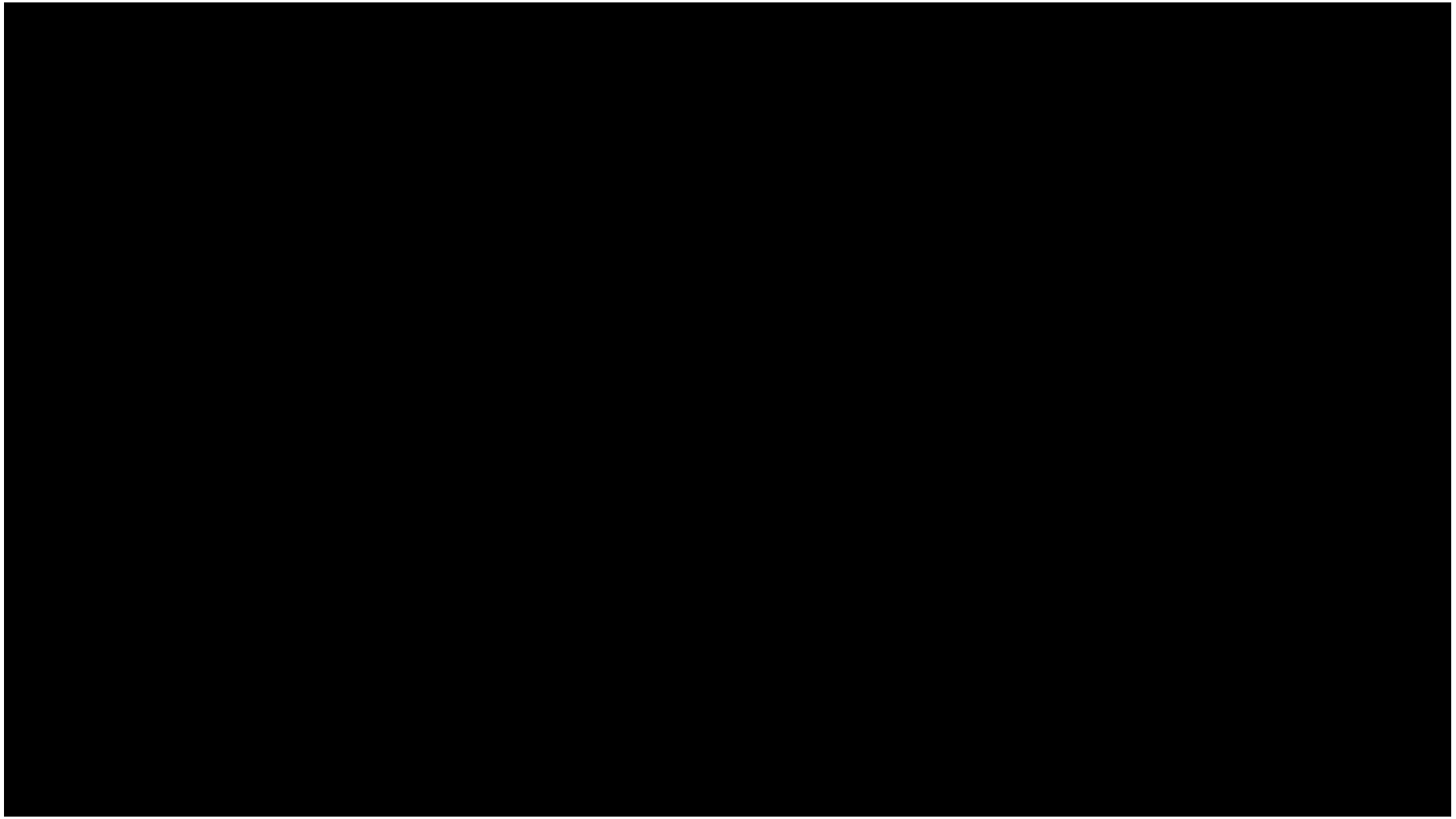
- https://www.youtube.com/watch?v=JxSdLnmH2eE



# Antibody treatments

- bamlanivimab (LY-CoV555) a single neutralizing antibody—Eli Lilly
- NEJM published results—on going Phase 2 BLAZE-1 single arm trial
- outpatients with recently diagnosed mild or moderate Covid-19,
- randomly assigned 452 patients to receive a single intravenous infusion of neutralizing antibody LY-CoV555
  - placebo, 700 mg, 2800 mg, or 7000 mg
  - evaluated the quantitative virologic end points and clinical outcomes.
    - primary outcome was the change from baseline in the viral load at day 11 Mean decrease from baseline was -3.8 log elimination >99.97% of viral RNA

# Group Comps

2800-mg dose the difference from placebo in the decrease from baseline was −0.53 (95% confidence interval [CI], −0.98 to −0.08; P=0.02), for a viral load that was lower by a factor of 3.4.

- 700-mg dose (−0.20; 95% CI, −0.66 to 0.25; P=0.38) –EUA Dose
- 7000-mg dose (0.09; 95% CI, −0.37 to 0.55; P=0.70).
- On days 2 to 6, treated members had a slightly lower severity of symptoms than those who received placebo.
- hospitalization or visit to an emergency department
  - 1.6% in the LY-CoV555 group
  - 6.3% in the placebo group.
  - RR= 30%

# Regeneron mAB cocktail

- REGN-COV2, a combination of monoclonal antibodies casirivimab and imdevimab
- EUA approval from FDA 11/23/20
  - mild-to-moderate COVID-19 patients at least 12 years of age who are not hospitalized but are at high risk for progressing to severe COVID-19.
- authorized dosage is 1,200 mg of casirivimab and 1,200 mg of imdevimab as a single IV infusion over at least 60 minutes via pump or gravity. Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete.
- Patients treated with casirivimab and imdevimab should continue to self-isolate and use infection control measures (e.g., wear mask, isolate, social distance, avoid sharing personal items, clean and disinfect “high touch” surfaces, and frequent handwashing) according to CDC guidelines.

# EUA Approval Criteria for use by FDA

**LIMITATIONS OF AUTHORIZED USE (**bamlanivimab similar)

- Casirivimab and imdevimab are **not authorized for use in patients**:
- Who are hospitalized due to COVID-19
- Who require oxygen therapy due to COVID-19,OR
- Who require an increase in baseline oxygen flowrate due to COVID-19 in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity.
- Benefit of treatment with casirivimab and imdevimab has not been observed in patients hospitalized due to COVID-19. Monoclonal antibodies, such as casirivimab and imdevimab, may be associated with worse clinical outcomes when administered to hospitalized patients requiring high flow oxygen or mechanical ventilation with COVID-19

# DEFINITION OF HIGH RISK

- patients who meet at least one of the following criteria:
- Have a body mass index (BMI) ≥35
- Have chronic kidney disease
- Have diabetes
- Have immunosuppressive disease
- Are currently receiving immunosuppressive treatment
- Are ≥65 years of age

- Are ≥55 years of age AND have
  - cardiovascular disease, OR
  - hypertension, OR
  - chronic obstructive pulmonary disease/other chronic respiratory disease.
- Are 12–17 years of age AND have BMI ≥85$^{th}$ percentile for their age and gender based on CDC growth charts,
  - https://www.cdc.gov/growthcharts/clinical_charts.htm, OR
  - Sickle cell disease, OR
  - Congenital or acquired heart disease, OR
  - Neurodevelopmental disorders, for example, cerebral palsy, OR
  - medical-related technological dependence, for example, tracheostomy, gastrostomy, or positive pressure ventilation (not related to COVID-19), OR
  - asthma, reactive airway or other chronic respiratory disease that requires daily medication for control.


LOONEY TUNES
"That's all Folks!"