COVID-19 Update

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21 July 2021

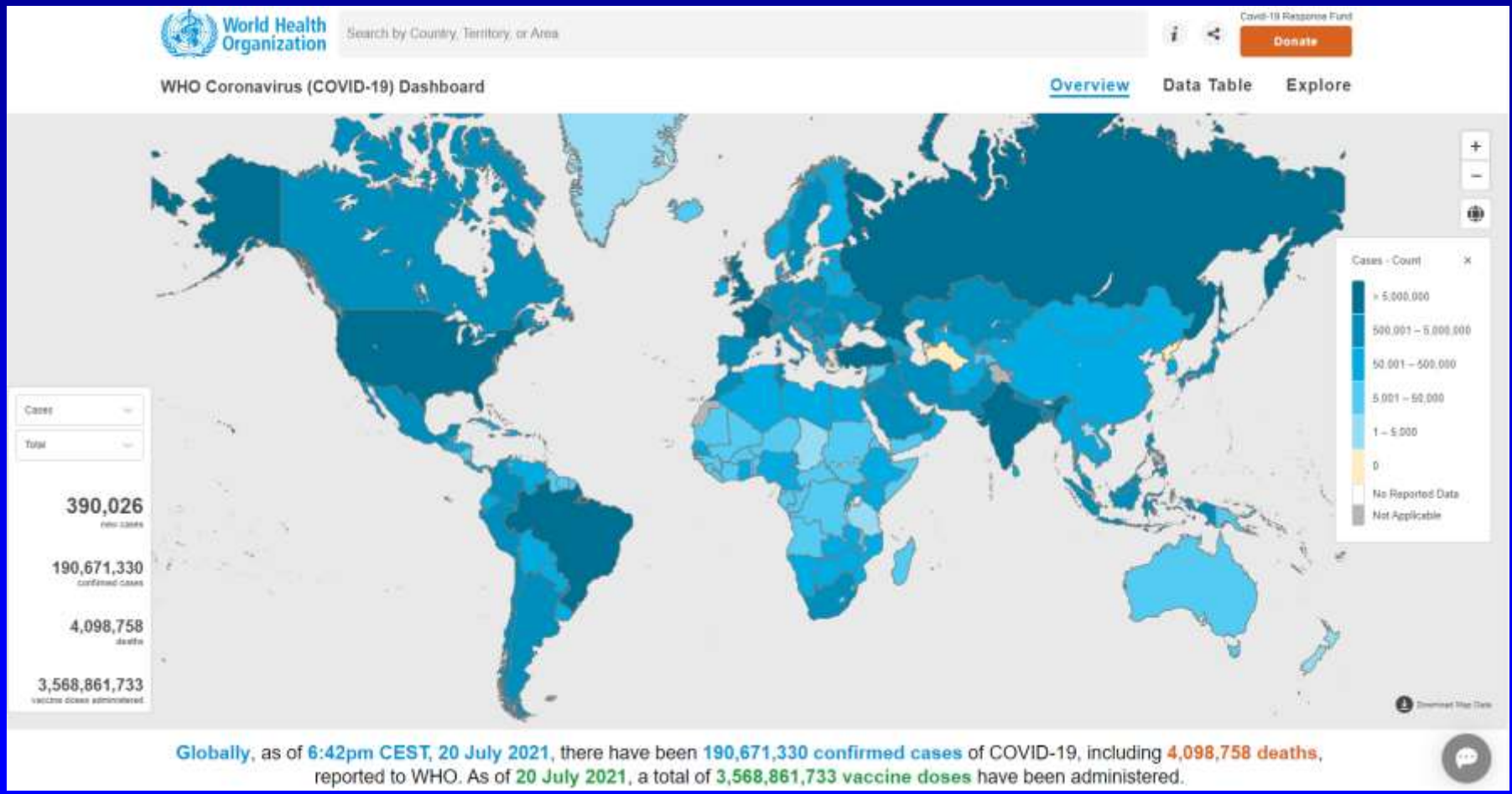
Objectives

- Current epidemiology
- Treatment for adults
- Vaccines for adults
- Current Erlanger protocols

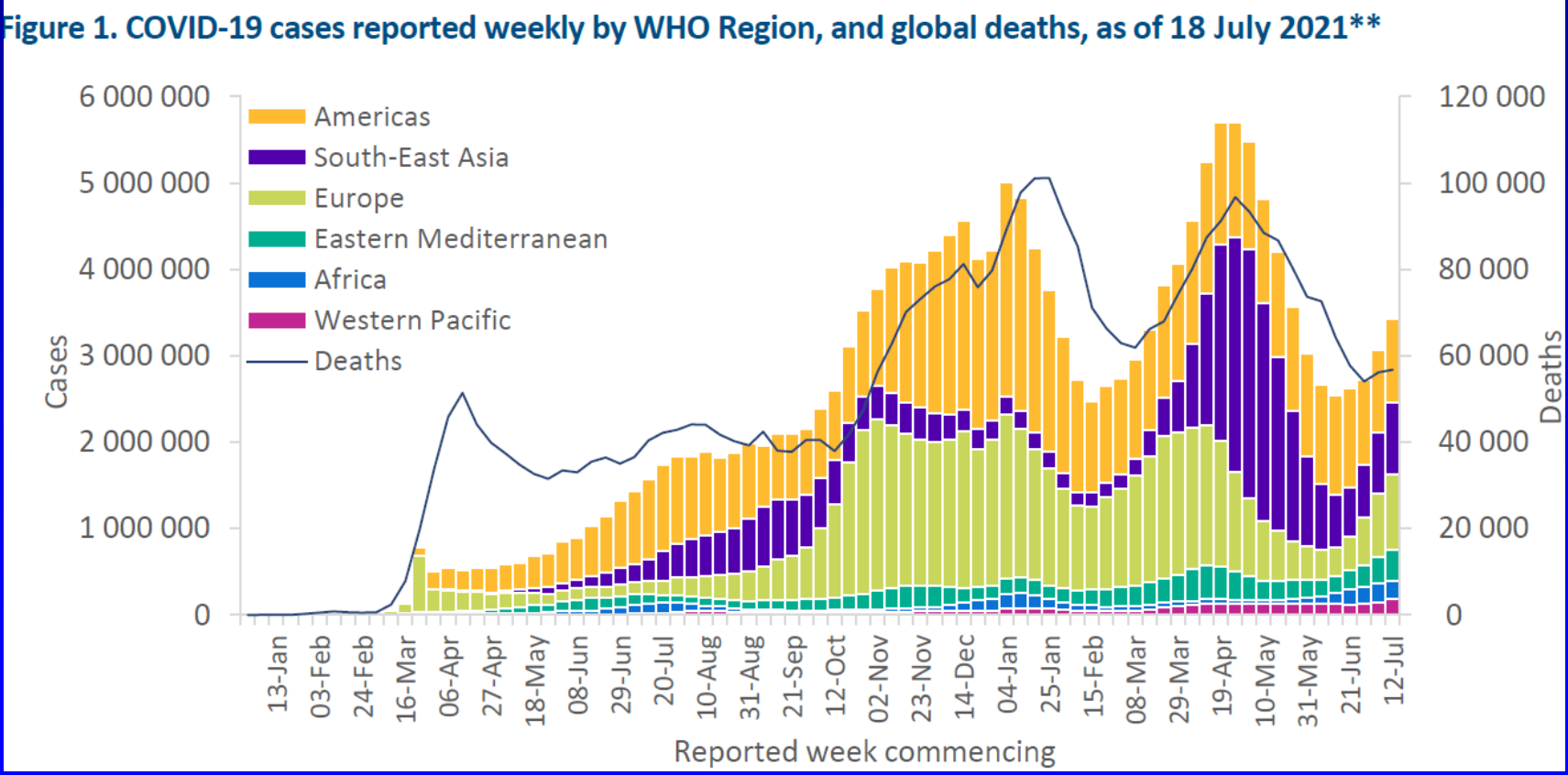
Current Determinants of Pandemic

- "Pandemic of the unvaccinated"
  - 99% of recent deaths unvaccinated
  - 97% of recent hospitalizations unvaccinated
  - Regions with lower vaccinations rates hit harder
  - Cases, hospitalizations, and deaths now up
- Increasing proportion of delta variant (83%)
- Relaxation of mitigation strategies/requirements
  - Masking, social distancing, hand hygiene

COVID-19 Epidemiology: Global (WHO)



COVID-19 Epidemiology: Global



COVID-19 Epidemiology: Global

Table 1. Newly reported and cumulative COVID-19 cases and deaths, by WHO Region, as of 18 July 2021**

WHO Region	New cases in last 7 days (%)	Change in new cases in last 7 days *	Cumulative cases (%)	New deaths in last 7 days (%)	Change in new deaths in last 7 days *	Cumulative deaths (%)
Americas	967 205 (28%)	0%	74 734 644 (39%)	22 411 (39%)	-6%	1 960 619 (48%)
Europe	885 048 (26%)	21%	58 319 701 (31%)	7 173 (13%)	0%	1 204 780 (29%)
South-East Asia	829 552 (24%)	16%	36 760 906 (19%)	16 403 (29%)	12%	526 942 (13%)
Eastern Mediterranean	354 030 (10%)	15%	11 794 433 (6%)	3 875 (7%)	4%	226 399 (6%)
Africa	202 801 (6%)	-5%	4 589 220 (2%)	4 817 (8%)	-4%	107 498 (3%)
Western Pacific	191 009 (6%)	30%	3 970 165 (2%)	2 088 (4%)	10%	59 749 (1%)
Global	**3 429 645 (100%)**	**12%**	**190 169 833 (100%)**	**56 767 (100%)**	**1%**	**4 086 000 (100%)**

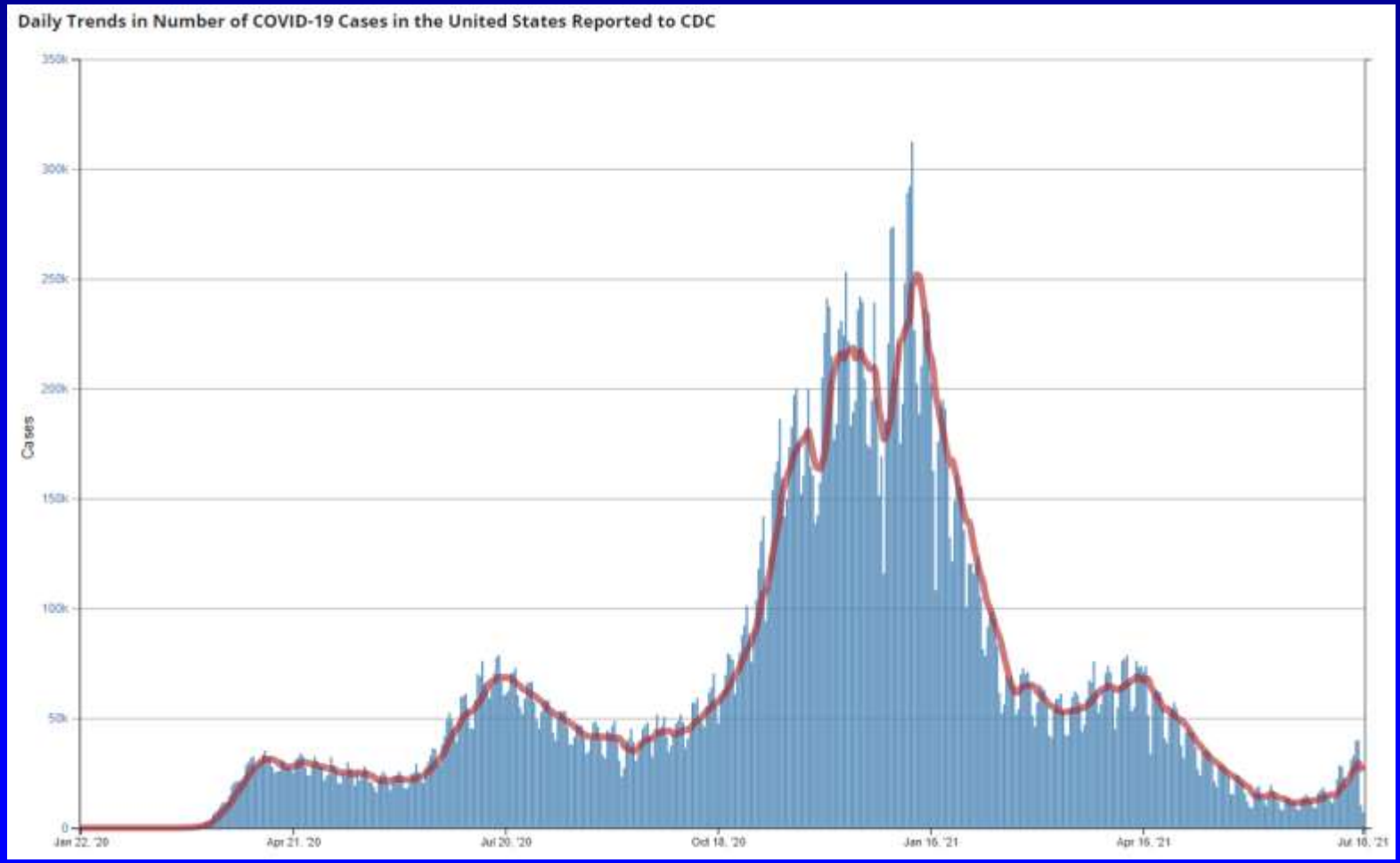
*Percent change in the number of newly confirmed cases/deaths in past seven days, compared to seven days prior

**See *Annex 2: Data, table and figure notes*

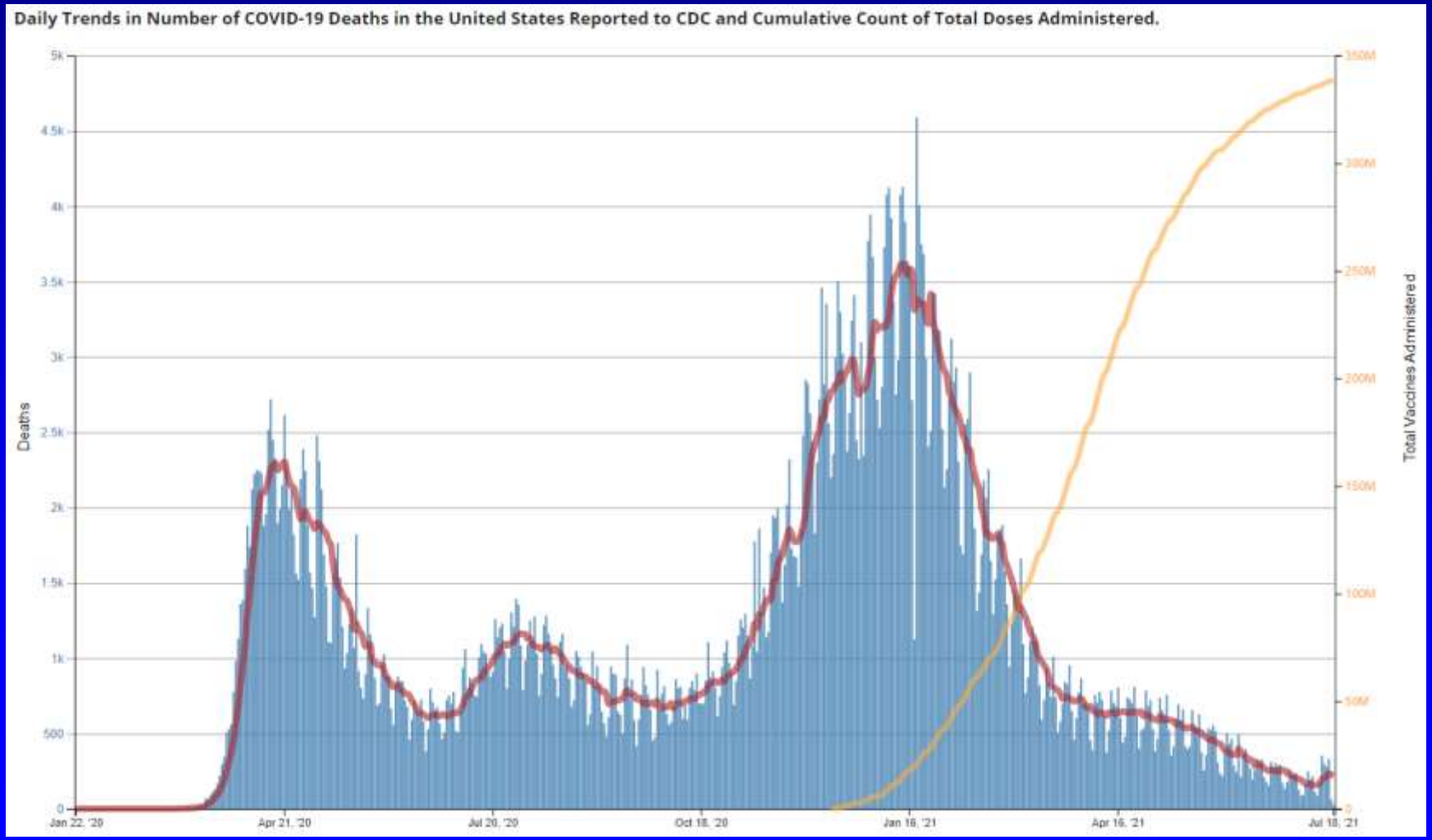
COVID-19 Epidemiology: USA (CDC)

- 33,896,296 reported cases
- 606,618 reported deaths
- 186M with at least 1 dose of vaccine
  - 56.1% of total population
  - 68.3% >18, 65.6% >12, 89.1%>65
- 161M fully vaccinated
  - 48.6% of total population
  - 59.5%>18, 56.9% >12, 79.5%>65

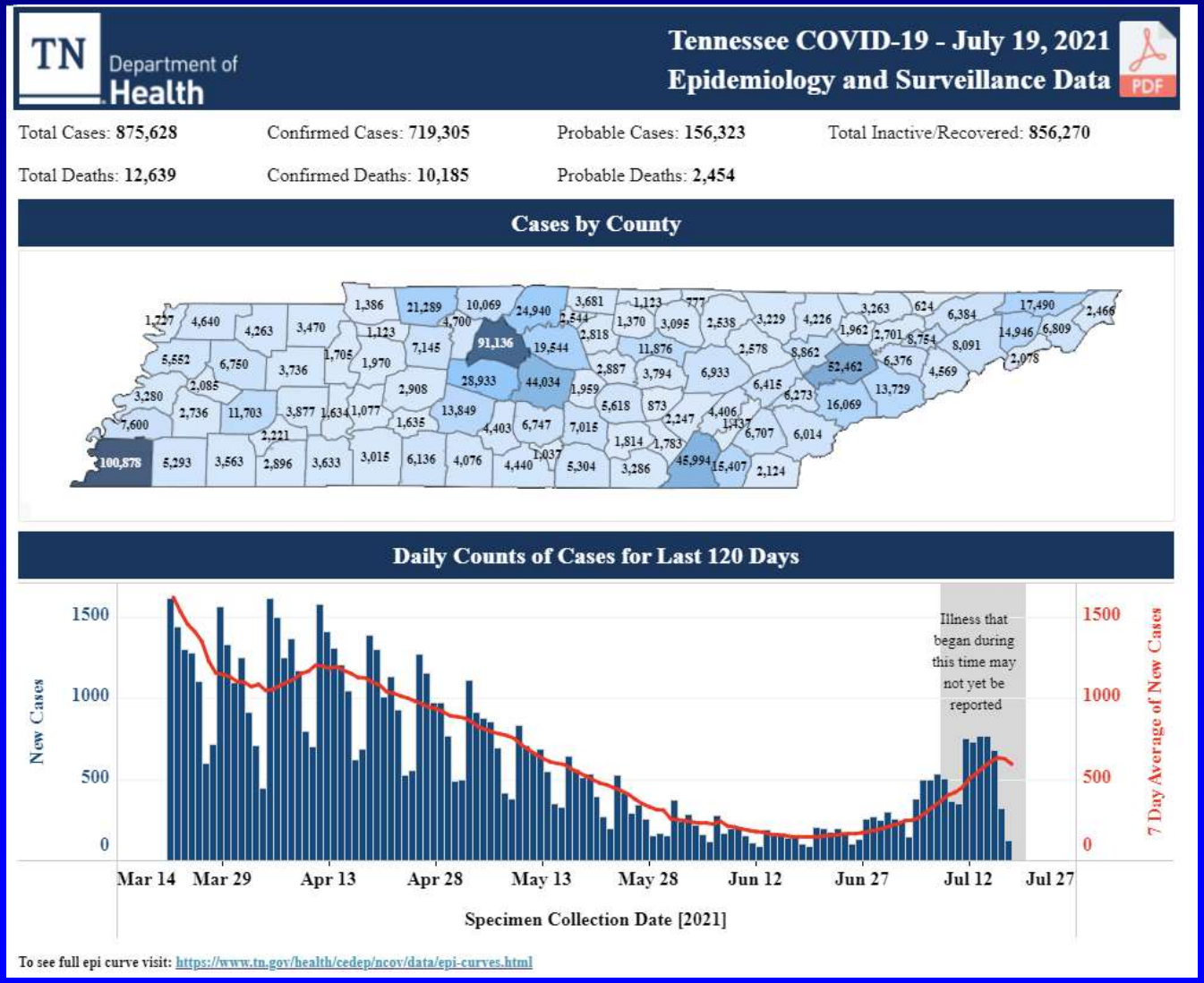
COVID-19 Epidemiology: USA



COVID-19 Epidemiology: USA



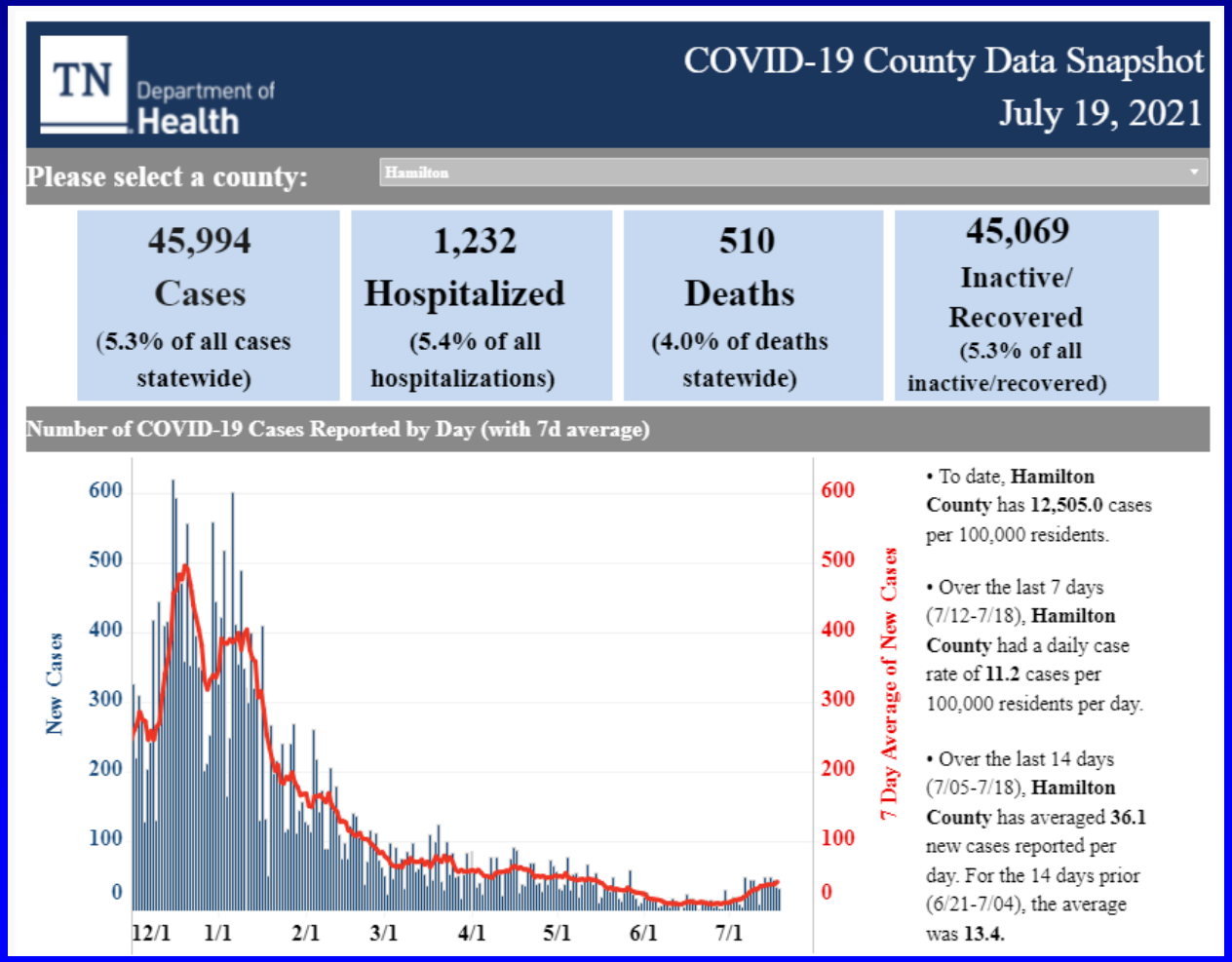
COVID-19 Epidemiology: TN



38.5%
Fully
Vaccinated

67% VT
34% AL

COVID-19 Epidemiology: Ham Co.



42%
Fully
Vaccinated

COVID-19 Epidemiology: Erlanger

- 1 case in house 4 weeks ago
- 20 cases in house 7/20/21
  - 6 in ICU
  - 60% male
  - 50% Hamilton County residents
  - 75% BMI>25, 40% >30
  - 70% >50yo
  - 1 of the 20 fully vaccinated

COVID-19 Therapeutics

- IDSA (idsociety.org) and NIH (nih.gov) guidelines have largely driven treatment paradigms in this country
  - Dexamethasone
  - Remdesivir
  - Baricitinib
  - Tocilizumab
  - Casirivimab plus imdevimab or Sotrovimab
    - bamlanivimab plus etesevimab no longer recommended in nih guidelines/fda guidance

COVID-19 Therapeutics (NIH)

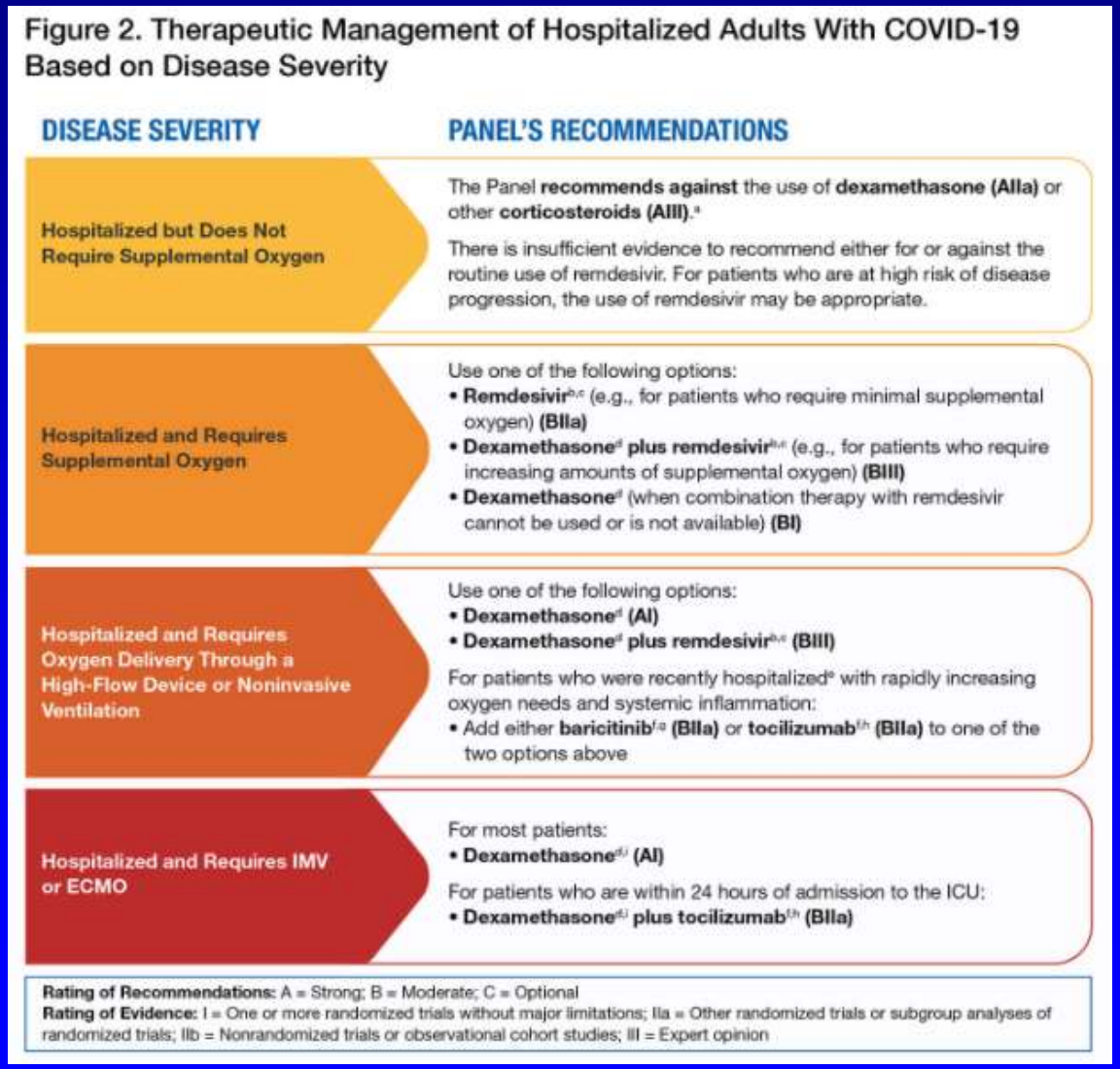


Figure 2. Therapeutic Management of Hospitalized Adults With COVID-19 Based on Disease Severity

DISEASE SEVERITY	PANEL'S RECOMMENDATIONS
Hospitalized but Does Not Require Supplemental Oxygen	The Panel **recommends against** the use of **dexamethasone (AIIa)** or other **corticosteroids (AIII)**.[a] There is insufficient evidence to recommend either for or against the routine use of remdesivir. For patients who are at high risk of disease progression, the use of remdesivir may be appropriate.
Hospitalized and Requires Supplemental Oxygen	Use one of the following options: • **Remdesivir**[b,c] (e.g., for patients who require minimal supplemental oxygen) **(BIIa)** • **Dexamethasone**[d] **plus remdesivir**[b,c] (e.g., for patients who require increasing amounts of supplemental oxygen) **(BIII)** • **Dexamethasone**[d] (when combination therapy with remdesivir cannot be used or is not available) **(BI)**
Hospitalized and Requires Oxygen Delivery Through a High-Flow Device or Noninvasive Ventilation	Use one of the following options: • **Dexamethasone**[d] **(AI)** • **Dexamethasone**[d] **plus remdesivir**[b,c] **(BIII)** For patients who were recently hospitalized[e] with rapidly increasing oxygen needs and systemic inflammation: • Add either **baricitinib**[f,g] **(BIIa)** or **tocilizumab**[f,h] **(BIIa)** to one of the two options above
Hospitalized and Requires IMV or ECMO	For most patients: • **Dexamethasone**[d,i] **(AI)** For patients who are within 24 hours of admission to the ICU: • **Dexamethasone**[d,i] **plus tocilizumab**[f,h] **(BIIa)**

Rating of Recommendations: A = Strong; B = Moderate; C = Optional
Rating of Evidence: I = One or more randomized trials without major limitations; IIa = Other randomized trials or subgroup analyses of randomized trials; IIb = Nonrandomized trials or observational cohort studies; III = Expert opinion

COVID-19 Therapeutics

- Remdesivir
  - Nucleoside analog
  - Inhibitor of RNA-dependent RNA polymerase
  - FDA approved 10/2020
  - >12yo, >40kg
  - 200mg iv on day 1, then 100mg iv on days 2-5, some extend to 10

COVID-19 Therapeutics

- Baricitinib
  - JAK Inhibitor
  - >2yo
  - EUA in combination with remdesivir in those requiring hospitalization
  - 4mg po up to 14 days
  - AE-VTE

COVID-19 Therapeutics

- Tocilizumab
  - Monoclonal ab to IL-6 receptor
  - EUA >2 in combination with corticosteroids in those requiring oxygen
  - AE infection risk
  - Not to be used in combination with baricitinib

COVID-19 Therapeutics (outpt)

- Monoclonal Ab
  - Casirivimab plus imdevimab
  - Sotrovimab
  - (bamlanivimab plus etesevimab)

-resistance issue with beta and gamma variants

Figure 2. FDA EUA criteria for the use of casirivimab/imdevimab, bamlanivimab/etesevimab, and sotrovimab [1,2,3,a]

This EUA is for the use of the unapproved products casirivimab and imdevimab, and/or bamlanivimab and etesevimab, and/or sotrovimab for the treatment of mild to moderate COVID-19 in adults and pediatric patients (12 years of age and older weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at high risk for progressing to severe COVID-19 and/or hospitalization.

The following medical conditions or other factors may place adults and pediatric patients (age 12-17 years and weighing at least 40 kg) at higher risk for progression to severe COVID-19:

- Older age (for example ≥65 years of age)
- Obesity or being overweight (for example, adults with BMI >25 kg/m^2, or if age 12-17, have BMI ≥85th percentile for their age and gender based on CDC growth charts
- Pregnancy
- Chronic kidney disease
- Diabetes
- Immunosuppressive disease or immunosuppressive treatment
- Cardiovascular disease (including congenital heart disease) or hypertension
- Chronic lung diseases (for example, chronic obstructive pulmonary disease, asthma [moderate-to-severe], interstitial lung disease, cystic fibrosis and pulmonary hypertension)
- Sickle cell disease
- Neurodevelopmental disorders (for example, cerebral palsy) or other conditions that confer medical complexity (for example, genetic or metabolic syndromes and severe congenital anomalies)
- Having a medical-related technological dependence (for example, tracheostomy, gastrostomy, or positive pressure ventilation [not related to COVID-19])

a. These criteria refer to Recommendation 14

COVID-19 Vaccines in US

- Pfizer
- Moderna
- J and J

COVID-19 Vaccines in US: Pfizer

- mRNA technology-spike protein
- 2 doses (0, 21 days)
- IM
- EUA (original 12/11/2020) 12 years and older
- 95% effective
- 90% real world CDC study of healthcare workers
- 88% effective against delta symptomatic infection (unpublished)

COVID-19 Vaccines in US: Moderna

- mRNA technology-spike protein
- 2 doses (0, 28 days)
- IM
- EUA (12/18/2020) 18 years and older
- 94% protective against symptomatic infection
- 90% effective among health care workers real world (CDC)
- Unpublished data re delta variant

COVID-19 Vaccines in US

- AE: myocarditis after mRNA vaccines
- Most after 2nd dose
- Most in young men
- Most recovered in short order
- ACIP reviewed 6/2021-no change in vaccine recommendation

COVID-19 Vaccines in US

- J and J
  - Single dose, fewer storage requirements
  - 18yo and older
  - Adenovirus vector technology to deliver message for spike protein production
  - EUA 2/21/21
  - Pause for thrombosis with thrombocytopenia
  - Rare GBS warning release earlier this month
  - 72% overall effectiveness, ? Delta protection

COVID-19 Vaccines in US

- Boosters
  - 7/22 ACIP topic-IC
- Alternative Strategies
- <12yo-Dr. Woods

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Mix-and-match COVID vaccines: the case is growing, but questions remain

A slew of studies suggests that mixing vaccines provokes potent immune responses, but scientists still want answers on real-world efficacy and rare side effects.

COVID-19 Vaccines not in US

- AstraZenica
  - Europe
  - 18 and older, 2 doses, viral vector technology
  - AE-thrombosis with thrombocytopenia
- Novovax
  - Studies ongoing
  - Adjuvanted protein vaccine
  - 2 doses

COVID-19 Vaccines in US

- Hesitancy and vaccine converts
  - Safety profile after 300+ million doses have been given
  - Pro-vaccine messages of providers, friends, and family
  - Learning that not being vaccinated will prevent people from doing some things

COVID-19 Erlanger Policies

- PPE
- Employee Health Screening
- Testing
- Visitation

COVID-19 Erlanger Policies

- PPE
  - Universal masking
  - Hospital issued mask and eye protection for all patient encounters
  - Contact/droplet/airborne for covid-19
    - N95, face shield, gloves, gown, negative pressure

COVID-19 Erlanger Policies

- Employee Health Screening
  - By reporting for duty, one attests that he or she is free of symptoms that could be associated with covid-19
  - With increase in cases, returned to attestation form available on intranet 7/20/2021
    - Will increase efficiency for employee health to manage these cases

COVID-19 Erlanger Policies

- Testing in-patients
  - Rapid (Abbott IDNow)
  - If confirmatory testing needed, Respiratory viral panel (Biofire) and Panther PCR are available in-house

COVID-19 Erlanger Policies

- Visitation
  - Screened, masked single visitor per 24 hour period
  - 4-8pm ICU non-covid
  - 1 overnight Floor non-covid
  - Exceptions for children, pregnant women, end of life
  - Subject to change
  - No visitors for covid-19 pts during isolation period except with end of life exceptions with waiver
  - Other exceptions approved by house supervisor

COVID-19 Summary

Pandemic is not over-please follow our protocols

Vaccination provides best protection-be an ambassador

Rapidly evolving topic with much to be learned