

Adherence of Patients Receiving Immunoglobulin Replacement Therapy in the Home during the COVID-19 Pandemic

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Introduction

Adherence to therapies is a primary determinant of treatment success.¹ Since the consequences of non-adherence include worsening of the disease and increased morbidity, healthcare-utilization and cost, it is imperative to gain better insight into the factors affecting adherence.^{1,4} Early non-adherence studies focused on patient behavior, but recent studies show that adherence is governed by a complex, overlapping, wide variety of factors that affect behavior.

Various news outlets have reported that the coronavirus 2019 (COVID-19) pandemic has caused supply chain issues, personnel shortages, decreased travel, and economic and social disruption, contributing to psychosocial stress. Stories have shown interpersonal conflict surrounding mask usage, increased alcohol consumption, changes in physical activity and sleep patterns, and concerns of depression and anxiety. Emerging evidence suggests that the COVID-19 pandemic is disrupting health behaviors such as medication adherence.²

Immunoglobulin (Ig) therapy is used to treat patients with primary immune- and autoimmune-mediated disorders. Larger Ig doses are typically administered intravenously every 4 weeks, which may rely on scheduling nursing personnel for IV access. Ig therapy can also be given subcutaneously (SC), allowing patients to perform self-administration ranging from weekly to monthly depending on physician orders and the specific Ig product infused.

Purpose

The purpose of this study was to determine whether the adherence rate of patients receiving immunoglobulin replacement therapy (IGRT) in the home was affected during the COVID-19 pandemic and identify associated factors.

Methods

Data were analyzed from the IDEaL (Immunoglobulin, Diagnosis, Evaluation, and key Learnings) Patient Registry, which is a prospective, observational registry study of patients receiving Ig replacement therapy in the home or at an ambulatory infusion suite with one national home infusion provider. Following patient consent, data were collected from pharmacy standard of care forms and shipping reports. Self-reported missed and delayed doses in addition to infections were evaluated the year prior to the pandemic (March, 2019 through February, 2020) and the first year of the pandemic (March, 2020 through February, 2021). The reasons for missed and delayed doses were grouped together into like categories. A delayed dose is defined as a dose taken within the prescribed time frame but after the scheduled date, i.e., weekly dose every Monday was given within the same week on Thursday. Fisher's test was used with $P \leq 0.05$.

Results

Table 1: Patient Demographics

	Pandemic Year	
	2019 (n=169)	2020 (n=157)
Age Distribution		
Under 18	4 (2%)	6 (4%)
18 and Over	165 (98%)	151 (96%)
Gender Distribution		
Male	31 (18%)	24 (15%)
Female	138 (82%)	133 (85%)
Diagnosis		
Primary Immune	163 (96%)	154 (98%)
Autoimmune	6 (4%)	3 (2%)
Route of Administration		
IV	34 (20%)	29 (18%)
SC	135 (80%)	128 (82%)

Table 1: During both years evaluated, most registry patients were adult females receiving IGRT subcutaneously for a primary immune disorder.

Figure 1: Patient-Reported Missed Doses

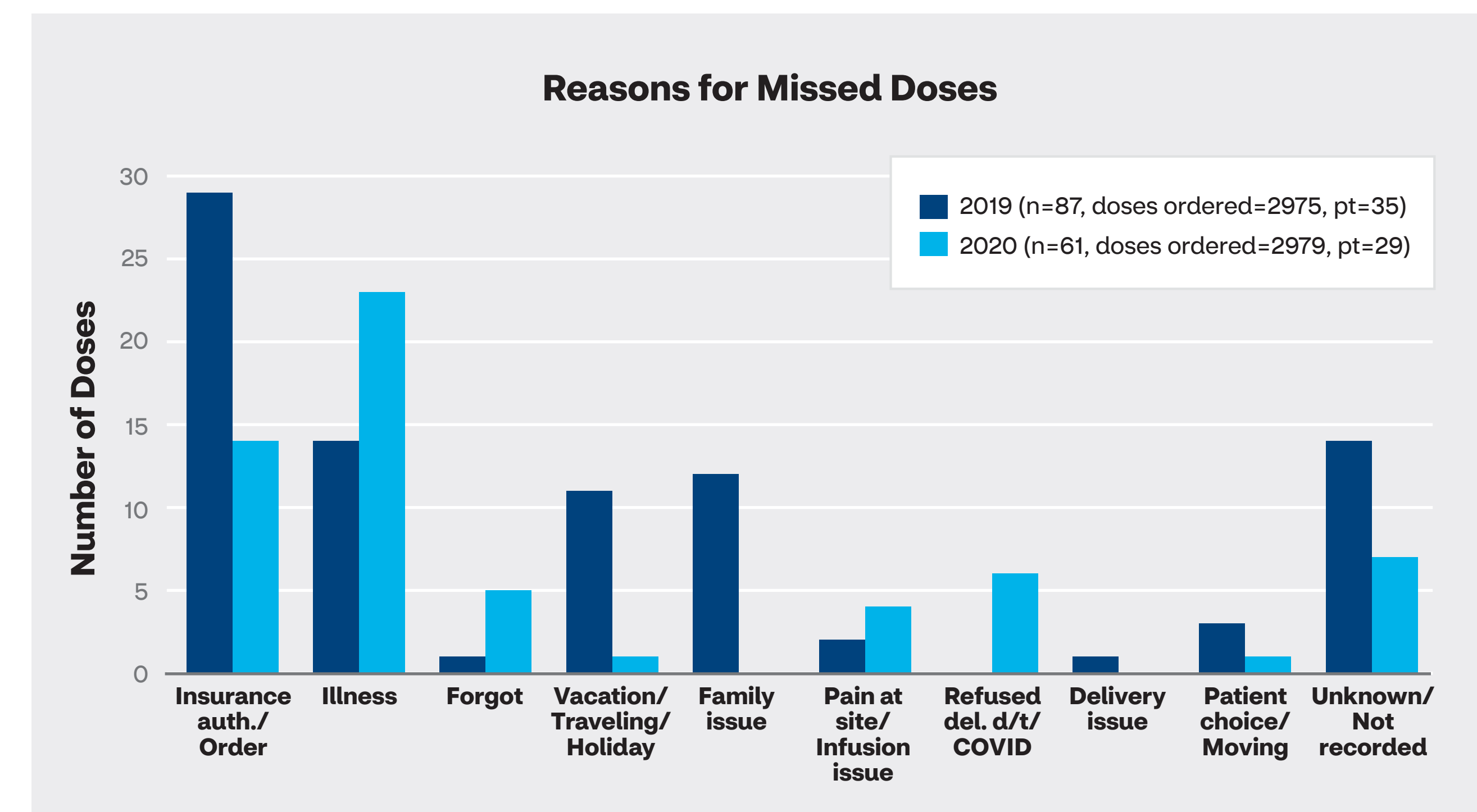


Figure 1: The number of missed doses decreased from 87 in 2019 to 61 in 2020 ($p=0.03$), and the number of patients (pt.) experiencing missed doses decreased from 35 to 29. Missed doses increased during the pandemic for illness ($n=14$, $n=23$), forgetfulness ($n=1$, $n=5$), pain/infusion issue ($n=2$, $n=4$), and refusing delivery over concern of contracting COVID-19 became an issue ($n=6$). A decrease in missed doses was seen for lack of insurance authorization or order ($n=29$, $n=14$). Vacation/traveling/holiday dropped from 11 to 1, and family issue dropped from 12 to zero.

Figure 2: Patient-Reported Delayed Doses

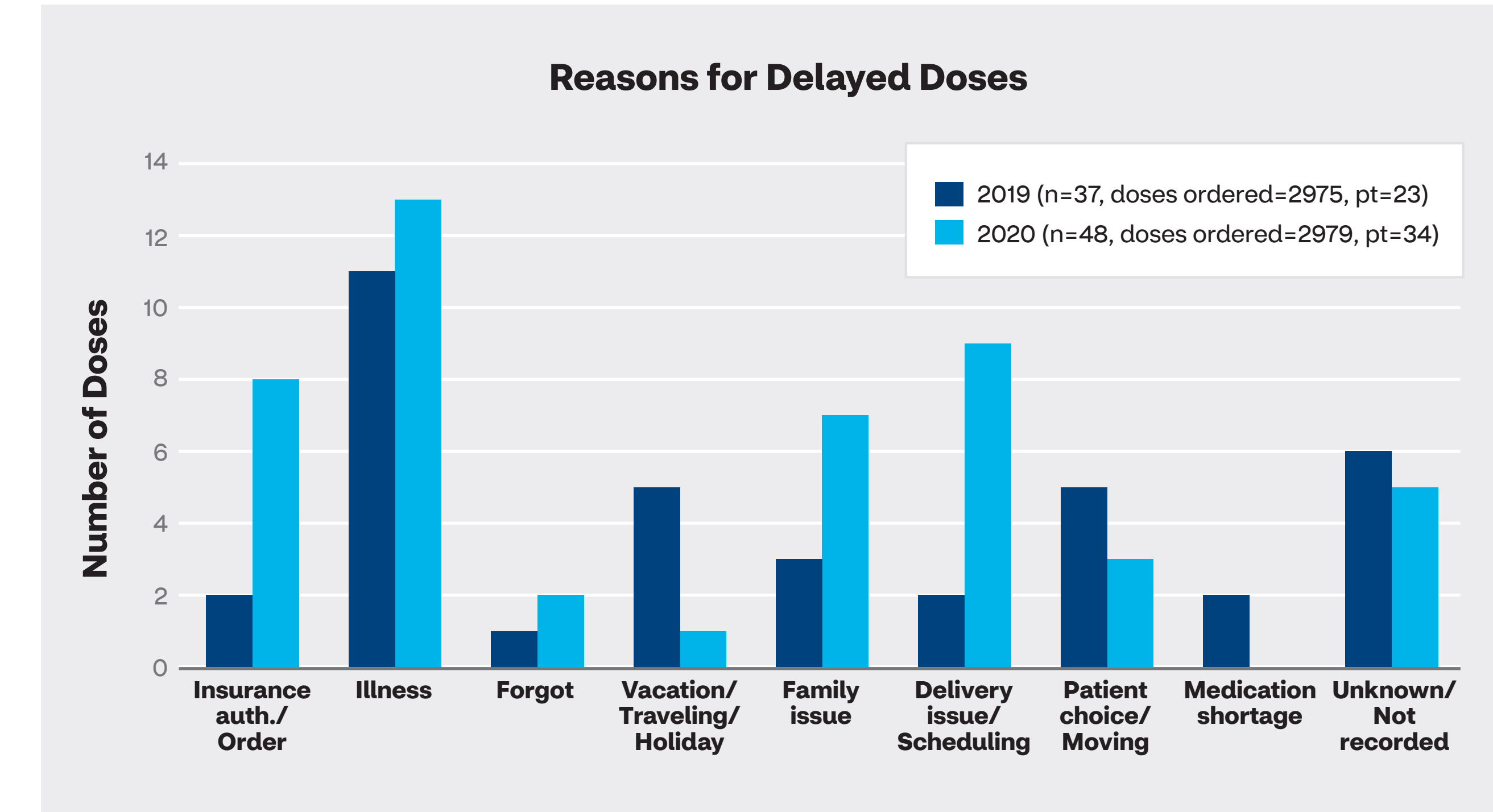


Figure 2: Delayed doses increased from 37 to 48 during the pandemic, and the number of patients experiencing delayed doses increased from 23 to 34. The most common reason for delayed doses during both years was illness, which included hospitalization, surgery, rehab, and just not feeling well enough to infuse ($n=11$, $n=13$). During the pandemic, there was an increase in delivery and scheduling issues ($n=2$, $n=9$), lack of insurance authorization or orders ($n=2$, $n=8$) and family issues ($n=3$, $n=7$). Decreases were seen in vacation/traveling ($n=5$, $n=1$) and pt. choice/moving ($n=5$, $n=3$).

Figure 3: Number and Type of Infections

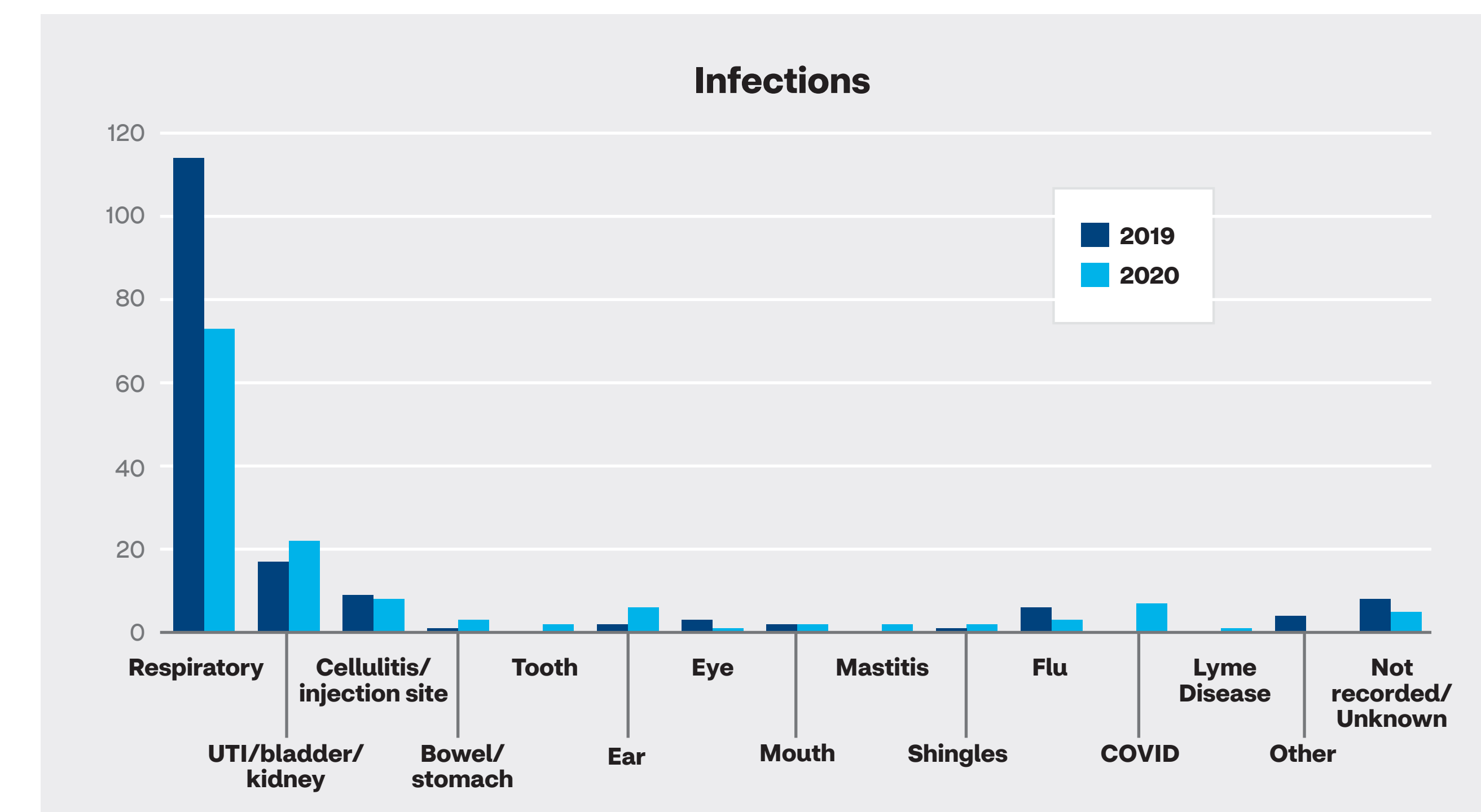


Figure 3: The most prevalent infection was respiratory for both years, though they decreased during the pandemic ($n=114$, $n=73$) even if COVID-19 were included in the 2020 count (total $n=80$). Seven registry patients contracted COVID-19 and all survived.

Discussion

The most direct affect attributed to the pandemic is the decrease in missed and delayed doses for vacation/traveling holiday and patient choice/moving due to the lockdowns. Long-term stress suppresses or dysregulates immune responses.³ Illness accounted for the largest increase in missed doses and an

increase in delayed doses, and forgetfulness also increased in both categories, indicating elevated stress may be a factor. Increased illness might also be due to patients delaying visiting their doctor, contributing to a more serious illness. Elevated stress may be a factor for the increase in pain at injection site/infusion issues (needle placement, slipping out, leakage). The COVID-19 pandemic affected the adherence of one patient, as 6 doses were missed due to fear of contracting COVID-19 from the supplies. There was an increase in delayed doses for family issues during the pandemic, but the number of missed doses dropped to zero. This, again, may be due to lockdowns and the inability to travel to family members to provide assistance. The pandemic caused widespread illness, producing personnel shortages and shipping delays. Delivery issues increased delayed doses but did not contribute to any missed doses during the pandemic year. Lack of insurance authorization or signed physician order is a health system/healthcare team-related factor according to the World Health Organization but are sometimes due to delayed notification of a new healthcare plan.⁴ Missed doses due to this category dropped from 29 to 14 during the pandemic; a possible indicator of increased diligence of all parties involved with this process.

Infections decreased during the pandemic, and one can only speculate that this may be attributed to a decreased exposure to people (virus transmission) during lockdowns and patients following the Center for Disease Control guidance regarding mask wearing and handwashing.

While the number of delayed doses increased overall, it appears patients didn't let these issues translate into missing more doses. This increased adherence may be attributed to the fact that this set of patients experiences primarily respiratory infections and were at greater risk for COVID-19, a primarily respiratory disease, as was the case in a similar study.⁵

Conclusion

These observational data show that IGRT adherence increased during the COVID-19 pandemic and identified associated factors.

References

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