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Increased Productivity and Efficiency Among Cancer Center Clinical Trials Workforce during the COVID-19 Pandemic

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Background:

Independent of the SARS-CoV-2 pandemic, we developed a pilot program tracking productivity allowing research coordinators (RCs) to work from home. However, with the pandemic's onset all RCs were ordered to work from home starting March 25, 2020. Simultaneously, all in-person clinical trial site monitoring visits were prohibited, forcing sponsors to either halt research monitoring operations (10%) or adapt to remote monitoring (90%). We analyzed the productivity and efficiency of RCs during at home days versus in office days to better understand the impact of the pandemic on clinical trial operations.

Methods:

During this study period, RCs performed daily productivity tracking in a RedCap database, whether at the office or at home. Productivity was defined as total data fields entered; efficiency was defined as data fields entered in a given time period. Continuous variables were summarized using the median and interquartile range (IQR). To account for the fact that the data are clustered by RC, comparisons between working location were made using a logistic regression model with a random intercept for RC. A p-value <.05 was considered statistically significant. RCs who entered values incorrectly or who entered/exited
the team during the tracking period were excluded. The data entry work was also categorized into 16 distinct disease groups for analysis.

Results:

There were 2,369 observations recorded by 58 RCs between March 2 and June 29, 2020. RCs spent a median of 2.75 hours (IQR 1.50-4.00) performing data entry at home, compared to a median of 3.00 hours (IQR 2.00-5.25) performing data entry in the office ($P = .5$). All 58 RCs recorded a total of 17,966 hours over 81 days working at home, where 24 of the RCs recorded a total of 1,169 hours over 69 days working from the office (Tables 1 and 2). For all disease groups, the median number of hours worked by RCs from home and the office were 8.00 (IQR 7.92-8.10) and 8.50 (IQR 7.91-10.00), respectively ($P = .046$). On average, RCs entered significantly more data fields at home (95.5, IQR 32-240) compared to at the office (75, IQR 35-145, $P < .001$). There was no significant difference in the number of patients for whom data were entered. There was a trend towards an increase in the median number of data fields entered per hour from home (40, IQR 20-72) compared to the office (21, IQR 13-36, $P = .064$, Tables 3 and 4).

Among the hematology group, the median number of hours worked by RCs from home and the office were 8.00 (IQR 7.90-8.05) and 8.02 (IQR 7.92-8.36), respectively ($P = .1$). The median number of data fields entered by RCs from home and the office were 150 (IQR 47-336) and 74 (IQR 41-164), respectively ($P < .001$), and the median number of data entry hours for RCs from home and the office were 3.50 (IQR 2-5) and 2.62 (IQR 1.56-3), respectively ($P = .004$). There was no significant difference in the number of patients for whom data were entered or the number of data fields per hour.

Among the solid tumor group, the median number of hours worked by RCs from home and the office were 8.00 (IQR 7.95-8.18) and 9.87 (IQR 7.87-10), respectively ($P = .2$). There was no significant difference in the number of data fields entered, the number of data entry hours, nor the number of data fields entered per hour.

Hematology RCs completed a median of 150 (IQR 47-329) data fields per day while the solid tumor RCs completed a median of 65 (IQR 25-159) data fields per day. The multiple myeloma and leukemia groups completed the most data fields per day, 320 (IQR 200-650) and 202 (IQR 58.5-390), respectively (Tables 5 and 6).

Total median time spent on data entry and total median time spent on all other tasks was 2.98 hours and 5.28 hours respectively, meaning 36% of an RCs work was comprised of data entry tasks. With the hematology research RCs bearing the brunt of the data entry workload, per hour, RCs completed
nearly double the average amount of data fields when at home (40, IQR 20-72 vs 21, IQR 13-36). This translates into RCs being 17% more efficient overall when working at home.

Conclusions:

A silver lining to the SARS-CoV-2 pandemic includes increased data entry by RCs, and virtual monitoring and site initiation visits by sponsors and contract research organizations. These have created efficiencies including a greater number of trials opened and a reduction in trial times to open, when compared to
a similar time period in 2019. Preliminary employee satisfaction surveys also reveal a high degree of satisfaction when working from home.

Table 1.

| Hours worked per day at home or office, over time |
|------------------------------------------------|
| ![Graph showing hours worked per day at home or office](image1)

Table 2.

| Data fields completed per day, at home, or office |
|------------------------------------------------|
| ![Graph showing data fields completed per day at home or office](image2)

Table 3.

| Number of data fields completed over time |
|------------------------------------------|
| ![Graph showing number of data fields completed over time](image3)

Table 4.

| Median number of data fields completed per day, by disease team |
|---------------------------------------------------------------|
| ![Table showing median number of data fields completed per day, by disease team](image4) |

Table 5.

| Data fields completed per day, Hematologic or Solid Tumor Groups |
|----------------------------------------------------------------|
| ![Graph showing data fields completed per day, Hematologic or Solid Tumor Groups](image5)

Table 6.

| Data fields per hour by work location |
|--------------------------------------|
| ![Bar chart showing data fields per hour by work location](image6) |
Disclosures

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Author notes

* Asterisk with author names denotes non-ASH members.

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