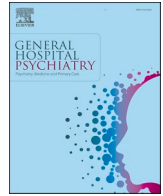




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Letter to the Editor



COVID vaccine use in inpatient psychiatry units—The need is here and now

The Food and Drug Administration (FDA) recently issued Emergency Use Authorizations (EUAs) for three COVID-19 vaccines. Individuals on psychiatric inpatient units are a cohort that would benefit from early vaccination due both to demographic factors and the nature of inpatient settings. In this letter, we use inpatient psychiatry units as one example of a care setting important to providing vaccine access to individuals with acute and chronic behavioral health issues.

Early reports have shown higher levels of comorbidity and mortality in patients with psychiatric diagnoses who are hospitalized with COVID-19 [1]. Dormitory style living conditions and difficulty enforcing infection prevention standards have led to increased spread of COVID-19 in inpatient psychiatry facilities [2]. In the pandemic period, psychiatric inpatients were also admitted for higher acuity diagnoses compared to prior years, which can increase the length of stay in a psychiatric unit and therefore increase the nosocomial risk for contracting COVID-19 [3]. In addition, psychiatric inpatients at higher risk for general medical co-morbidities [4].

Inpatient psychiatry units are an ideal setting to administer COVID-19 vaccines for individuals with acute psychiatric needs [5]. Staff psychiatry nurses are experienced in delivering intramuscular medications (e.g. antipsychotic deaconate shots), and have a history of vaccine distribution. As part of the Inpatient Psychiatric Facilities Quality Reporting program, the Centers for Medicare and Medicaid Services currently publicly track the rate of influenza vaccination administration as a national quality metric.

The initial two vaccines that received EUA by the FDA require two doses at fixed intervals (Moderna requires 28 days between doses, while Pfizer-BioNTech requires 21 days between doses) [6,7]. If only one dose is administered, then the efficacy drops from 95% to 52.4% for the Pfizer-BioNTech, and was consistent from 94.1% to 95.2% for the Moderna vaccine [8,9]. More recently, a single dose vaccine by Johnson and Johnson (J&J) has been approved for distribution. See Table 1 for comparisons of the three vaccines available for use.

The two dose vaccines have several challenges in distribution on inpatient psychiatry units. While individuals can obtain the first vaccine dose in an inpatient psychiatric unit or long-term residential setting per guidance by the Centers for Disease Control, patient churn among care settings may impede the successful administration of both doses of a COVID-19 vaccine. In addition, vaccine distribution can be impacted by poor adherence by patients or poor coordination among clinical settings to administer both doses. For example, inpatient psychiatry providers may not know that a patient received the first of two doses externally, since electronic health records and vaccine records are often not integrated in a centralized database.

The J&J vaccine is easier to administer and more logistically feasible to distribute as a one-dose vaccine, while still having the benefit of being effective against severe COVID-19 infections. It does not does require

very cold temperature refrigeration and has the lowest reported cost per dose of the three vaccines [10]. However, the J&J vaccine was the most recently approved of the three vaccines, and as a result, has more limited availability.

Inpatient psychiatric facilities will need to work through logistics of vaccine distribution, since the choice of distributing J&J or the two-dose vaccines may vary by region due to local supply. In addition, nursing, pharmacy, and provider workflows are needed to obtain patient consent and administer the vaccine. As part of patient and caregiver education, staff should carefully explain the benefits and risks for vaccine use and particularly highlight the important role of vaccines in patient safety.

Numerous factors should be considered to identify which patients are offered a COVID-19 vaccination if a finite quantity of vaccine doses is allotted to a given facility. For example, COVID-19 risk calculators that include age, other medical comorbidities, homelessness, mask compliance, and travel can help guide vaccine prioritization. In addition, patient length of stay is an additional factor, since longer lengths of stay may increase risk for nosocomial infection in inpatient settings.

Among inpatient psychiatric facilities, differences can also arise in speed of vaccine distribution. Based on anecdotal evidence in Connecticut, patient vaccinations were first received and distributed in the Veterans Administration inpatient setting, followed by state facilities with long-term psychiatric patients, followed by private non-profit psychiatric facilities.

Institutional leadership will need to identify facility-specific guidance and provide staff with both workflow protocols and educational materials for COVID-19 vaccine distribution. In addition, vaccine distribution should be tracked among psychiatric patient populations by age, race, gender, and other demographic variables to assess for variations in COVID-19 vaccine assent and receipt.

Declaration of Competing Interest

None of the other authors have disclosures to report. The authors declare that they have no competing interests to declare.

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References

- [1] Li L, Li F, Fortunati F, Krystal JH. Association of a prior psychiatric diagnosis with mortality among hospitalized patients with coronavirus disease 2019 (COVID-19) infection. *JAMA Netw Open* 2020;3(9). <https://doi.org/10.1001/jama-networkopen.2020.23282>. e2023282-e82. [Online First: Epub Date].
- [2] Thompson Jr JW, Mikolajewski AJ, Kissinger P, et al. An epidemiologic study of COVID-19 patients in a state psychiatric hospital: high penetrance with early CDC

Table 1
Comparison of Pfizer-BioNTech, Moderna, and Johnson & Johnson COVID-19 Vaccines.

	Pfizer-BioNTech	Moderna	Johnson & Johnson
Number of Dosages Required	Two, 21 days apart	Two, 28 days apart	One
Efficacy after first dose	52.4%	95.2%	65.5%
Efficacy after second dose	95%	94.1%	NA
Efficacy against severe COVID-19 cases after first dose	88.9%	42.6%	85.4%
Efficacy against severe COVID-19 cases after second dose (>7 days)	75%	100%	NA
Number of deaths in trial	6	0	7
Vaccine Group	2	0	0
Placebo Group	4	0	7
Cost per dose	\$19.50 ^a	\$25–37	\$10
Shelf-life once thawed (days)	5	30	180
Storage temperature	–70 °C	–20 °C	2–8 °C

^a Per 100 million doses.

guidelines. *Psychiatr Serv* 2020;71(12):1285–7. <https://doi.org/10.1176/appi.ps.202000270> [published Online First: Epub Date].

- [3] Abbas MJ, Kronenberg G, McBride M, et al. The early impact of the COVID-19 pandemic on acute care mental health services. *Psychiatr Serv* 2020. <https://doi.org/10.1176/appi.ps.202000467>. appips202000467. [published Online First: Epub Date].
- [4] Goldman ML, Mangurian C, Corbeil T, et al. Medical comorbid diagnoses among adult psychiatric inpatients. *Gen Hosp Psychiatry* 2020;66:16–23. <https://doi.org/10.1016/j.genhosppsych.2020.06.010> [published Online First: Epub Date].
- [5] Cotugno S, Morrow G, Cooper C, Cabie M, Cohn S. Impact of pharmacist intervention on influenza vaccine assessment and documentation in hospitalized

- psychiatric patients. *Am J Health Syst Pharm* 2017;74(23 Supplement 4):S90–4. <https://doi.org/10.2146/ajhp160755> [published Online First: Epub Date].
- [6] CDC. Vaccines & Immunizations - Pfizer-BioNTech Vaccine. Secondary Vaccines & Immunizations. Pfizer-BioNTech Vaccine; 2021. <https://www.cdc.gov/vaccines/covid-19/info-by-product/pfizer/index.html>.
- [7] CDC. Vaccines & Immunizations - Moderna Vaccine. Secondary Vaccines & Immunizations - Moderna Vaccine. <https://www.cdc.gov/vaccines/covid-19/info-by-product/moderna/index.html>; 2021.
- [8] Polack FP, Thomas SJ, Kitchin N, et al. Safety and efficacy of the BNT162b2 mRNA Covid-19 vaccine. *N Engl J Med* 2020;383(27):2603–15. <https://doi.org/10.1056/NEJMoa2034577> [published Online First: Epub Date].
- [9] Baden LR, El Sahly HM, Essink B, et al. Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine. *N Engl J Med* 2020;384(5):403–16. <https://doi.org/10.1056/NEJMoa2035389> [published Online First: Epub Date].
- [10] Zhou A. Top 5 COVID-19 vaccine questions answered. In: Secondary Top 5 COVID-19 Vaccine Questions Answered; 2020. <https://www.cas.org/blog/covid19-vaccine-questions>.

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