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Original Research Article

Adaptation of an Academic Inpatient Consultation-Liaison Psychiatry Service During the SARS-CoV-2 Pandemic: Effects on Clinical Practice and Trainee Supervision



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Background: The SARS-CoV-2 pandemic has led to drastic changes in how psychiatric consultation-liaison (C-L) services conduct business and required rapid transition to telepsychiatry. We describe the practice changes implemented to rapid transition to virtual care in a large, academic psychiatry C-L service in response to the pandemic. **Objective:** To describe clinical service structural changes, timelines and impacts on consultation volume as well as present quantitative and qualitative data regarding the experience of this transition from the standpoints of both psychiatric trainees and attending physicians.

Methods: We present the narrative descriptions of transition details based on focused interviews with inpatient C-L leadership. Inpatient consult volume and charge data were gathered using analysis of health system data. Attending and trainee experience of the transition to virtual care were assessed using

anonymous, online surveys. **Results:** During the pandemic, the average weekly consultation volume and average weekly charges were significantly lower compared with prepandemic. Both volume and charges were affected by addition of video consultation capability. Both attendings and trainees had moderate or high comfort and moderate satisfaction with telephone and video consultations. Overall, the trainee satisfaction with supervision, learning, and their consult psychiatry experience did not seem to be affected by the pandemic. **Conclusions:** Our results support the feasibility of the rapid implementation of virtual care in a psychiatric academic C-L service without negatively impacting the learner's consult psychiatry experience. This should provide comfort to academic C-L services that required rapid implementation of virtual care.

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Key words: SARS-CoV-2, telepsychiatry, academic, COVID-19, consultation-liaison, implementation.

INTRODUCTION

The SARS-CoV-2 pandemic (COVID-19) has led to drastic changes in how psychiatric consultation-liaison (C-L) services conduct business. In response to the patient and provider safety challenges associated with the pandemic, many C-L services have undergone an evolution in how they interact with patients, consulting teams, and their own team members.^{1,2} Several different strategies have been taken, including reducing direct patient interactions through utilization of virtual

care, increasing the use of liaison relationships to provide more direct support to providers, and adjusting provider workforce in ways to reduce personal

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protective equipment (PPE) utilization and decrease risk of asymptomatic spread of the virus.^{1,3-5}

While there have been prior descriptions of telepsychiatry C-L by academic hospitals,⁶⁻⁸ to our knowledge, there has not been a detailed description of the rapid transition to virtual care that many organizations had to complete in response to the pandemic.⁹ Here, we describe such practice changes implemented in a large, academic psychiatry C-L service. In addition to details regarding clinical service structural changes, timelines, and potential impacts on consultation volume, we also present quantitative and qualitative data regarding the experience of this transition from the standpoints of both psychiatric trainees and attending physicians.

MATERIALS AND METHODS

To obtain information regarding the service transitions, focused interviews were conducted with inpatient C-L leadership. They provided narrative descriptions of the transition, including details regarding workflows, timelines, and team structure. Inpatient consult volume and charge data were gathered using analysis of health system data warehouses. Given that charge data are felt to be proprietary by the hospital system, we present this data as a percentage compared with prepandemic values, as opposed to actual dollar amounts. Data were downloaded into a database (Microsoft Excel) and analyzed using simple database tools. Attending and resident experience of the transition to virtual care were assessed using anonymous, online surveys, which were disseminated and analyzed using an online software package (Qualtrics). C-L Psychiatry Fellows were not included in the survey study, as they functioned in a supervisory capacity at the start of the pandemic but transitioned to performing direct patient care mid-way through the study period. Thus, it was not clear which survey version applied to them, and because they were a small group ($n = 2$), the decision was made to not include them in this study. Medical students were not allowed to continue to work with the consult team starting with the onset of the pandemic, and they were thus also not included in the survey. Provider comfort and satisfaction with virtual care consultation, as well as their agreement with statements regarding their experience were assessed on a 10 point Likert scale with defined values of Low (1-4), Moderate (5-7), and High

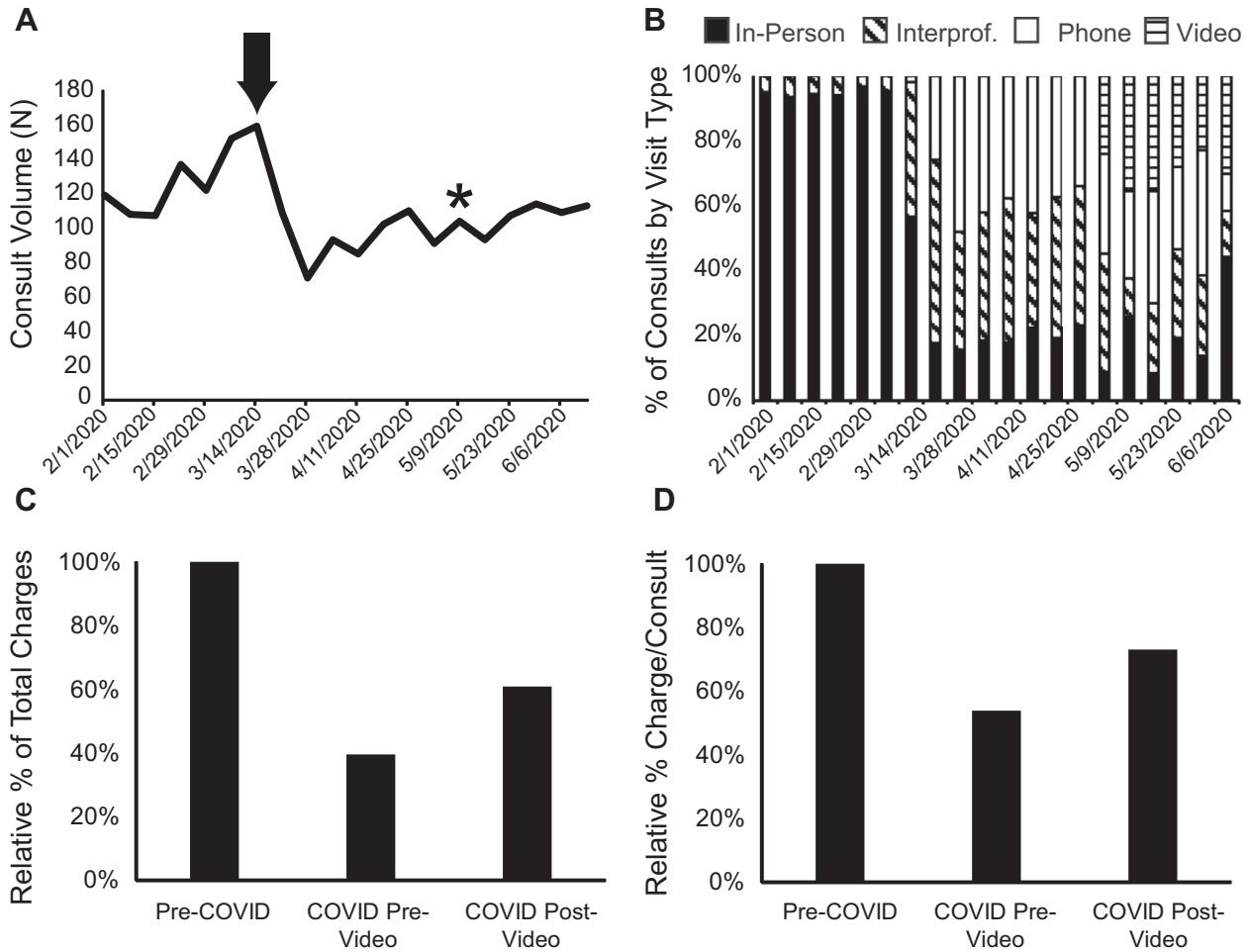
(8-10) comfort/satisfaction/agreement. Means and standard deviations were calculated. When appropriate, paired and unpaired *t*-tests were conducted within Microsoft Excel. Narrative feedback from the surveys was evaluated by both authors, and consensus was met regarding recurrent themes. All activities requiring the responses of human subjects (online surveys) were approved through the Institutional Review Board of the University of North Carolina at Chapel Hill.

RESULTS

The inpatient psychiatry consult service consists of teams of 2 attendings, 4-5 residents, 2 fellows, 2-3 medical students, and several other learners. They provide consultation to all 900+ inpatient adult medical and surgical beds in our large academic teaching hospital. In the month of February, the average weekly inpatient consult volume was 113 consultations, and almost all of these were completed in-person (Figures 1A and 1B). This value is slightly lower than the average weekly consult volume from July 1, 2019 to January 31, 2020 (145.5 consults/wk). In response to calls to reduce patient and provider exposure, as well as preserve PPE as a result of COVID-19, the operations of the consultation service shifted to a largely virtual mode of care delivery. On March 16, the team reduced the number of in-person consultations, utilizing telephones to conduct many patient interviews and discussions with primary treatment teams. All members of the consultation team remained in the hospital, with the exception of medical students, who were dismissed from clinical work per the decision of medical school leadership. On March 23, in an effort to further reduce provider exposure, the team shifted to have just 1 attending physician and 1 trainee in the hospital. The remainder of the team worked remotely from their home or office, still largely conducting patient interviews via telephone. The attending-trainee team that remained in the hospital prioritized seeing those patients that were felt to need in-person evaluation.

Both patient volume (Figure 1A) and consultation charges fell (Figure 1C) with the onset of the pandemic and the transition to virtual care. By April 11, patient encounter volume fell by 25.2% (Figure 1A) and charges fell by 66.9% compared with prepandemic

FIGURE 1. Analysis of Psychiatry Consult Volume, Type, and Billing Charges: (A) Weekly Psychiatry Consult Volume Completed From February 1, 2020 to June 20, 2020. The arrow indicates initiation of COVID-19 pandemic-related changes to the C-L service structure and function. The * indicates initiation of capability to perform video consultations. (B) Weekly Psychiatric Consultation Distribution by Consult Type



Interprof. = Interprofessional consultations. (C) Psychiatry Consultation Charges Presented as a Percentage of the Prepandemic Billing Charges. (D) Psychiatry Consultation Charge Per Consult Presented as a Percentage of the Prepandemic Value. C-L = consultation-liaison.

(Figure 1A). In addition, the type of consultations performed shifted to a mix of in-person, telephone, and interprofessional consultations (Figure 1B). Interprofessional consultations involved direct conversations with requesting medical/surgical teams that led to formal documentation of recommendations in the electronic medical record, as well as a formal discussion of these recommendations with the requesting team. In these cases, the patients are never personally evaluated by the psychiatry consultant. These consultations were documented in a similar manner to direct consultation, with the exception of clear statements in the chart

regarding the nature of the consultation and the fact that the patient was not directly examined by the consulting provider. They are billed using a specific set of time-based Current Procedural Terminology codes (99446, 99447, 99448, 99449), which are reimbursed at a lower rate than in person or video consultations. C-L service line leaders noted that several meetings were held with health system coders and compliance regarding the appropriate process and documentation for all virtual consultations. Over the next few weeks, consultation volume slowly increased but continued to remain below prepandemic levels. On May 11, the team

TABLE 1. Attending and Trainee Survey of Virtual Care Transition

Survey Prompt	Attending		Trainee		P value
	Mean	SD	Mean	SD	
Comfort (1 = very uncomfortable; 10 = very comfortable)					
In person consultations	8.25	0.83	7.56	1.71	0.388
Telephone consultations	7.00	1.41	6.80	1.66	0.846
Video consultations	8.25	1.30	7.00	1.66	0.241
Interprofessional consultations	5.75	0.43	7.86	1.46	0.012*
Satisfaction (1 = very unsatisfied; 10 = very satisfied)					
Performing/supervising Telephone consultations	5.00	1.00	6.40	2.15	0.157
Performing/supervising Interprofessional consultations	4.50	0.87	7.43	2.32	0.024*
Performing/supervising Video consultations	7.25	0.83	6.13	1.45	0.156
Overall Psychiatry consults supervision experience before COVID-19 pandemic	9.00	0.71	8.10	1.87	0.237
Overall Psychiatry consults supervision experience during COVID-19 pandemic	5.75	1.79	8.00	1.61	0.113
Psychiatry consults experience before COVID-19 pandemic			7.50	1.20	
Psychiatry consults experience during COVID-19 pandemic			7.30	1.27	
Overall Psychiatry consults experience			7.50	1.28	
Agreement (1 = strongly disagree; 10 = strongly agree)					
The changes made to the psychiatry consults rotation during the COVID-19 were necessary.	9.00	1.22	8.20	2.27	0.459
The ability to perform video consults was important during the COVID-19 pandemic.	10.00	0.00	6.88	2.62	0.016*
For most patients, telephone consults were sufficient to get the information needed.	4.00	2.74	7.20	2.75	0.139
For most patients, video consults were sufficient to get the information needed.	7.25	0.83	8.00	2.29	0.466
Given the choice, I prefer performing video consults over telephone consults.	9.75	0.43	4.11	2.28	0.000*
Attending supervision for consults during COVID-19 was just as good as before COVID-19.	3.75	2.17	7.50	2.11	0.047*
The trainee psychiatry consult learning experience during COVID-19 was as good as prepandemic.	2.25	1.92	7.80	1.47	0.009*
The COVID 19 pandemic likely negatively impacted the trainees' view of the psychiatry consults rotation.	5.50	2.87	2.90	2.59	0.226

Bold and italics indicated values that were statistically significantly different between "Attending" and "Trainee" for that specific question. SD = standard deviation.

* P value < 0.05.

gained the capability to perform video consultations, with the use of re-deployed staff members who served as "telepresenters." These telepresenters used tablets to initiate video consultations using a Health Insurance Portability and Accountability Act-compliant, secure video platform for those consultation team members that were working remotely. Note, there were rare instances before the availability of telepresenters that a member of the C-L team that was in the hospital would use videoconferencing software to connect a patient with a provider who was working remotely. However, this practice was limited, as it was quickly recognized that it was simply more efficient for the "in-house" provider to simply perform the consultation, while allowing the remote provider to do other duties. Over the next 6 weeks after introduction of the telepresenters, video consults accounted for an average of 29.4% of all consultations performed (Figure 1B). In June, with ready availability of PPE and the creation of specific workspaces to allow for physical distancing, the consultation team moved to having 2 trainee physicians in the

hospital, along with 1–2 attending physicians. This led to an increase in in-person consultations (Figure 1B).

The average weekly consultation volume increased slightly following initiation of video consults (Figure 1A), with total charges increasing at a greater rate (Figure 1C). During the video consultation era, the average weekly consultation volume was 106.7 consults/wk, which was significantly lower than the prepandemic volume ($P = 0.02$). Average weekly charges during the video consultation era were 39.1% lower than prepandemic but 35% higher than the pandemic period before video consultation (Figure 1C). The average charge per consultation was 26.9% lower in the video consultation era compared with prepandemic but 26.3% higher than the pandemic period before the video consultation era (Figure 1D).

Four attendings (80%) and 10 residents (62.5%) completed an anonymous online survey regarding their experience with virtual care. Overall, both attendings and trainees had moderate or high comfort with all forms of virtual consultations (Table 1). Among

the attendings, comfort was higher for telephone, video, or in-person consultations over peer-to-peer (interprofessional) consultation. However, attendings had a significantly lower comfort level than trainees with interprofessional consultation ($P = 0.01$). In terms of satisfaction, attendings reported low satisfaction for interprofessional consultations and moderate satisfaction for telephone and video consultations. Trainees reported moderate satisfaction for all 3 virtual consultation types and had significantly higher satisfaction with interprofessional consults ($P = 0.02$). Attending satisfaction of their supervision of residents during the pandemic was rated at moderate, which was significantly lower than prepandemic ($P = 0.043$). However, resident satisfaction with their supervision by attendings did not change during the pandemic and remained high. Overall, the trainee satisfaction with their consult psychiatry experience was moderate and did not seem to be affected by the pandemic. Both groups felt strongly that the changes made in the structure of the consult service during the pandemic were necessary. However, while attendings strongly agreed that the ability to perform video consultations was important, trainees had only moderate agreement with this statement ($P = 0.016$). Attendings only weakly agreed that telephone consultations were sufficient to get needed information, whereas trainees showed moderate agreement with this statement. Attendings strongly preferred video consults over telephone consults, but trainees did not ($P < 0.0001$). Similarly, attendings felt that both trainee supervision and learning were worse during the pandemic, but trainees did not ($P = 0.047$ and $P = 0.0089$, respectively).

Review of narrative feedback from attendings showed 5 common themes (Supplementary Table 1). First, they felt less comfortable connecting with trainees and patients during the pandemic. Second, they felt the move to virtual care negatively impacted the liaison relationship with other teams and created difficulty in connecting with the trainees. Third, they felt it was important to have the capability to perform video consultations. Fourth, they worried that the experience for the trainees was significantly reduced in quality because of a change in the supervision experience. Finally, there was clear appreciation of the need for the rapid changes made during the pandemic. In hindsight, they wished that there was a quicker transition to video consultations, and there was a desire to keep in-person consultations more active. Moving forward, they

had concerns regarding balancing supervision, patient care, and financial concerns, recognizing that video or in-person consultations reimburse at a higher level than telephone or interprofessional consultations.

Review of narrative feedback from residents showed 6 common themes (Supplementary Table 2). First, most trainees felt less comfortable conducting virtual care, stating it was more difficult to connect with patients, and they had less confidence in their assessments. Second, the majority of trainees felt working remotely led to increased efficiency in some aspects of their work, but efficiency was negatively impacted when they conducted video consultations by waiting for telepresenters to be available. Many also found video consultations “frustrating”, when attempting to interview patients who had difficulty engaging in virtual interactions (delirium, neurocognitive disorders, mania, etc.). Additional frustration was felt as a result of logistical and technical challenges with conducting video consultations. Most trainees had a very positive view that teaching was of high quality both before and during the pandemic. Finally, there was consensus that the transition to virtual care was challenging but necessary during the pandemic.

DISCUSSION

Here, we present a detailed timeline of a rapid transition in the structure and method of service delivery on a busy academic inpatient psychiatric C-L service in response to the COVID-19 pandemic. In response to clear guidance from health system leadership, the C-L service abruptly transitioned to a largely liaison model supplemented with telephone consultation. This was later supplemented with the addition of the capability to perform video consultations. Clearly, the abrupt transition to a new model of care led us to a reduction in overall consultation volume, with a concomitant reduction in consultation charges. While consultation volume dropped precipitously, the drop in consultation charges was even greater. This is presumably because a large proportion of consultations during the initial pandemic period were performed as interprofessional consultation or using telephone. Both of these types of consultations are compensated at much lower levels than in-person or video consultations. Indeed, as the pandemic progressed and video consultations became possible, the average charge per consultation increased.

While in-person consultations also increased during this time as a result of greater access to PPE, it seems that incorporation of video consults led to the capability of the C-L team to provide better patient care while also allowing for higher reimbursement for their work. It also seems that earlier adoption of video consultation capabilities would have been beneficial to patients, requesting medical/surgical teams, and the C-L team.

Several factors led to a delay in video consult implementation. First, at the onset of the pandemic, the health care system had only 1 approved video platform that had not been used in the inpatient setting. Transitioning this system for inpatient work proved difficult, and it took some time for alternative video platforms to be approved. Second, even when alternative video platforms were identified and implemented, there was no infrastructure to facilitate video psychiatric consultations. Most patients undergoing psychiatric consultation do not have access to electronic devices that could facilitate video conferencing, and the health care system did not have a supply of such devices to provide. Further, it was not felt that hospital-supplied devices could safely be left with patients for videoconferencing to psychiatric consultants. Thus, a hospital staff member was needed to serve as a telepresenter to facilitate the consultations. Because many psychiatric consultations can take greater than 30 minutes, clinical staff were not felt to be appropriate to serve in this role, and many administrative staff that could have served as telepresenters were not allowed in the hospital in an effort to reduce PPE use. Even once such staff were allowed to be present in the hospital, there were no staff identified to possibly serve in this role. Financial concerns of hiring/paying a staff member to serve in this capacity were often cited. However, based on our estimate of an average charge/consult increase after implementation of video consultations, having the capability to perform video consultations from the start of the pandemic (an additional 7 wk) would have led to an estimated overall increase in charges of \$36831.73.

In addition to the financial concerns raised by the reliance on telephonic or interprofessional consultations, the attending psychiatrists were also greatly concerned about the quality of care provided by these types of services. While there is existing literature supporting the efficacy of video psychiatric consultations, there is little evidence to support the efficacy of telephonic inpatient psychiatric consultations. The attending psychiatrists expressed only moderate

confidence that telephonic consultation was sufficient to get the information needed, and their confidence in interprofessional consultations was even lower. They placed a high emphasis on the capability to perform video consultations when face-to-face interactions were limited by safety issues. Interestingly, while the trainees had similar levels of comfort and satisfaction with performing telephone and video consultations compared with attending physicians, they actually showed a preference to perform telephone consultations over video consultations. This may reflect the view by many trainees that telephone consultations were more efficient to perform and less vulnerable to technologic and logistical challenges. Attending physicians also expressed lower levels of comfort and satisfaction with interprofessional consultations compared to trainees, who seemed to hold a relatively positive view of this type of consult. This is most likely related to the relative efficiency of these consultations for the trainees.

From an education standpoint, trainees had positive views of attending supervision before the pandemic, and they did not feel the learning experience was diminished as a result of changes in response to COVID-19. In fact, they felt that the pandemic did not negatively impact their view of the psychiatry consults rotation. Interestingly, this differed greatly from the attendings' expectations of the trainee experience. They overwhelmingly felt that their supervision and teaching was worse during the pandemic. It is unclear why there is such a disconnect in the trainee experience and attending perception. One possibility is that the attendings' own experience during the pandemic was less satisfying compared with prepandemic (Table 1), and they assumed that the trainees felt the same way. In fact, there was no change in trainee satisfaction with their supervision experience as a result of the pandemic, which seems a testament not only to their resilience but also to the continued perceived excellence in teaching and supervision by the attending psychiatrists. Overall, it seems that despite the faculty's misgivings, the trainee experience on the consult service was not impacted in a significantly negative way as a result of the transition to virtual care in response to the pandemic.

CONCLUSIONS

In summary, our evaluation of the virtual care transition on an inpatient academic psychiatry consult service

demonstrates that the pandemic had a clear impact on the overall clinical volume in the early phase of COVID-19. This volume reduction also dramatically reduced physician charges for services, and this charge reduction was amplified by the transition to virtual care. Some of this charge reduction was offset by utilization of video consultations, but the service continued to operate with reduced charges because of the virtual care transition. Our findings suggest that any transition to virtual care needs to be made thoughtfully by service administrators, with a clear eye on financial health because of changes in charges and reimbursement. From an education standpoint, the abrupt transition led to logistical challenges, but overall, no significant change in trainees' perception of their learning experience. This was in spite of the fact that the psychiatry faculty held strong misgivings about their ability to continue to provide high-quality

supervision and training during this time. Our work should reassure faculty that such a transition, if done well, does not negatively impact trainees.

SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.psych.2020.11.002>.

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