

Telemedicine Use During the COVID-19 Pandemic by Resilient Rheumatology Providers: A National Veterans Affairs Follow-up Survey

Jasvinder A. Singh¹, John S. Richards², Elizabeth Chang³, Amy M. Joseph⁴, and Bernard Ng⁵

ABSTRACT. Objective. To assess rheumatology provider experience and practices at Veterans Affairs (VA) facilities during the coronavirus disease 2019 (COVID-19) pandemic.

Methods. We performed an anonymized follow-up national cross-sectional survey (November 5, 2020 to January 1, 2021) to assess provider resilience, experience, practices, views, and opinions about changes to medications and laboratory monitoring of veterans with rheumatic diseases.

Results. Of the 143 eligible VA rheumatology providers, 114 (80%) responded. Compared to the original survey, fewer providers reported using telephone visits (78% vs 91%, $P = 0.009$), and more used clinical video telehealth (CVT; 16% vs 7%, $P = 0.04$) or in-person visits (76% vs 59%, $P = 0.007$). Most providers were somewhat or very comfortable with the quality of clinical encounters for established but not new patients for telephone, video-based VA Video Connect (VVC), and CVT. The mean 2-item Connor-Davidson Resilience Scale score was 6.85 (SD 1.06, range 0–8), significantly higher than the original April–May 2020 survey score of 6.35 (SD 1.26; $P = 0.004$). When adjusted for age, sex, and ethnicity, high provider resilience was associated with significantly higher odds of comfort with technology and the quality of the VVC visit for the following: (1) established patients (odds ratio [OR] 1.72, 95% CI, 0.67–4.40 and OR 4.13, 95% CI 1.49–11.44, respectively) and (2) new patients (OR 2.79, 95% CI 1.11–7.05, and OR 2.69, 95% CI 1.06–6.82, respectively).

Conclusion. Reassuringly, VA rheumatology providers became increasingly comfortable with video visits during the first 10 months of the COVID-19 pandemic. High provider resilience, and its association with better quality CVTs, raise the possibility that video visits might be an acceptable substitute for in-person visits under appropriate circumstances.

Key Indexing Terms: COVID-19, rheumatic disease management, rheumatology provider, telemedicine, telehealth, veterans

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The coronavirus disease 2019 (COVID-19) pandemic led to substantial morbidity and mortality,¹ as well as interruption of healthcare delivery. Face masks, physical distancing, and stay-at-home orders were implemented to abate the pandemic.² An undesirable consequence of the stay-at-home directives was the failure or delay in seeking medical care for acute and chronic medical conditions.³ Rheumatologists pivoted to virtual care for new referrals to rheumatology as well as to maintain continuity of care.

A survey of Veterans Affairs (VA) rheumatology providers early in the pandemic in April–May 2020 found that most providers were comfortable providing virtual care to established stable patients with autoimmune inflammatory rheumatic diseases (AIIRDs) and to a significantly smaller proportion to new patients or those with active disease.⁴ High provider resilience was associated with comfort with the technology for telemedicine in our original survey.⁴ In June–July 2020, many VA healthcare centers reopened their facilities to in-person visits but at limited capacity. It was thus timely to repeat the national VA rheumatology provider survey to evaluate provider resilience and changes in providers' view of telemedicine and their comfort with it in managing patients with AIIRD. VA is the largest integrated healthcare system in the US⁵ and provides care to more than 9 million veterans annually; 900,000 received care through VA telemedicine in 2019.⁶ Most VA facilities saw a significant increase in telemedicine visits, using telephone, clinical video telehealth (CVT; a video visit with the patient, with a facilitator to assist, at a clinic remote from the provider), or VA Video Connect (VVC; a video visit without a facilitator with the patient at home) in March 2020, with a reduction in in-person outpatient visits.

Our study objectives for this national rheumatology provider follow-up survey were to examine the following: (1) providers' experience/practices (ie, modalities of VA rheumatology healthcare delivery) and associated quality of clinical encounters; (2) providers' views/opinions of outpatient management of rheumatic diseases (RDs); (3) modification to laboratory monitoring for disease-modifying antirheumatic drugs (DMARDs) and immunosuppressive agents; and (4) provider resilience and its association with various modalities for outpatient care of veterans with RDs.

METHODS

We performed a follow-up cross-sectional survey of a national cohort of VA rheumatology providers listed as members of the VA Rheumatology Consortium (VARC), a volunteer working group of VA rheumatology providers who practice across the US, previously surveyed in April–May 2020. VARC maintains an email list of its participants, and the survey was sent to this list.

We updated our April–May 2020 survey questions⁴ to keep them relevant to the study focus and to allow the examination of time trends, including adding questions related to laboratory monitoring for high-risk medication toxicity. We piloted our survey with 5 rheumatologists and finalized the content. We emailed an anonymized survey to all VARC members on November 5, 2020, using the Qualtrics survey software; all responses were deidentified. Nonresponders received reminders to complete the survey from November 13 to December 13, 2020. The survey closed on January 25, 2021. We used June 2020 as an anchor for several

questions for 2 reasons: (1) several VA medical centers started allowing in-person patient visits at this time; and (2) this was time after the completion of the first survey in April–May 2020, so it would avoid overlap with the first survey, and allow comparisons to be made. The Human Ethics Committee at the University of Alabama at Birmingham (UAB) approved this study, and all investigations were conducted in conformity with ethical principles of research (UAB X120207004). The institutional review board waived the need for an informed consent for this anonymous survey. Key differences in phrasing of questions between this follow-up vs the original survey are provided in Supplementary Table 1 (available with the online version of this article).

We assessed providers' experiences, views, and opinions regarding various aspects of the outpatient management of veterans with RD, including but not limited to the following: (1) the best healthcare delivery modality (in-person, telephone, or video visit), and which diseases were appropriate for telephone or video visits; (2) the current modes of outpatient rheumatology care delivery; (3) providers' use of technology and their comfort with the technology used ("What is your level of comfort with technology with providing healthcare?"), and the quality of the clinical encounter during the outpatient visits ("What is your level of comfort with the quality of the clinical encounter when providing healthcare?"); and (4) the challenges with and the frequency of laboratory monitoring for high-risk medication toxicity.

We used a validated 2-item Connor-Davidson Resilience Scale (CD-RISC2; score 0–8),⁷ to measure provider resilience (or stress-coping ability), where higher scores correspond with higher resilience, with a mean score of 5.9–6.9 in the general population,^{7,8,9} and a score of 6.5 in physicians.¹⁰

We assessed summary statistics as proportions or mean (SD). Comparisons with the baseline survey were done using *t* test for continuous variables (means; eg, resilience scores) or comparison of proportions for categorical variables, as appropriate; *P* values were provided based on these comparisons. For those who responded to both baseline and follow-up surveys, a paired *t* test was done for the comparison of means. The results from the April–May survey (ie, the last survey), and the associated *P* values are shown in the Results section text but not in tables, since tables present only the new data from the current survey.

We used multivariable-adjusted logistic regression analysis, adjusting for provider age, sex, and race/ethnicity, to assess whether provider resilience (categorized as high resilience, score of 7 or 8; ie, scores higher than the general population) was independently associated with comfort with technology and with the quality of the clinical visit in providing virtual care to new or established clinic patients. The outcome for comfort with technology and comfort with the quality of the clinical visit was defined as somewhat or very comfortable. We obtained information on sex and age for all potential participants from Healthgrades (www.healthgrades.com) and other publicly available search websites. Analyses were done using SPSS v27 (IBM Corp.).

RESULTS

Of the 143 eligible responders (after removing 10 duplicate/incorrect email addresses), 114 VA rheumatology providers completed this follow-up COVID-19 VA provider survey (ie, the overall response rate was 80%). Of these, 64 providers (56%) reported that they had participated in the original VA COVID-19 survey, and 50 providers were first-time survey responders.

Of the responders, 32% were aged 45–54 years; 51% were White, 31% Asian, 10% Hispanic, and 6% African American; 66% were female; and 76% had practiced rheumatology for at least 10 years (Table 1).

Nonresponder characteristics. Potential responders (ie, all eligible responders; *n* = 143) to this current survey were slightly older

Table 1. Responder characteristics for the national VA rheumatology provider COVID-19 follow-up survey.

	Study Cohort, n = 114 ^a , n (%)
Age, yrs	
25–34	2 (2)
35–44	25 (24)
45–54	34 (32)
55–64	35 (33)
≥ 65	9 (9)
Sex	
Male	36 (34)
Female	69 (66)
Race/ethnicity	
White	54 (51)
African American	6 (6)
Hispanic	10 (10)
Asian	32 (31)
Other	3 (3)
Rheumatology practice, yrs	
≤ 5	6 (6)
6–9	17 (16)
10–20	43 (40)
> 20	39 (36)
No. of rheumatology FTEs at facility	
1	17 (16)
2	26 (25)
≥ 3	61 (59)
Completed the previous VA COVID-19 provider survey	64 (62)

^a Of the 114 who opened the questionnaire, 112 indicated they provided care to veterans and completed the questionnaire; the percentages are for nonmissing responses for each variable. Missing data: age (n = 9), sex (n = 9), race/ethnicity (n = 9), years practiced rheumatology (n = 7), rheumatology FTEs (n = 10), and completed previous survey (n = 10). Percentages indicate valid percent with responders as the denominator. COVID-19: coronavirus disease 2019; FTE: full-time equivalent; VA: Veterans Affairs.

(16% vs 9% were aged ≥ 65 yrs) and more likely to be male compared to the survey responders (45% vs 34%).

RDs and adjudicated appropriateness of healthcare delivery methods later in the COVID-19 pandemic. The proportion of rheumatology providers who chose telephone or VVC as the best modality for follow-up of established patients varied widely across RDs (Figure 1), with a range of 90–100% for gout, osteoporosis, polymyalgia rheumatica (PMR), and osteoarthritis (OA), to 9–20% for patients with systemic lupus erythematosus (SLE), systemic sclerosis (SSc), vasculitis, rheumatoid arthritis (RA), or spondyloarthritis (SpA) who require changes in immunosuppressive, glucocorticoid, DMARDs, and/or biologic medications (Figure 1). Compared to the original April–May 2020 survey, the use of telephone visit was lower by 10–20% for each condition, whereas VVC use and in-person visits were higher by approximately 10% each.

Provision of healthcare safely and efficiently to veterans. Providers responded to these general questions regarding healthcare provision, regardless of the type of visit. Forty-four percent of responders agreed or strongly agreed that they were able to provide healthcare efficiently, 72% were able to provide it safely, and 72% spent a lot of extra time providing this care. A higher proportion spent extra time providing care compared with the baseline survey (72% vs 51%, $P < 0.001$).

Current modes of outpatient rheumatology care delivery and recent changes since June 2020. Compared to the original survey, fewer rheumatology providers were using telephone visits (78% vs 91%, $P = 0.009$), and more used CVT (16% vs 7%, $P = 0.04$) and in-person visits (76% vs 59%, $P = 0.007$); VVC visits remained essentially unchanged (60% vs 59%; $P = 0.88$; Table 2). A significant proportion of providers reported an increase of ≥ 50% in the following types of visits related to COVID-19, at rates higher than the original survey: 73% for telephone visits and 51% for VVC visits, but only 2% for CVT

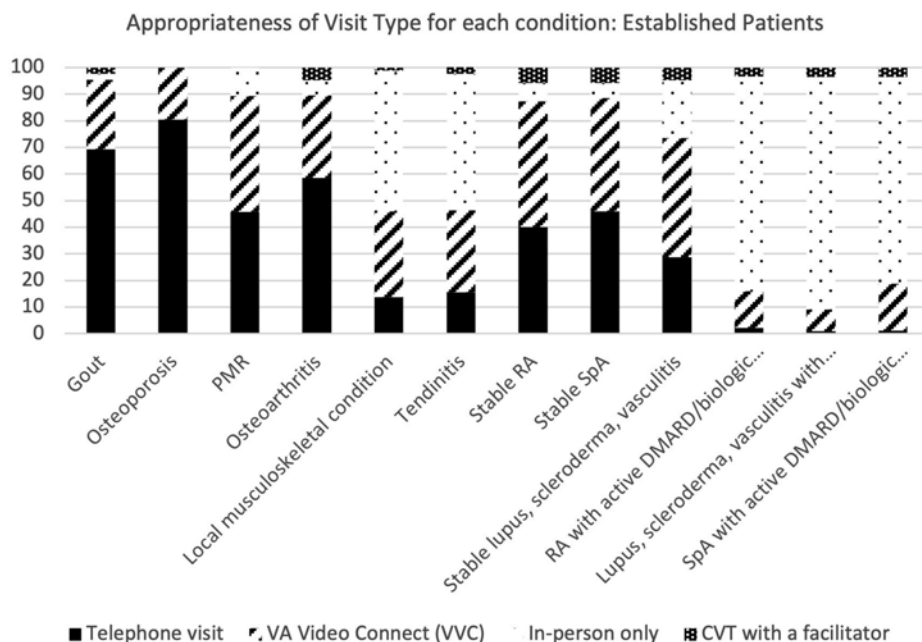


Figure 1. Provider preferred clinic follow-up appointment modality for established patients due to COVID-19, by the type of rheumatic disease during the COVID-19 pandemic, since June 2020. Y-axis represents the percent of all valid nonmissing responses. The number of missing responses for each condition varied (n = 16 to n = 18). Providers responded to the question, “Which of the following conditions in established patients do you feel are best suited for telephone or video-based visits during follow-up during the COVID-19 pandemic? Choose the single best response.” This was followed by listing each rheumatic condition in a separate row. Response options included telephone, VA Video Connect, and in-person visit. COVID-19: coronavirus disease 2019; CVT: clinical video telehealth; DMARD: disease-modifying antirheumatic drug; PMR: polymyalgia rheumatica; RA: rheumatoid arthritis; SpA: spondyloarthritis; VA: Veterans Affairs.

Table 2. The type of hardware used and the healthcare setting used to provide VA rheumatology health care during the COVID-19 pandemic since June 2020.

	Telephone	VVC	CVT With Facilitator	In-person				
Current use	89 (78)	69 (60)	18 (16)	87 (76)				
	VA Laptop Computer Only	Personal Desktop and/or Laptop Computer	VA Desktop Computer Only					
Hardware used to provide VA health care	32 (28)	42 (37)	82 (72)					
	Working 100% From VA MC/clinic	Working 100% Off-site	Working Off-site and From VA MC/clinic					
Location of VA healthcare provider ^a	48 (49)	2 (2)	49 (49)					
	Telephone Visit	VVC	CVT	Imaging	VA Microsoft Outlook Email	VA Network Drive	CPRS	VA VPN
Difficulty of access ^b	26 (29)	65 (73)	27 (30)	51 (57)	33 (37)	42 (47)	44 (49)	38 (43)
No previous attempt to use	5 (6)	17 (19)	56 (64)	17 (19)	6 (7)	15 (17)	4 (5)	16 (18)

Values are expressed as n (%). ^a Missing, n = 15. ^b Missing, n=25; Difficulty = impossible, very difficult or somewhat difficult; difficulty accessing from home or a non-VA setting since June 2020. COVID-19: coronavirus disease 2019; CPRS: computerized patient record system; CVT: clinical video telehealth; MC: medical center; VA: Veterans Affairs; VPN: virtual private network; VVC; VA Video Connect.

visits (Supplementary Table 2, available with the online version of this article).

Providers' use of technology and their comfort with the technology used and the quality of outpatient visits in providing VA health-care 8 months into the COVID-19 pandemic. Compared to April–May 2020, VA rheumatology providers more commonly used VA-issued laptops (28% vs 18%, $P = 0.08$) and less commonly used their personal desktop or laptop (37% vs 50%, $P = 0.05$; Table 2). Nearly half (49%) were working entirely at the VA, up from 31% in the previous survey ($P = 0.007$), with 2% working exclusively from home and the remaining 49% working from both locations.

The proportion of rheumatology providers reporting difficulty using VA resources from non-VA/home settings for providing care/accessing VA ranged from 29% for telephone visit to 57% for accessing radiographic images, and 73% for VVC (Table 2).

Comfort with technology. For established patients, the proportion of responders who were somewhat or very comfortable with technology in providing healthcare to established clinic patients using each of these methods was essentially unchanged compared to the original survey (Figure 2A). For new patients, a greater number of responders were somewhat or very comfortable providing healthcare to new clinic patients compared to the original survey, in terms of telephone visits (40% vs 25%, $P = 0.02$) and VVC visits (47% vs 34%, $P = 0.05$). Approximately 30% were comfortable with CVT visits (no previous comparator question; Figure 2B).

Comfort with the quality of outpatient visits since June 2020 (no previous data). For established patients, the proportion of responders who were somewhat or very comfortable with the

quality of clinical encounters were as follows: (1) telephone visits, 63%; (2) VVC visits, 63%; and (3) CVT visits, 32% (Figure 2B). For new patients, the proportion of responders who were somewhat or very comfortable with the quality of clinical encounters with new clinic patients were as follows: telephone visits, 27%; VVC visits, 47%; and CVT visits, 27% (Figure 2B).

Improvement in comfort with the quality of outpatient visits since June 2020 (no previous data). For established patients, the proportion of providers whose comfort with the quality of the clinical encounter improved since June 2020 were as follows: telephone visits, 66%; VVC visits, 67%; and CVT visits, 31%. For new patients, the proportion of providers whose comfort with the quality of the clinical encounter improved since June 2020 were as follows: telephone visits, 46%; VVC visits, 58%; and CVT visits, 27%.

Laboratory monitoring for high-risk medication use in veterans with RDs since June 2020. This was a new question/domain assessed only in the follow-up survey (ie, it was not assessed in the April–May 2020 survey). According to the providers, the mean proportion of patients reported to be getting their laboratory monitoring done at various locations were as follows: VA medical center, 55%; VA community-based outpatient clinic (CBOC), 27%; local non-VA laboratory facility, 3%; non-VA primary care provider office, 2%; and 12% of veterans were missing/skipping the laboratory monitoring testing (Table 3).

Rheumatology providers reported some difficulty getting veterans' laboratory monitoring tests completed since June 2020: very difficult (3%), somewhat difficult (58%), neither difficult nor easy (14%), somewhat easy (19%), and very easy (4%; Table 3).

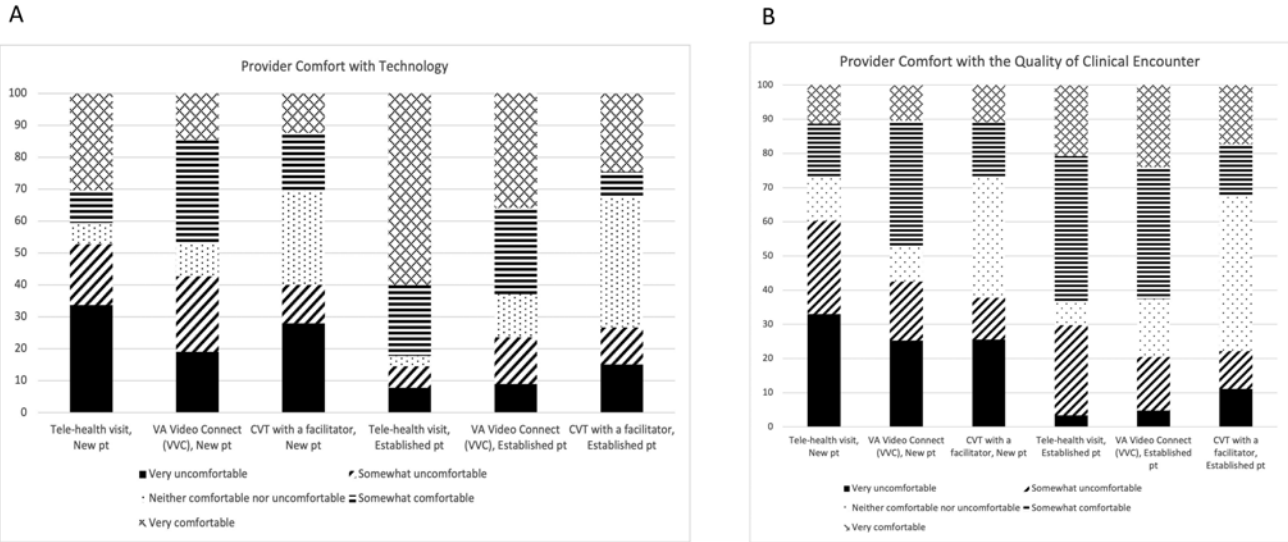


Figure 2. Provider comfort with (A) technology in providing care to new or established patients using each modality, and (B) the quality of clinical encounter during COVID-19 pandemic, since June 2020. The Y-axis represents the percent of all valid nonmissing responses. Providers responded to 2 questions: (A) “What is your level of comfort with technology with providing healthcare to new patients in your clinic during the COVID-19 pandemic, since June 2020? What is your level of comfort with technology with providing healthcare to established patients in your clinic during the COVID-19 pandemic, since June 2020?”; and (B) “What is your level of comfort with the quality of the clinical encounter when providing healthcare to new patients in your clinic during the COVID-19 pandemic, since June 2020? What is your level of comfort with the quality of the clinical encounter when providing healthcare to established patients in your clinic during the COVID-19 pandemic, since June 2020?” Each question was followed by listing telephone, VA Video Connect, and in-person visit in a separate row. Response options for each question was a 5-point ordinal scale: very uncomfortable, somewhat uncomfortable, neither comfortable nor uncomfortable, somewhat comfortable, and very comfortable. COVID-19: coronavirus disease 2019; CVT: clinical video telehealth; pt: patient; VA: Veterans Affairs.

Table 3. Rheumatology provider–reported laboratory monitoring tests being completed since June 2020 for rheumatic disease medication toxicity monitoring.

	VA Medical Center ^a	VA Community-based Outpatient Clinic	Local, Non-VA Laboratory ^a	Local, Non-VA Primary Care Office ^a	Missing or Skipping Tests ^a
Average (SD)	55% (21%)	27% (19%)	3% (6%)	2% (4%)	12% (12%)
Difficulty in monitoring labs ^b , n (%)	Very Difficult 3 (3)	Somewhat Difficult 57 (58)	Neither Difficult nor Easy 14 (14)	Somewhat Easy 19 (19)	Very Easy 5 (5)

^a Missing, n = 19. ^b Missing, n = 16. VA: Veterans Affairs.

A majority of the providers indicated optimal frequency of laboratory monitoring since June 2020 as follows: methotrexate (MTX) or leflunomide (LEF), every 3 months (93%); immunosuppressive drugs, every 3–4 months (92%); sulfasalazine (SSZ), every 3–4 months (79%); Janus kinase (JAK) inhibitors, every 3–4 months (87%); tumor necrosis factor inhibitors (TNFi), every 4–6 months (96%); non-TNFi biologics, every 4–6 months (88%); belimumab, every 3–6 months (99%); interleukin (IL)-17 or IL-23 inhibitor biologics, every 3–6 months (100%); and glucocorticoids (GCs) at 20-mg daily dose equivalent or higher, every 2–4 months (83%; Supplementary Table 3, available with the online version of this article).

A large proportion of rheumatology providers had reduced the frequency of laboratory monitoring since June 2020 due to the ongoing COVID-19 pandemic: SSZ, 63%; MTX or LEF, non-TNFi biologics, TNFi-biologics, and IL-17 or IL-23 inhibitor biologics, 50–51%; JAK inhibitors, belimumab, GCs, 20 mg daily or higher, 41–46%; and immunosuppressive drugs, 39%

(Supplementary Table 4, available with the online version of this article).

High responder resilience. Resilience was high among responders. The mean CD-RISC2 score was 6.85 (SD 1.06) for the respondents and for the subsample of people who had responded to the original survey (6.90, SD 1.14). Both were higher than the original survey score of 6.35 in April–May 2020 (SD 1.26; $P = 0.004$ and $P = 0.008$, respectively; Table 4). Compared to the original survey (31%), the proportion with high resilience scores (ie, CD-RISC2 score of 7 or 8) was higher at 48% in overall responders ($P = 0.002$) and 56% in repeat responders ($P < 0.0001$; Table 4).

Association of provider resilience with comfort with technology and quality of clinical encounters for virtual healthcare visits. After adjusting for age, sex, and race/ethnicity, a high provider resilience score was independently associated with significantly higher odds of more comfort with technology and more comfort with the quality of the clinical encounter/visit (somewhat or

Table 4. Rheumatologist resilience using the CD-RISC2 score in the current national VA rheumatology provider COVID-19 follow-up survey compared to the original provider survey (April–May 2020).

	Original Survey, n = 103	Current Survey, n = 114	Repeat Responders in Current Survey, n = 64
CD-RISC2 score			
≤ 4	7 (7%)	2 (2%)	2 (3%)
5–6	43 (42%)	42 (37%)	22 (34%)
7–8	32 (31%)	55 (48%)	36 (56%)
CD-RISC2 score, mean (SD)	6.35 (1.26)	6.85 (1.06); <i>P</i> = 0.004*	6.90 (1.14); <i>P</i> = 0.008*
Missing	21 (20%)	15 (13%)	4 (6%)
Proportion with CD-RISC2 score 7–8	32 (31%)	55 (48%); <i>P</i> = 0.0002*	36 (56%); <i>P</i> < 0.0001*

Repeat responders in the current survey were those who indicated that they responded to the previous VA rheumatology provider survey during April–May 2020. * *P* value compared to the original survey using *t* test. CD-RISC2: 2-item Connor-Davidson Resilience Scale; COVID-19: coronavirus disease 2019; VA: Veterans Affairs.

very comfortable) for VVC visits: (1) comfort with technology: established patient, odds ratio (OR) 1.72 (95% CI 0.67–4.40) and new patient, OR 2.79 (95% CI 1.11–7.05); (2) comfort with the quality of the clinical encounter: established patient, OR 4.13 (95% CI 1.49–11.44) and new patient, OR 2.69 (95% CI 1.06–6.82; Supplementary Table 5, available with the online version of this article). No other significant associations were noted, except for comfort with the quality of the clinical encounter with telephone visits for established patients, with OR 3.97 (95% CI 1.40–11.21; Supplementary Table 5).

DISCUSSION

The COVID-19 pandemic necessitated the adoption of telemedicine. Many VA medical centers reintroduced in-person patient visits at limited capacity in June–July 2020, forcing providers to triage which new and established patients could be evaluated by in-person, VVC, CVT, or telephone visits. Thus, it was timely to conduct this national VA rheumatology provider COVID-19 survey as a follow-up to the original survey conducted in April–May of 2020.⁴ The response rate of 80% for this follow-up survey improved on the 67% for the initial survey,⁴ due in part to the use of an updated VARC email list for this follow-up survey (10 duplicate or incorrect email addresses were removed) and encouragement to members to respond by the VARC leadership. Both rates were greater than the 61% reported for physician surveys.¹¹ Nonresponders were slightly older and more likely to be men. Several findings are interesting and merit further discussion.

We found that a high provider resilience score was associated with a 3- to 5-fold higher likelihood of comfort with technology for telephone and VVC visits for established patients, and VVC for new patients. This is among the first few studies to examine the relationship between rheumatology providers' resilience and comfort levels with using telemedicine. Resilience scores for US rheumatologists is unknown, to our knowledge. Greater rates of comfort with telephone visit quality for established vs new patients may be related to familiarity with established patients.

Providers with high personal resilience, high professional fulfillment, and low burnout tended to be more stable in their jobs.¹² A previous study showed that the burnout in physicians could be reduced by using a mobile application to increase physician resilience.¹³ Therefore, provider resilience is an important construct and characteristic that is related to stability of health-care provider workforce. The improvement of provider resilience during a short span in our study indicates that this is a modifiable characteristic. It is worthwhile for healthcare systems to focus on ways to enhance provider resilience, an increasingly important issue in the evolving COVID-19 pandemic.

Most rheumatology providers were comfortable with telemedicine technology for providing healthcare to established patients with RDs, similar to previous reports.^{14,15,16} Although the percentage of rheumatology providers who were comfortable utilizing telemedicine for new patients increased from 25% to 40% for telephone and 34% to 47% for VVC, it remains < 50% for both modalities. This improved comfort with telemedicine visits for new patients may be due to greater experience by rheumatology providers with telephone and VVC visits over time and the availability of in-person visits as a potential back-up to the virtual visit. Further improvement may be achieved through training and added resources, such as the provision of support from technology personnel, better or improved Wi-Fi and bandwidth to ensure stable connection (especially for rural-dwelling veterans and those in Wi-Fi drop zones), and administrative support for setting up telemedicine clinics similar to the in-person clinics. To our knowledge, our national study is among the first to assess a change over time in rheumatology provider comfort with technology in outpatient visits for new vs established patients.

A recent study showed that the use of telehealth increased substantially during the COVID-19 transition (41% of all follow-up visits) and decreased slightly during the post COVID-19 transition (27.7% of visits).¹⁷ Telemedicine is a viable alternative to in-person rheumatology follow-up visits in many AIIRDs during the COVID-19 pandemic⁴ due to lower

transportation costs and high patient satisfaction;^{18,19,20} this finding was confirmed in a metaanalysis of rheumatology telemedicine studies.²¹

Most VA rheumatology providers were comfortable with the quality of telemedicine clinical encounters (ie, telephone visits or VVC) for established patients, but fewer were comfortable with these encounters for new patients. This confirms our finding from the original survey,⁴ highlighting the importance of physical examination and personal interaction, as well as the ease of getting laboratory tests and imaging during an in-person vs virtual visit for a new patient. Importantly, most VA rheumatology providers reported improved comfort with the quality of the telephone and VVC visits since June 2020, for both new and established patients. The proportion comfortable with the quality of CVT visits was only 32%, identifying this as an area of potential improvement for the VA. Potential reasons for lower level of comfort with CVT are the need for more support for visit coordination and the rheumatologist's confidence in the skills of the examiner on the other end, when an examiner is needed.

Most VA rheumatology providers reported patients getting their laboratory monitoring testing done at VA medical centers, but other sites (eg, VA CBOCs, local non-VA laboratory facilities) were also commonly used. Importantly, 12% were missing laboratory monitoring testing. Not surprisingly, most rheumatology providers reported difficulty getting these tests completed and a large proportion had reduced the frequency of laboratory monitoring in veterans since June 2020 due to the ongoing COVID-19 pandemic to avoid potentially exposing patients with AIIRD to the disease. Both are novel findings, to our knowledge. We do not have data regarding ease of obtaining laboratory tests in the prepandemic period, but most would have been obtained without difficulty at the time of our routine in-person clinic visits. Potential solutions to the challenge of obtaining laboratory monitoring tests include more team support to rheumatology providers with ordering and scheduling of these tests at sites convenient to the patient, and more efficient communication of results.

Rheumatology providers continued to view gout, osteoporosis, OA, and PMR as appropriate for telephone visits or video-based healthcare visits for established patients. However, despite more experience with telemedicine, they deemed active systemic autoimmune rheumatic conditions (eg, RA, SpA, SLE, vasculitis, SSc) as most appropriate for in-person visits. Comparing this follow-up survey 6–8 months into the pandemic to the baseline April–May 2020 survey, 10–20% fewer providers chose telephone visits for all AIIRD, and a similar proportion chose video-based or in-person visits as the most appropriate, indicating a slight shift in favor of in-person or video-based visits. This shift was possibly related to experience with and the availability of functional platforms for video-based visits and some resumption of in-clinic visits. A recent study found high agreement between video consultations and face-to-face visits (within 2 weeks) in treatment decisions for patients with RA, SLE, and SpA with inadequate disease activity control.²² The perception of the providers in our study could be influenced by the low rate

of use for video consultation for new patients. It is reported that teleconsultations conducted through a telephone call are less reliable than video consultations.^{21,23}

Our study findings must be interpreted considering limitations. These findings cannot be generalized to non-VA settings. Nonresponse bias is a potential study limitation despite the similarity of responders to the overall sample in age and sex (nonresponders were only slightly older and more likely to be male); however, our response rate of 80% is higher than average physician survey response rate.⁴ Examining provider experience, practice, views, and opinions and their change over time was our study goal. The study design did not allow the validation of provider experience and practices with provider-level or patient-level clinical/resource utilization data, which are not available due to the anonymized nature of the survey. Most visits are likely for continuing care of RDs, although some may be COVID-19-related; however, these visit-level data were not available for this study. Future studies should examine such data to analyze the effect of COVID-19 on outcomes of patients with AIIRD. Sixty-two percent of respondents indicated that they participated in the original survey ($n = 64$), but it is possible that a slightly larger proportion actually did but did not recall having done so, which might have introduced some measurement errors in our comparisons.

In conclusion, we conducted a national follow-up study of experiences, practices, views, and opinions of VA rheumatology providers during the COVID-19 pandemic. Despite their experience with telemedicine for longer than 6 months, providers continued to have reservations with its utilization for new patients and specific AIIRD subpopulations. More widespread, more detailed, and more frequent technology training and education for patients and providers, as well as more ancillary staff support to providers could improve the acceptance of telemedicine and its appropriate use. The knowledge of barriers to the use of technology in providing optimal rheumatology care, and the association of provider resilience with comfort with telemedicine, can inform healthcare policy makers and allow delivery of optimal health care to patients with RDs in one of the largest integrated healthcare systems in the US.

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DATA AVAILABILITY

These data are available from the authors after appropriate approvals have been obtained from the Ethics Committee at the University of Alabama at Birmingham and all privacy policies and regulations are met.

ONLINE SUPPLEMENT

Supplementary material accompanies the online version of this article.

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