Amelioration of Indirect Costs Following COVID-19 Infection in High-Risk US Patients Treated with Nirmatrelvir-Ritonavir

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BACKGROUND

- COVID-19 results in a a substantial societal burden of disease, and was the second most common reason for short-term disability (STD) between 2020 and 2022.[1]
- Nirmatrelvir-ritonavir (NMV/r; Paxlovid) reduces hospitalization and death in patients at high-risk for severe COVID-19 and has been associated with direct cost savings.[2,3]
- The potential benefit of NMV/r on indirect costs due to workplace absence, STD, or long-term disability (LTD) remains unclear in the US, especially during the Omicron predominant period.

OBJECTIVE

- To compare indirect cost burden derived from workplace absenteeism, STD, or LTD between patients at high-risk of severe COVID-19 who did or did not receive treatment with NMV/r.

METHODS

- The study sample was composed of high-risk US adults with a COVID-19 diagnosis between 12/16/2021 and 12/1/2022 who had eligibility for work loss data (absence, STD or LTD) in the Merative™ MarketScan® Health and Productivity Management (HPM) Database.
  - High-risk patients were aged ≥50 or had an underlying condition associated with elevated risk of severe COVID-19.[4]
- The first non-diagnostic claim with a COVID-19 diagnosis served as the index date and patients had continuous medical and pharmacy benefits as well as eligibility for absence, STD, or LTD benefits for 6 months prior and ≥30 days following index.
  - Patients were followed until the end of continuous eligibility, end of study data, death, or a new COVID-19 diagnosis.
  - Work loss outcomes were assessed in the subgroup of patients with eligibility for that type of work loss (e.g., STD costs in people with STD eligibility)
- Treated patients had a claim for NMV/r on index or in the next 4 days; untreated patients had no claims for NMV/r, molnupiravir, or remdesivir in their study period.
  - Untreated patients were directly matched 1:1 to treated patients on age, sex, index quarter, Charlson Comorbidity Index (CCI) score (0-1, 2, 3+), and presence of a baseline hospitalization or emergency room visit.
  - Matched cohorts were well balanced on demographics and baseline characteristics with standardized mean differences below or near 0.01.
- Within the matched treated and untreated samples, subgroups of patients with ≥1 diagnosis of cardiovascular disease (CVD), diabetes, hypertension (HTN), chronic lung disease (CLD), or overweight/obesity (Ow/O) were defined.
  - Subgroup definitions were not subject to matching; thus, sample sizes varied.
- Indirect costs were estimated by multiplying the median Bureau of Labor Statistics (BLS) daily wage by the number of absence days or 70% of STD or LTD days reported in the HPM Database.[5]
  - Mean monthly indirect costs per 1,000 employees were reported; costs were inflated to 2022 US Dollars (USD).
  - Total indirect cost savings were calculated as the sum of the cost difference between treated and untreated cohorts for absence, STD, and LTD.
- Differences between the treated and untreated cohorts were examined with t-tests; critical alpha was 0.05. 95% confidence intervals (CIs) around the difference were also reported.

RESULTS

- Sample sizes for the matched treated and untreated absence, STD, and LTD cohorts, as well as the various subgroups based on pre-period comorbidity burden within each, are reported in Table 1.
- Patients were followed for a median of 5 months (mean ±SD of 5 ±2 months).

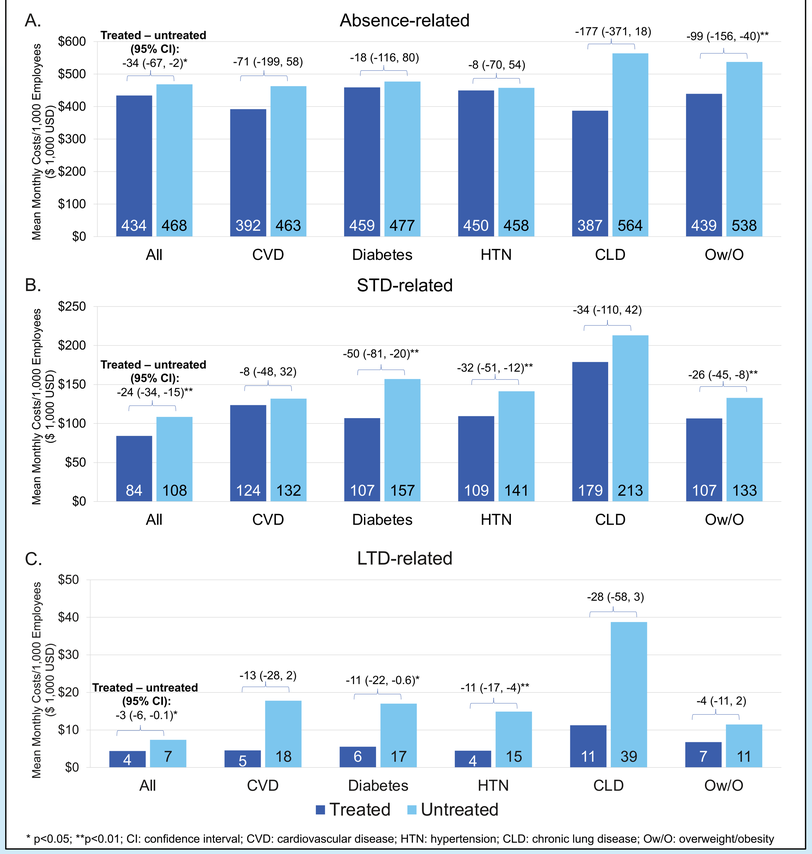
Table 1. Study Sample Sizes

	Absence		STD		LTD	
	Treated	Untreated	Treated	Untreated	Treated	Untreated
All Patients	1,909	1,909	20,265	20,265	20,318	20,318
CVD	135	130	1,566	1,522	1,520	1,618
Diabetes	269	218	3,139	2,555	3,103	2,478
HTN	611	567	6,292	5,862	6,222	5,908
CLD	76	66	810	767	830	801
Ow/O	645	617	6,217	5,520	6,248	5,623

CVD: cardiovascular disease; HTN: hypertension; CLD: chronic lung disease; Ow/O: overweight/obesity

- Indirect costs related to absence, STD, and LTD were significantly higher in untreated patients compared with treated patients within the overall matched cohorts (Figure 1 A-C)
- Cost trends were replicated in the various subgroups; however, not all differences were statistically significant (Figure 1 A-C)

Figure 1. Mean Monthly Indirect Costs per 1,000 Employees

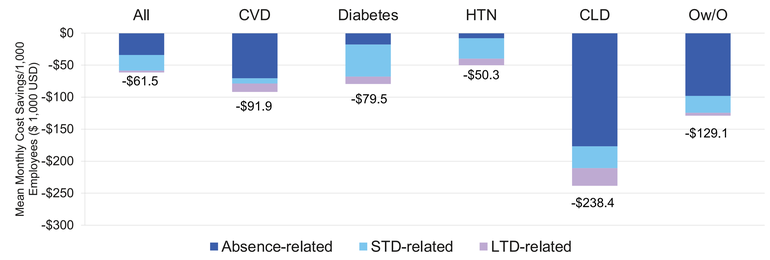


* p<0.05; **p<0.01; CI: confidence interval; CVD: cardiovascular disease; HTN: hypertension; CLD: chronic lung disease; Ow/O: overweight/obesity

RESULTS

- Total estimated mean indirect cost savings associated with NMV/r treatment exceeded $60,000 per month for a population of 1,000 employees (Figure 2).
  - Cost savings for subgroups ranged from approximately $50,000 to $238,000.

Figure 2. Monthly Estimated Indirect Cost Savings per 1,000 Employees



CVD: cardiovascular disease; HTN: hypertension; CLD: chronic lung disease; Ow/O: overweight/obesity

CONCLUSIONS

- **Lower indirect costs were observed among NMV/r treated relative to untreated patients following COVID-19.**
  - **The trend for lower indirect costs was observed for all work loss types assessed.**
- **NMV/r treatment may be associated with appreciable cost savings within employer populations, especially among employees with specific comorbidities.**
  - **In this study, NMV/r treatment was associated with a monthly cost savings of approximately $61,500 in a population of 1,000 employees.**
  - **Monthly savings among patients with CLD approached $240,000 for a population of 1,000 employees.**

LIMITATIONS

- Results are for primary beneficiaries whose employers offer workplace benefits and may not generalize to individuals without employer sponsored benefit programs like commercial health insurance, paid time off, or disability benefits.
- Costs were estimated based on lost workdays and the median BLS wage; costs for specific employer populations will differ based on average compensation and benefits provided.
- Indirect costs are based on all-cause work loss and may not be specific to COVID-19.

References

[1] Judy J, et al. *J Med Econ.* 2024;27(1):941-951; [2] Pfizer. EPIC-HR Final CSR v 2.0. 2023; [3] Lewnard JA, et al. *Lancet Infect Dis.* 2023;23(7):806-815;.[4] Centers for Disease Control and Prevention. Underlying Conditions and the Higher Risk for Severe COVID-19. 2024; [5] US Bureau of Labor Statistics. Median weekly earnings of full-time wage and salary workers by detailed occupation and sex; [6] Bonafede M, et al. *PharmacoEconomics.* 2021;5:23-34.

Disclosures

MF, ASC, RS, GSS, PC, FRE, JCC, MAC, and RM are all employees of Pfizer and hold Pfizer stock/stock options. BLB and KAE are employees of Merative who was retained by Pfizer to conduct this study. EFD received consulting fees from Pfizer.

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