COVID-19 Monoclonal Antibodies: A Single Center Real World Experience and Opportunities for Improvement

Brenner, S. Knee, A. Salvador, D. Housman, E. Fernandez, G. Paez, A.

Baystate Health | UMass Chan Medical School

Introduction

- COVID-19 monoclonal antibodies (mAb) reduce risk of ED presentation and hospitalizations when administered early in the disease course in patients with mild disease[1,2,3,4].
- Research gap: Barriers to implementation

Methods

Retrospective cohort review of patients referred for monoclonal antibody treatment from12/7/20-5/20/21

Aim: To evaluate factors associated with selection and potential barriers to mAb treatment

Inclusion criteria:

- Symptom onset within 10 days of referral
- High-risk for severe disease
- Not meeting hospitalization criteria
- Followed by in-network primary care provider

Selection: Per Massachusetts Department of Public Health guidelines – preference given if BMI ≥ 35, age ≥ 65, and social vulnerability index (SVI) > 0.5

Data Collected: Demographics, comorbidities, illness course, infusion selection, adverse events

Statistical Methods: Unadjusted regression models to estimate effect sizes (mean difference or percentage point difference) and 95% confidence intervals to estimate baseline factors associated with infusion – predictors selected based on clinical size of the effect and width of confidence interval

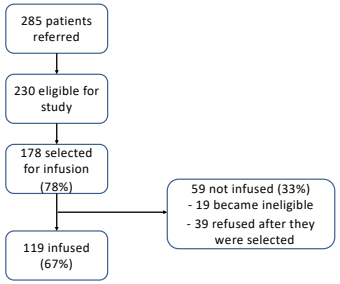


Figure 1: Predictors of Monoclonal Antibody Selection

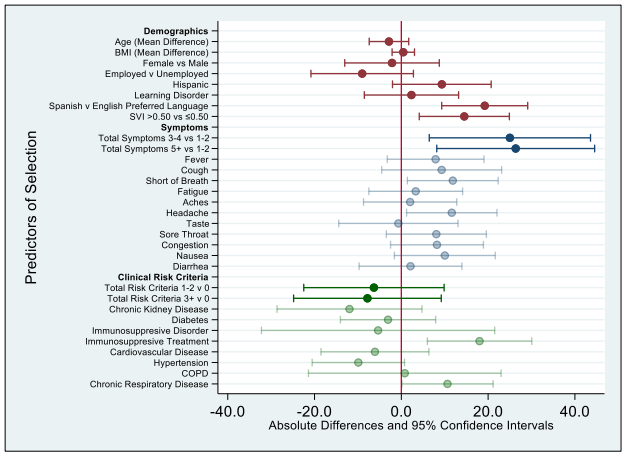
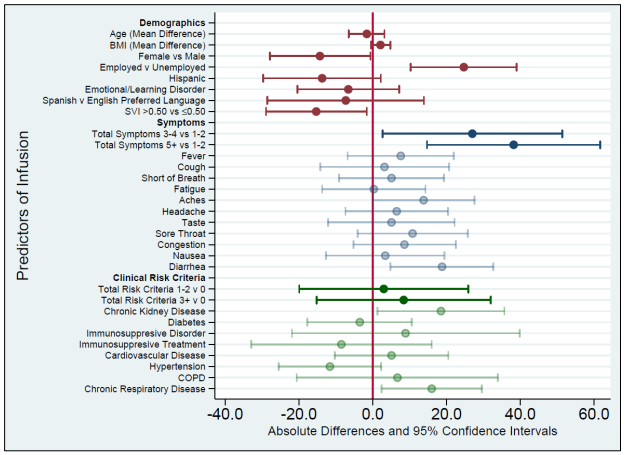


Figure 2: Predictors of Monoclonal Antibody Infusion

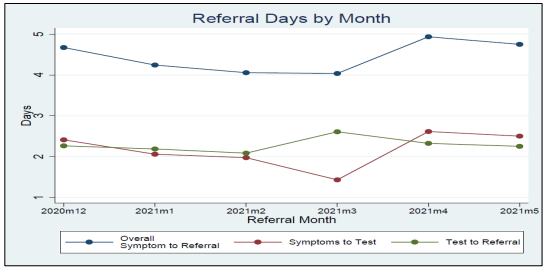


What is Social Vulnerability Index (SVI)?

Most common reasons for missed treatment:

- **Became ineligible** (19, 32%):
  - 17% clinically worsened
  - 15% no longer in treatment window
- **Refused** (39, 65%):
  - 20% improved clinically
  - 10% concerned about mAb safety
  - 7% unable to find alternative caregiver
  - 5% lacked transportation
  - 3% inconvenient time

Figure 3: Days of Symptoms to Referral



Discussion

- More likely to be selected: unemployed, Hispanic ethnicity, Spanish language preference, higher SVI, increased number of symptoms, immunosuppressive medications, and chronic respiratory disease
- Patients with a higher SVI were less likely to present for treatment with mAb despite being preferentially selected
- Less likely to present for treatment: Hispanic or with Spanish language preference, unemployed, female gender
- Short time from symptom onset to treatment did not appear to be a barrier

Conclusions

- Delivery of mAb requires coordination of a variety of steps
- Possible for patients to access mAb in the recommended time window, even in new recommended 7-day time frame
- Patients with high SVI, female gender, Hispanic ethnicity, Spanish language preference, or unemployed status may have barriers to access to care
- More studies needed to determine how best to reduce barriers

References

1. Chen P, et al. SARS-CoV-2 Neutralizing Antibody LY-CoV555 in Outpatients with Covid-19. N Engl J Med. 2021 Jan 21;384(3):229-237. doi: 10.1056/NEJMoa2029849. Epub 2020 Oct 28. PMID: 33113295; PMCID: PMC7646625.
2. Gottlieb RL, et al. Effect of Bamlanivimab as Monotherapy or in Combination With Etesevimab on Viral Load in Patients With Mild to Moderate COVID-19: A Randomized Clinical Trial. JAMA. 2021 Feb 16;325(7):632-644. doi: 10.1001/jama.2021.0202. PMID: 33475701; PMCID: PMC7821080.
3. Gupta A, et al. Early Treatment for Covid-19 with SARS-CoV-2 Neutralizing Antibody Sotrovimab. N Engl J Med. 2021 Nov 18;385(21):1941-1950. doi: 10.1056/NEJMoa2107934. Epub 2021 Oct 27. PMID: 34706189.
4. Weinreich DM, et al. REGN-COV2, a Neutralizing Antibody Cocktail, in Outpatients with Covid-19. N Engl J Med. 2021 Jan 21;384(3):238-251. doi: 10.1056/NEJMoa2035002. Epub 2020 Dec 17. PMID: 33332778; PMCID: PMC7781102.