

## Reduced time spent with patients and decreased satisfaction in work during COVID-19 pandemic

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Published ahead of issue: May 1, 2024. CMEJ 2024 Available at <https://doi.org/10.36834/cmej.78773>

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### Abstract

**Background:** The COVID-19 pandemic disrupted the healthcare system, affecting physician wellbeing. The consequences of reduced time spent with patients at bedside during the pandemic has not been investigated. The objectives of this study include assessing time spent with patients, physician wellbeing and patient satisfaction before and during the pandemic.

**Methods:** A total of 182 internal medicine physicians used Hill-Rom tracking devices to measure time spent at bedside while on the teaching hospital medicine service between September 2019 and November 2020 at Cleveland Clinic in Cleveland, Ohio. Time spent before and after March 2020, the outbreak of the pandemic were compared. Physicians' wellbeing was evaluated before and during the pandemic using the Accreditation Council for Graduate Medical Education survey. Patients' satisfaction was assessed via the Hospital Consumer Assessment of Healthcare Providers and Systems questionnaire and correlated to bedside time.

**Results:** From 88,661 time records collected during the 65-week study, 44,710 (50.43%) met the quality standards and were included in the analysis. The average time spent at bedside per patient before and during the pandemic was 12.12 and 7.85 minutes, respectively. Time decreased by 3.33 minutes for interns, 6.10 minutes for residents, and 2.70 minutes for staff. The pandemic correlated with physicians' decreased vitality and meaning in work. Patients' satisfaction did not correlate with bedside time.

**Conclusion:** Internal medicine physicians spent less time with patients during the pandemic and had worsened vitality and satisfaction with work. Physicians' time spent at bedside did not correlate with patients' satisfaction.

### Résumé

*Résumé français à venir.*

## Introduction

Burnout is defined by a loss of enthusiasm for work, a sense of detachment from patients, and a feeling that work is no longer meaningful.<sup>1</sup> When analyzing how physicians spend their time, researchers found that hospitalists and trainees spend only approximately 12-15% of their working hours directly interacting with patients and their families.<sup>2,3</sup> One study found that physicians who use electronic medical records had lower satisfaction with tasks and higher rates of burnout.<sup>4</sup> This dissatisfaction with tasks remained true when adjusted for age, sex, specialty, practice setting, and hours worked per week.<sup>4</sup>

Before the onset of the coronavirus disease 2019 (COVID-19) pandemic, it was estimated that up to 60% of physicians experienced burnout, with rates on the rise.<sup>5,4</sup> The COVID-19 pandemic has further stressed the well-being of health care workers, with professionals from various specialties and training levels reporting increased levels of anxiety (31-33%), depression (17-29%), suicidal ideation (5%), and post-traumatic stress disorder (14%) during the COVID-19 pandemic.<sup>6</sup> Additionally, residents were more likely to express feelings of mental and physical exhaustion.<sup>7</sup>

We found no study that had assessed whether physician wellbeing is influenced by the amount of time spent at bedside with patients. Our study, initially planned before the COVID-19 outbreak, aimed to investigate the correlation between physicians' well-being and the time they spent at patients' bedside. The unexpected emergence of the COVID-19 pandemic provided an opportunity to enhance this analysis by investigating the correlation between physicians' time spent at patients' bedside, physicians' well-being, and patients' satisfaction, both before and during the pandemic.

Understanding these dynamics could help in developing interventions that support physician well-being, which is intrinsically linked to patient outcomes. The findings could extend beyond just pandemic-induced disruptions and address the broader spectrum of challenges that healthcare systems face.

## Methods

### Study design, setting, and participants

Internal Medicine residents, staff physicians and patients admitted to the teaching hospital medicine service at the Cleveland Clinic from September 2019 to November 2020 were enrolled in the study.

All residents and staff physicians rotating through the inpatient medicine service were provided with Hill Rom tracking devices to measure the duration spent at patients' bedside as part of their daily practice. The time spent by each individual with patients was logged daily using the tracking software and collated weekly by the research coordinator to generate cumulative data. The study protocol was approved by the Cleveland Clinic Institutional Review Board (IRB).

The adjustments made to the study in response to the pandemic did not change the original IRB protocol intended to assess the time spent by physicians at bedside in association with their wellbeing, nor did they impact the collection, storage, or utilization of their data. Furthermore, these modifications had no bearing on the confidentiality or privacy of participant information.

**Residents.** The Cleveland Clinic Internal Medicine Residency Program consists of 184 residents. Out of this pool, there are 16 residents rotating on the teaching hospital medicine service at any given time. These 16 residents are further grouped into eight teams with two residents each (i.e., a senior resident and an intern). The eight teams are labeled: Kimball A through D, and Tucker A through D. Each resident may be on the service for one to four weeks at a time, based upon a pre-set schedule determined in advance by the Chief Medical Residents. Residents are responsible for providing patient care that is patient- and family-centered, compassionate, equitable, and effective.<sup>8</sup> While on inpatient rotations, residents are not responsible for other clinical duties such as outpatient clinics, research, or jeopardy.

As part of the educational curricula, all internal medicine residents are required to attend hourly noon conferences on Mondays, Wednesdays, Thursdays, and Fridays. On Tuesdays, from noon to 3 P.M. the interns are required to attend an academic half-day session, and they are excused from clinical responsibilities during this period. During COVID-19, the noon conferences transitioned from in-person to virtual, however academic half-day sessions continued to be held in person.

**Staff physician.** The staff physicians on Kimball Teams are affiliated with the Department of General Internal Medicine and those on Tucker Teams with the Department of Hospital Medicine. Each staff may be on service for one to four weeks at a time, based upon a pre-set schedule. The schedules are determined in advance by respective department chairs. Faculty members are responsible for providing appropriate levels of supervision to promote patient safety and create an effective learning environment by acting in a professional manner and attending to the well-being of the team.<sup>8</sup> Staff are not responsible for other clinical duties during inpatient rotations.

**Rotation structure.** Each Kimball or Tucker team is composed of one supervising staff physician, one senior resident, and one intern. There are no physician assistants or nurse practitioners on the teaching services. Each team cares for a maximum of 12 patients. Therefore, the total maximum patient capacity for the eight teaching teams on the hospital medicine service is 96. This number did not change during the COVID-19 pandemic. On the regular nursing floor, each nurse is responsible for up to six patients.

Daytime residents receive signout from the overnight residents at 7 A.M. Patient rounds typically occur from 8:30 A.M. to 12 P.M., with the duration varying based on the patient volume workflow dynamics. Each medical team can accommodate up to two new admissions per day, except on their "academic" days, which happen every fourth day. On these days, teams are exempt from admitting new patients. Daytime residents sign out to the night residents at either 4:30 P.M. or 5:30 P.M. depending on whether they are on a "short admitting" or "long admitting" schedule. This schedule remained unchanged before and throughout the COVID-19 pandemic.

During the COVID-19 pandemic, specific hospital units were allocated for COVID-19 positive patients. Personal protective equipment was made available for all clinical caregivers. During rounds, the protocol allowed for only one resident (either the senior or the intern) along with the attending physician to enter the patient's room, instead of the entire team, to minimize potential infection.

**Tracking devices.** The day before the hospital medicine rotation started, each participating team member was provided with a Hill-Rom Staff Locating © (Chicago, IL, USA) location tracking device. These devices were pinned to the identification cards and allowed for real-time location

tracking from a central computer in every unit, with precise detection of the exact patient bed where the physician is located. The tracking devices were returned to the research team on the last day of the hospital rotation.

The Internal Medicine Residency Program, Department of General Internal Medicine and Department of Hospital Medicine were introduced to the study two weeks prior to the date of initiation via an oral presentation for each department. Interns, residents, and staff were provided details on the study and had an opportunity to critically review the protocol presented and ask questions during these sessions. Participation in the study was completely voluntary and all members had an opportunity to opt out anytime during the study period. The decision not to participate in the study had no impact on participant's employment or performance evaluation at Cleveland Clinic. If a team member was absent during the rotation, the tracker did *not* get transferred to the resident or staff filling in.

#### Data collection

The Hill Rom location tracking devices were used to track the amount of time that physicians were inside the patient's room. This allowed the quantification of the cumulative and average times spent by each member of the team at the patient's bedside.

Data were collected for a total of 65 weeks (September 2, 2019 to November 30, 2020). Of these, 29 weeks were before, and 36 weeks were during the COVID-19 pandemic. The beginning of the COVID-19 at Cleveland Clinic was defined as March 23, 2020. This date was chosen because it represents the time when the Cleveland Clinic (as well as the Internal Medicine Residency Program) began implementing restrictive measures and policy changes, in response to the COVID-19 pandemic.

A total of 88,661 time records were collected between September 2, 2019 and November 30, 2020; 19,305 records were excluded as less than ten seconds were spent in the patients' rooms for each of these encounters; 16,882 records were excluded due to time spent in non-patient's rooms; 7,432 records were excluded due to unknown users or participants taking the wrong trackers; 332 records were excluded for individuals that were in  $\leq 5$  patient rooms per week. The final analysis included 44,710 time records (50.43% of total). Of these, 33,399 were collected before and 11,311 during the COVID-19 pandemic (Figure 1).

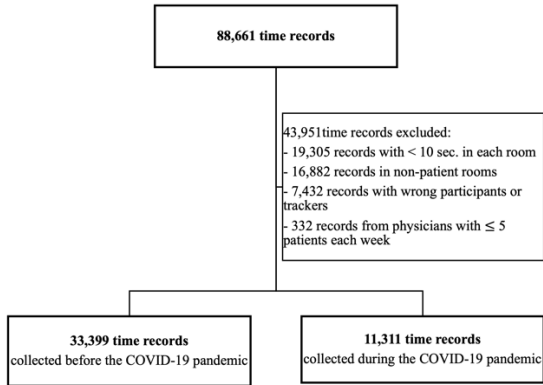


Figure 1. Time Records Collected Between September 2, 2019 and November 30, 2020

**Surveys**

At two points throughout the study, in February 2020 and December 2020, physicians were sent a standard, validated, IRB-approved, anonymous questionnaire provided by the Accreditation Council for Graduate Medical Education (ACGME) to assess their wellbeing and burnout. The survey consisted of 24 fixed response and Likert-type scale questions. The survey questions were classified into four categories: “burnout,” “meaning in work,” “vitality,” and “learning environment,” with two, ten, six, and six questions in each category, respectively.

As part of routine policy, patients were provided with Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) questionnaires at the time of discharge. The time spent by physicians with patients at bedside was correlated with the patient satisfaction scores from the HCAHPS questionnaires. Patient satisfaction was assessed using three questions from the HCAHPS questionnaire (Question 5, 6 and 7 which form the “Your Care from Doctors” section in the HCAHPS v 13.0, 2018 questionnaire), and one additional question about empathy, added to the survey by the Cleveland Clinic.

**Statistical analysis**

For the outcome of time spent with patients, the linear mixed effects models were used to compare the two time periods, before and during the COVID-19 pandemic, and least-square means were reported. Physician responses on wellbeing and burnout were analyzed in the same manner. HCAHPS scores (individually for Questions 5, 6 and 7 or HCAHPS v13.0, 2018) were correlated with mean time spent per patient (by each physician individually). All analyses were performed with RStudio: Integrated Development for R (2019) RStudio, Inc., Boston, MA, URL

<http://www.rstudio.com/>. Statistical significance was established with a two-sided p value < 0.05.

**Results**

A total of 182 Cleveland Clinic physicians participated in the study including 60 interns (Post Graduate Year (PGY) -1), 70 residents (PGY-2 or PGY-3), and 52 staff physicians. The average time spent at bedside per patient before and during the COVID-19 pandemic across all providers was 12.12 minutes and 7.85 minutes, respectively. For each provider group, time spent with patients decreased during COVID-19 by: 3.33 minutes for interns, 6.10 minutes for residents, and 2.70 minutes for staff (Table 1).

Table 1. Mean time spent per patient by participant before and during COVID-19

	Mean (minutes)	SE	P value
Before COVID-19	12.12	0.33	
During COVID-19	7.85	0.41	
Difference	4.34	0.33	< .001
Difference: interns	- 3.33	0.81	< .001
Difference: residents	- 6.10	0.50	< .001
Difference: staff physicians	- 2.70	0.55	< .001

The ACGME survey results showed decreased “meaning in work” and “vitality” when comparing the scores during and before the COVID-19 pandemic. The specific questions associated with the above categories were: “I view my work as contributing to my personal growth” (mean difference, 0.42; standard error, 0.21; P = 0.05), and “I have energy and spirit” (mean difference, 0.44; standard error, 0.21; P = 0.04), respectively. There were no differences in the “burnout” and “learning environment” categories (Table 2).

In 2019, the HCAHPS survey for staff physicians participating in the study was completed by a total of 58 patients. In 2020, the survey was completed by 66 patients. HCAHPS survey scores both before and during COVID-19 pandemic did not correlate with the time physicians spent at bedside with patients (Table 3).

Table 2. ACGME Survey on physician responses on wellbeing and burnout

Questions	Survey February		Survey December		Survey Dec. - Feb.		
	mean	se	mean	se	mean	se	pv
<b>Burnout</b>							
I feel burned out from my work.	2.56	0.24	2.78	0.31	0.22	0.34	0.52
I have become more callous towards people since I took this job.	1.99	0.25	1.49	0.29	-0.50	0.28	0.08
<b>Meaning in work</b>							
I have found a meaningful career.	4.43	0.11	4.21	0.15	-0.22	0.17	0.21
I view my work as contributing to my personal growth.	4.43	0.14	4.01	0.18	-0.42	0.21	0.05
My work really makes no difference in the world.	1.77	0.17	2.08	0.23	0.31	0.27	0.26
I understand how my work contributes to my life's meaning.	4.14	0.16	3.92	0.19	-0.22	0.20	0.26
I have a good sense of what makes my job meaningful.	4.30	0.14	3.90	0.19	-0.40	0.22	0.07
I know my work makes a positive difference in the world.	4.06	0.14	4.18	0.19	0.11	0.23	0.62
My work helps me better understand myself.	3.95	0.18	3.50	0.24	-0.46	0.28	0.10
I have discovered work that has a satisfying purpose.	4.01	0.16	3.86	0.19	-0.15	0.18	0.40
My work helps me make sense of the world around me.	3.68	0.18	3.78	0.24	0.10	0.28	0.72
The work I do serves a greater purpose.	4.03	0.15	3.93	0.19	-0.10	0.22	0.67
<b>Vitality</b>							
I feel alive and vital.	3.86	0.15	3.59	0.19	-0.27	0.20	0.17
Sometimes I feel so alive I just want to burst.	2.40	0.19	2.30	0.24	-0.10	0.26	0.69
I have energy and spirit.	3.73	0.16	3.28	0.20	-0.44	0.21	0.04
I look forward to each new day.	3.45	0.17	3.60	0.20	0.15	0.20	0.45
I nearly always feel alert and awake.	3.04	0.18	2.79	0.24	-0.25	0.27	0.36
I feel energized.	3.02	0.17	3.24	0.22	0.22	0.24	0.36
<b>Learning environment</b>							
I feel that my attendings provide me choices and options.	3.82	0.13	4.17	0.18	0.35	0.21	0.09
I feel understood by my attendings.	3.59	0.15	3.91	0.20	0.32	0.21	0.12
My attendings conveyed confidence in my ability to do well in the course.	4.08	0.13	4.12	0.16	0.04	0.18	0.82
My attendings encouraged me to ask questions.	3.97	0.14	4.23	0.19	0.27	0.23	0.25
My attendings listen to how I would like to do things.	3.87	0.15	4.15	0.20	0.28	0.23	0.23
My attendings try to understand how I see things before suggesting a new way to do things.	3.72	0.16	3.88	0.22	0.16	0.26	0.55

Table 3. Correlation between HCAHPS and Cleveland clinic scores and time spent at the bedside

HCAHPS and Cleveland Clinic Questions	2019 (N = 58)				2020 (N = 66)			
	r	95% CI		p	r	95% CI		p
During this hospital stay, how often did doctors treat you with courtesy and respect?	0.068	-0.267	0.388	0.694	-0.176	-0.049	0.152	0.291
During this hospital stay, how often did doctors listen carefully to you?	0.147	-0.191	0.454	0.392	-0.027	-0.343	0.295	0.874
During this hospital stay, how often did doctors explain things in a way you could understand?	0.125	-0.213	0.435	0.469	0.030	-0.292	0.347	0.857
During this hospital stay, what was degree staff cared about you as a person?	0.161	-0.177	0.465	0.349	0.041	-0.283	0.356	0.808

## Discussion

This study of time spent by internal medicine physicians at bedside includes an analysis of multi-level providers (interns, residents, staff), physician wellbeing and patient satisfaction before and during the COVID-19 pandemic.

Our study showed that the mean time spent at bedside per patient decreased by 4.34 minutes when comparing before and during COVID-19 pandemic recordings. Residents had the most substantial decrease in time by 6.10 minutes, followed by interns at 3.33 minutes, then staff at 2.70 minutes. A possible explanation for this observation might be the increased proficiency of the interns and residents as they advance through their residency training, while staff were potentially more accustomed to managing patient care efficiently even amidst the challenges posed by the pandemic.

The insights gained from this study will be valuable for addressing future healthcare disruptions.

This study marks the first direct assessment of bedside time and its correlation with physician wellbeing. Despite physicians expressing a desire to spend more time with patients, this goal remains largely unmet. An anonymous survey conducted across six academic hospitals found that 87% of attendings considered bedside rounds essential to patient care, yet only 31% conducted teaching rounds at bedside.<sup>9</sup> When emergency medicine and hospitalist physicians were surveyed regarding their preferred use of time, 100% expressed a desire to spend “less” or “much less” time documenting in the electronic health record, while 59% wished to dedicate “more” or much more” time to patient interaction.<sup>10</sup> In our study, as interns, residents, and staff spent less time with patients, their survey responses indicated a decline in meaning in work and energy levels.

It is important to note that the internal medicine physician teams included in this study were caring for patients with COVID-19 infection. Thus, it is possible that not all physicians entered COVID-19 positive rooms on a daily basis, with some team members potentially utilizing video calls. This dynamic could have influenced the recorded time spent by physicians in patient rooms, potentially resulting in variations based on individual roles and the extent of direct interaction with COVID-19 positive patients. For instance, physicians who primarily engaged in remote interactions via video calls might have recorded less time in patient rooms compared to those directly involved in bedside care.

Time spent per patient did not correlate with patient satisfaction based on the HCAHPS scores for the physicians participating in the study. This could be attributed to physicians utilizing video calls for patient interactions, making better use of shorter time at bedside, and engaging in effective interprofessional communication with nurses, pharmacists, and respiratory therapists. These and other factors could be studied. A study at Mayo Clinic conducted on internal medicine inpatient teaching services had similar findings; there was no relationship between time spent in patients' room, level of agreement of between patient and physician care plan, and patient experience.<sup>11</sup>

Our study has several limitations. We limited our study to internal medicine physicians. The practices of other specialties, such as surgery or family medicine, are likely different in terms of time spent with the patients at bedside. This study was also limited to internal medicine in the inpatient setting, and allocation of time may vary depending on the specialty as well as inpatient versus outpatient. We had limited responses from patients for the HCAHPS survey from both 2019 and 2020. It is important to note that our study did not assess the outcomes based on whether or not the patient had COVID-19. Lastly, it is possible that other factors that we could not capture influenced the time spent at bedside and physician burnout.

## Conclusions

Our study demonstrates a reduction in the time that internal medicine residents and attending physicians spent at patients' bedside during COVID-19 pandemic. This decrease correlated with diminished physician vitality and

meaning in work but did not show a correlation with patient satisfaction.

**Conflicts of Interest:** The authors have no conflict of interest to disclose.

**Funding and Acknowledgement:** Funding for this project was provided by the Accreditation Council for Graduate Medical Education (ACGME) through the "Back To Bedside" Grant.

**Edited by:** Christina St. Onge (senior section editor); Marcel D'Eon (editor-in-chief)

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