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# Clinical implications of telemedicine for providers and patients

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The coronavirus disease 2019 (COVID-19) pandemic has resulted in paradigm shifts in the delivery of health care. Lockdowns, quarantines, and local mandates forced many physician practices around the United States to move to remote patient visits and adoption of telemedicine. This has several long-term implications in the future practice of medicine. In this review we outline different models of integrating telemedicine into both male and female fertility practices and recommendations on performing video physical examinations. Moving forward we foresee two general models of integration: one conservative, where initial intake and follow-up is performed remotely, and a second model where most visits are performed via video and patients are only seen preoperatively if necessary. We also discuss the impact THAT telemedicine has on coding and billing and our experience with patient satisfaction. (*Fertil Steril*® 2020;114:1129–34. ©2020 by American Society for Reproductive Medicine.)

**Key Words:** Telemedicine, telehealth, health communication, COVID-19, SARS-CoV-2

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The worldwide pandemic of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and resulting coronavirus disease 2019 (COVID-19) caused significant and radical changes in health care delivery. Chief among these changes is the increased use of telehealth and telemedicine services. Telemedicine is defined as the use of electronic information and telecommunications technologies to support and promote clinical health care when the participants are separated by a distance (1). Improvements in technology, internet bandwidth, and increased comfort in video-based communication had led to increasing interest in telemedicine over the past several years. Despite the increasing interest, however, use of telemedicine was extremely low before the pandemic. In the urology community, an analysis of commercial and Medicare claims data found that fewer

than 1% of urologists were using video visits in 2019 (2). In the female infertility world, before the pandemic, patients were increasingly using social media and fertility-tracking applications to obtain and engage with reproductive health information, but the use of telemedicine in patient care was far from routine (3). The rapid acceleration in the adoption of telemedicine was the consequence of public health constraints of routine in-person medical care imposed by public health officials and the removal of significant regulatory barriers by state and national governments (4). The American Society for Reproductive Medicine (ASRM) statement on patient management and clinical recommendations during the COVID-19 pandemic recommended that practices continue to use telehealth to the greatest extent possible to develop treatment plans and begin or continue the evaluation and education

of patients (5). The Society for Male Reproduction and Urology in collaboration with the Society for the Study of Male Reproduction recommended that male reproductive consultations should continue via telemedicine and that physical exam should be performed as a follow-up when possible (6). They also stated that scrotal ultrasound may be used for further evaluations when necessary. In addition to these task force and joint statements, the ASRM and many other large medical societies hosted webinars to educate their members specifically on using telemedicine (7).

Many health care organizations and electronic medical record platforms rose to this challenge and added video visit capabilities in a matter of weeks in March 2020. This led to a rapid transition to telemedicine. In 2019, 11% of patients were using some form of telehealth, whereas by May 2020 that figure had increased to 50% (8). Health care systems large and small, private and academic, were all forced to quickly adapt. Providers across all specialties are now seeing anywhere from 50 to 175 times the number of patients via telehealth compared with pre-pandemic levels (8). Practitioners that

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may have been reluctant in the past to embrace the technology were forced to do so. A recent survey found that 57% of providers view telehealth more favorably than before COVID-19, and 64% reported increased comfort using it (8).

Much of this recent surge in use was implemented without much planning or careful study. We are at a point now where we can take a critical look at the implementation of telemedicine and examine ways to better integrate these systems into our clinical practice. It has become increasingly evident that telemedicine will not be a fleeting trend of the COVID-19 pandemic. We must take stock of what works and what does not work, and not forget the importance of the patient perspective in developing organization protocols for telehealth implementation. Systematic reviews of previous telemedicine literature demonstrates that it is mostly likely noninferior to traditional models of health care delivery, with almost equal rates of patient-perceived quality of care (9). A recent investigation by McKinsey showed that 76% of patients surveyed are now interested in using telemedicine going forward, and 74% reported satisfaction with their telemedicine encounters (8). Clearly, telemedicine is here to stay. It is therefore crucial that we ensure the safe and effective integration of this modality into our reproductive medicine practices.

## MODELS OF INTEGRATION

Much of the literature published before the pandemic demonstrated that telemedicine had the ability to improve patient satisfaction, reduce health care costs, reduce travel time, and facilitate complex quality care for patients in rural locations (10–13). Despite these potential benefits, many providers found it cumbersome to integrate into regular clinical practice. Furthermore, many states and insurance agencies had regulatory hurdles in place that made implementing telehealth burdensome and not economically viable (14). This quickly changed in the initial weeks of the pandemic, which forced many infertility practices to move to a complete virtual visit experience. With the reduction in community spread of SARS-CoV-2 and the easing of public health restrictions, most practices have returned to a normal volume of in-person visits. Despite that return, many providers have chosen to continue telemedicine visits. There are various platforms that are in place to help facilitate the telemedicine visit. Most compensation models require a real-time synchronous video component to be present for initial consultation and billing of appropriate evaluation and management coding. In addition, it is important to note that while regulations were eased during the COVID-19 health care emergency, current guidelines stress the need for secure video software which provides end-to-end encryption that is Health Insurance Portability and Accountability Act (HIPAA) compliant. Integrating telehealth into the normal workflow of a busy office practice has led to particular insights that have proven useful for managing both patient and provider time efficiently.

Because the patients are not available to fill out previsit paperwork, we have found mailing or e-mailing our routine paperwork to the patient before the visit to be satisfactory.

In addition, some electronic medical record platforms allow patient questionnaires to be posted through the patient portal. The answers to these questionnaires can then be imported into the patient visit note. Another option is to have office staff or a nursing assistant call in advance and prescreen the patient and manually go through the previsit questionnaire. This is not ideal, however, because it can be time consuming and take away from other important clinical duties. On the day of the visit we have found it beneficial to have medical assistants call the patients before the scheduled time of the video visit. This would simulate the intake portion of normal in-person visit where the medical assistant can perform home medication reconciliation, complete the necessary Physician Quality Reporting System requirements and other common tasks such as imputing the chief complaint and recording vital signs. This prescreening phone call also is an opportunity to reinforce the need for a private environment to conduct the visit. Unfortunately, we have had many experiences where the patient may attempt to conduct the telemedicine video visit in a public place where privacy might be a concern. Furthermore, at this time an informed consent should be obtained and include a discussion about privacy, risks, confidentiality, and billing.

The initial office visit is a critical component of building the physician-patient relationship. Within our female fertility practice, the use of a sequential visit model in which the initial patient interview is conducted virtually and is followed by an in-person exam at a later date has proven successful. The initial virtual consultation allows for a thorough history taking, often of both partners; given current restrictions in our practice, patients must come alone to visits, so the virtual visit now allows us to include both partners in the discussion. While this model decreases face-to-face interaction, thereby providing increased safety and often comfort for physician and patient alike, it also has other advantages that will persist after the worries about COVID. Partners who are not together at the time of the appointment can both be included in the video chat from separate locations, and the lack of travel time allows patients to complete the visit during times when they otherwise would have been unable, such as during the work day. Virtual visits also allow for increased flexibility in terms of timing, with visits able to be conducted either before or after normal business hours. In this way, we are able to expand our ability to offer services.

In a male fertility practice, implementing telemedicine can be considered along two different pathways: a conservative, more traditional pathway or a more aggressively remote visit pathway. Men's health providers have been able to effectively leverage telemedicine for performance of initial consultations and follow-up discussions. The focus of an evaluation consists of a thorough medical, sexual, and social history, both for the patient and often for the spouse, as well as a review of any existing records. This can be accomplished easily via a virtual visit.

In a primarily remote-based pathway, most, if not all, of the patient care is delivered by means of telemedicine with the patient only needing an in-person visit in advance of a procedural intervention. Studies across many different medical specialties have found that after conducting an e-

consultation, 62%–92.1% of patients did not subsequently require an in-person visit (15). This has not been replicated in the male fertility practice, but one can imagine several scenarios in which a telemedicine video visit offered enough information to provide proper counseling without seeing the patient in person. The semen analysis has become the lynchpin for the male fertility evaluation. After a complete history taking, a patient with a history of infertility can often present to the office with two normal semen analyses. With the known limitations of male fertility diagnostic workup, if the history and semen analysis is unremarkable, often no other testing is warranted. These patients can then be referred to advanced reproductive techniques. Furthermore, frequently based on history alone, a significant amount of lifestyle counseling can be performed. The video physical exam can provide a significant amount of information as well, and an in-person exam may be necessary only in certain circumstances. Often, physical exams can be performed by having the male patient sit in a warm room for at least 5 minutes followed by visual inspection. This is done by having the patient remove their clothing and stand with their legs shoulder width apart and arms spread out. Visual inspection of the patient can provide sufficient information regarding body habitus, presence of absence of gynecomastia, assessment of secondary male characteristics, and any obvious visible pathology of the penis and scrotum. While not ideal, the presence or absence of varicocele can be confirmed by an outpatient scrotal ultrasound. In addition, it is known that men presenting with infertility are at higher risk of testicular malignancy. An outpatient scrotal ultrasound would also confirm or rule out that diagnosis. If varicocele is confirmed and semen parameters match that of varicocele, the patient can be counseled and scheduled for a preoperative visit for varicocele repair. At this preoperative visit, the physical exam findings can then be confirmed. Remote postoperative evaluation of the wound is also possible. For pain complaints, the provider can have the patient describe the quality, frequency, and severity of the pain and point to the affected area. In another scenario, if the patient is confirmed to have Klinefelter syndrome by means of hormone and genetic testing, a microdissection testicular sperm extraction can be scheduled and the patient examined only for the preoperative visit after adequate counseling. In another scenario, obstructive azoospermic patients can be scheduled for office sperm extraction and an exam can be performed at the time of the procedure to obtain tissue for cryopreservation.

Certain subjective aspects of the physician-patient interaction, such as body language, may be partially lost during telehealth encounters, making patients feel less at ease, especially with sensitive topics. However, because the initial visit is dedicated solely to a discussion of the chief complaint and medical history, there is more time to make that initial connection. Both patients and physicians within our practice have noted feeling less rushed than with typical in-person visits. The gap between initial consultation and examination also allows time for the patient to gather any relevant medical records that were not initially provided. These can then be brought to the in-person exam for review by the physician.

Scheduling of additional testing, such as semen analysis and hysterosalpingogram, can be done immediately after the initial telehealth visit, and all educational materials typically provided to patients are instead e-mailed. Although concerns about loss to follow-up have been raised using this model, we have found that by scheduling a physical exam to closely follow the initial virtual one, patients are seen expeditiously and their overall time to treatment initiation is not significantly increased. Many of our practitioners, for example, have made it standard to schedule both the initial virtual visit and follow-up physical exam at the same time, often within a few days of each other.

At the time of the scheduled physical exam, because a detailed history has already been performed, a focused physical, pelvic or scrotal ultrasound and any necessary bloodwork can be completed in a relatively short period of time, limiting patient time in the office. Follow-up regarding results and subsequent treatment plans can then be done via an additional telehealth visit with both partners present. This model has proven to be effective and time-efficient during the COVID pandemic and will likely continue to be used for a large percentage of our patients after the pandemic.

Telemedicine can play a large role in the reproductive medicine practice beyond simply the initial office visit. Follow-up discussions, whether of results, treatment plans, or failed cycles, can be easily performed virtually. Before COVID, these discussions were typically performed in person or over the telephone. By using a virtual visit, the need for patients to travel back and forth for what is often a relatively short visit is eliminated. Furthermore, unlike a telephone call, a video visit allows for “face-to-face” contact, which may be helpful when discussing more emotional topics such as an unsuccessful cycle or failed reconstruction or sperm retrieval. The ability to include both partners is also made significantly easier through a telemedicine approach.

The telemedicine platform is also easily applicable to ancillary services offered by our practice. Our in vitro fertilization and fertility preservation classes, in which patients learn how to administer injections as well as review the processes involved with stimulation and monitoring, are now conducted entirely over video. Whereas patients would typically meet with a nurse individually after the class, they are now contacted by that nurse over the telephone to follow up, ask questions, and begin the process of scheduling and ordering medications. The virtual platform again allows for both partners to be present and easily allows for patients to take the class a second or third time if they deem it necessary. Genetic counseling and psychologic services are also now conducted entirely via a virtual platform, and the transition for both patients and providers has been relatively seamless. Even our donor oocyte program has made use of telehealth, with potential donors undergoing their psychology and genetic evaluation remotely as the first step in screening. Because psychologic or genetic issues are common reasons for donor disqualification, we can now avoid having a donor who would otherwise be disqualified come into the office at all. This enhances both safety and convenience for our potential donors.

## THE VIDEO EXAMINATION

The physical exam has been considered a cornerstone of fertility evaluation. A great deal of information can be gleaned from a well performed complete physical exam. Despite not being able to physically lay hands on patient, the video visit is able to provide useful and actionable information.

In the evaluation of male infertility, a physical exam is not necessary to order semen analyses. A baseline semen analysis is a necessary decision point for workup and evaluation. Orders and instructions for obtaining a semen analysis can be done via video visit. In addition, hormone profiles and genetic testing can be ordered based on history and semen analysis results. This approach has been suggested by a group of Canadian male fertility specialists who found it a useful strategy initiating the infertility evaluation process and maximizing the benefit of eventual in-person evaluation (16). Even without laboratory diagnostics available, a complete video exam can provide important information in the evaluation of the infertile male. Conceptualizing the physical exam in general, particularly the male fertility exam, a great deal of the information gained is from visual inspection. General inspection and body habitus can point to endocrine disorders and Klinefelter syndrome. We start our physical exam by asking men to place their cellphone, laptop, or tablet on a waist-high table and step back so that we can assess the entire body. The patient is then asked to lift up his shirt so that we can inspect the breasts for any swelling. The abdomen is then visually inspected for hair pattern, surgical scars, abdominal obesity, or abnormal masses. We then perform a genital exam, and the patient is asked to lower his pants and underwear to mid-thigh level. It has become our practice to reinforce the confidential nature of the telemedicine video visit at this point as well as ask the patient that they perform this part of the exam in a private location. We then inspect the pubic hair pattern, length of penis, and circumcision status. If uncircumcised, we ask the patient to retract the foreskin and visualize the meatus. The patient is instructed to lift the penis up against the abdomen so that we can inspect the scrotum. The scrotal skin is visualized for any lesions and for the presence of bilateral testicles. Large clinical varicoceles can also be visualized. With examination of a warm relaxed scrotum, often an obvious large varicocele, which will collapse in the supine position, large hydroceles or spermatoceles, which do not collapse when supine, and even general determination of testicular size can be assessed. The patient is then asked to palpate the testicles on the video so that we can confirm both testicles are in the scrotum and are generally of normal size. We then ask the patient to lift the scrotum up so we can visualize the perineum. The patient is then asked to turn around and face away from the camera so that we can inspect the skin of the back.

For the evaluation of female fertility, one of the greatest limitations of telemedicine is the lack of an in-person physical exam. Unlike many other areas of medicine that may be amenable to a video exam, female reproductive medicine does not lend itself to this type of examination. The main reason behind this is the importance of pelvic ultrasound, a

critical tool in diagnosis and management of patients. Much of our initial decision making regarding patient treatment and protocols is based on ovarian reserve, which is best gauged by means of ultrasound. Ultrasound can also allow us to diagnose previously unrecognized conditions, such as fibroids, polyps, and ovarian cysts, which may be causes of infertility or contraindications to fertility treatment. Monitoring patients in treatment cycles also requires frequent ultrasound monitoring. Unlike obstetrics, in which various types of remote monitoring have been used for pregnant women, including home glucose and blood pressure monitoring, at-home ultrasound monitoring is as yet not a reality. While some small studies have demonstrated that self-operated endovaginal telemonitoring is noninferior to traditional in-office monitoring, many larger studies are needed to determine whether or not this practice is feasible, effective, and, most importantly, safe for patients (17, 18). As of now, the use of video exam in female reproductive medicine is extremely limited and should be reserved for easily visible pathology such as injection-site infections/reactions and surgical-site infections.

## IMPACT ON CODING AND BILLING

The increasing use of telehealth services brings with it several important considerations involving privacy, physician liability and reimbursement, and patient consent (19). Currently, there are no standardized guidelines to ensure appropriate safeguards and regulatory oversight, such as ensuring that telehealth applications are HIPAA compliant. This is concerning for both patients and practitioners. Furthermore, delivery of reproductive medicine services via telehealth may present unique risks that increase physician liability. For example, because telehealth allows the delivery of care across state lines, physicians and practices are confronted with the complex issue of conflicting state licensure requirements. Most liability carriers use the physician's state of licensure rather than the patient's state of residence to define coverage. There is also no standard liability insurer for telehealth, with most liability insurance issues dealt with on a case-by-case basis. As telemedicine becomes a standard part of practice, these issues require clarity. Physician reimbursement also is a crucial consideration and one whose future remains largely unknown. Before the COVID pandemic, 37 states had parity laws mandating insurance coverage of services rendered remotely. However, only a fraction of those laws guaranteed true parity, with equal reimbursement of remote and in-person services. Even with true parity laws, reimbursement may still be an issue because Current Procedural Terminology (CPT) codes have been ineffectively updated to adapt to the telehealth platform. In some circumstances, the required elements of a given service code may not be fulfilled in a virtual visit. Finally, whereas telephone follow-ups were almost never covered by insurance companies, telehealth visits can be submitted, allowing for reimbursement for physicians and decreased costs for patients.

Currently, telemedicine visits are being billed similarly to in-person visits with the use of CPT 9921X, depending on



level and time. It is recommended that place of service modifier code 02 be used to note that telemedicine encounter occurred (20). Several modifiers have been added to indicate type of telehealth visit and technologic failure of hardware during telehealth visits. In addition, higher levels of service require detailed physical exams which are not possible via video visit. Owing to this limitation, coding is often done based on time rather than complexity (20). The Centers for Medicare and Medicaid Services plan to change billing based on medical decision making only, but this has yet to be implemented. Although many insurers have now greatly expanded their telehealth coverage because of the COVID-19 pandemic, there is little transparency as to the future state of coverage and reimbursement, with many insurers planning to terminate coverage once the pandemic ends.

## PATIENT RESPONSE

We have found patients to overall be very receptive to telemedicine. Patients unwilling or unable to travel to the hospital and immunocompromised patients now have greater access to care. In addition, patients can be seen from the comfort of their own homes, and because they have specific video visit times to meet with a provider, wait times can be minimized. As technology and video communication has become routine in daily communication, many patients seem to have embraced telemedicine. However, some barriers to use of video visits include patients who are unable or unwilling to use video technology, religious or cultural restrictions precluding patient use of video visits, and internet server or connectivity issues. Although these barriers exist, video visits seem to benefit both providers and patients and will likely be a critical part of patient practices moving forward even when pandemic restrictions are lifted. We will likely continue telemedicine visits for the initial new patient visits and for follow-up visits for patients who are not local to our hospitals.

It is important to note that our experience is significantly influenced by our practice locations in the northeast. The local impact of COVID-19, particularly early in the pandemic, resulted in a significant effect on patient psyche. We have found that many patients are concerned about venturing out in public, particularly to a doctor's office. Most would rather have minimal contact with the health care system, and many are happy to have an option for a video visit. In a survey of German patients in the face of COVID-19, 84.7% preferred a telemedicine visit rather than a face-to-face consultation (21). A retrospective review of Press Ganey satisfaction scores of a New York City-based clinic before and during COVID-19 found significantly higher rates of overall satisfaction with telemedicine in the COVID-19 periods compared with the pre-COVID-19 period (22). In addition, satisfaction with video visits was higher than with in-person visits. Interestingly, a multivariate analysis of factors found that younger age and new visits were negatively associated with overall satisfaction, but telemedicine continued to have a strong independent association with overall score. A survey of French patients found similar rates of satisfaction with telemedicine, with 84% reporting it to be a "good experience" (23).

Before the pandemic, patients also gave high satisfaction scores to telemedicine visits. In one survey study, 95% of patients scored their visit as very good to excellent (24). Another study of patients randomized to video visit versus in-person postoperative care found high rates of satisfaction with the elimination of travel costs and reduced time away from work (10). The concept of having in-person visits only if necessary is not new (25). Patients appear to appreciate not having to take time away from work, drive, find parking, and sit in a waiting room for a busy physician to see them. The "on-demand" nature of the video visit is very much in line with the current culture of immediacy. A study of a teleurology program for new hematuria consultations found significantly higher rates of satisfaction in the video visit group versus the in-patient visit group (26). Furthermore, when patients were asked to choose between a video visit or an in-person consultation, 98% of patients preferred the video visit consultation. Another prospective study of a virtual urology clinic in London found that 90% of patients were either very happy or happy with their level of service (27). From the limited amount of data available, patients seem to have overall high rates of satisfaction with telemedicine, and patient satisfaction is one of key drivers to the success of telemedicine (28).

## CONCLUSION

The COVID-19 pandemic forced many providers and patients to adopt telemedicine without debate or decision. The benefits to telemedicine are clear, increasing office efficiency for the clinician with significant improved convenience for the patient. Before the pandemic, the promise of telemedicine was to address gaps in health care for remote and rural populations. However, it has become increasingly clear that many so-called "health care disrupters" see telemedicine as filling a gap in current health care delivery. In the men's and women's health space, before the worldwide COVID-19 pandemic, companies such as Hims and Roman were marketing telemedicine to address sensitive topics of sexual dysfunction, mental health, hair loss, and dietary and vitamin supplements (29). It was noted, even before COVID, that this is a major trend and force in the medical industry (30). Mainstream health care organizations would be shrewd to not ignore these trends. It has become increasingly clear that SARS-CoV-2 will not be dissipating and that there will continue to major interruptions in the delivery of health care for the foreseeable future. It is therefore imperative that we adapt and modify our practices to incorporate telemedicine. The true impact of telemedicine on infertility practices is not well known and we must continue to gather data to understand its effect on outcomes and healthcare economics.

## REFERENCES

1. Institute of Medicine (US). Committee on Evaluating Clinical Applications of Telemedicine. In: Field MJ, editor. *Telemedicine: a guide to assessing telecommunications in health care*. Washington, DC: National Academy Press; 1996.
2. Ellimoottil C. Implementing telemedicine in urology: an overview of the benefits and barriers. *J Urol* 2019;202:47-8.

3. Blakemore JK, Bayer AH, Smith MB, Grifo JA. Infertility influencers: an analysis of information and influence in the fertility webspace. *J Assist Reprod Genet* 2020;37:1371–8.
4. Azar AM II. Determination that a public health emergency exists. Available at: <https://www.phe.gov/emergency/news/healthactions/phe/Pages/2019-nCoV.aspx>.
5. American Society for Reproductive Medicine. Patient management and clinical recommendations during the coronavirus (Covid-19) pandemic. Available at: <https://www.asrm.org/news-and-publications/covid-19/statements/patient-management-and-clinical-recommendations-during-the-coronavirus-covid-19-pandemic/>.
6. American Society for Reproductive Medicine. SMRU statement regarding male reproductive health and Covid-19. Available at: <https://www.asrm.org/news-and-publications/covid-19/statements/smr-statement-regarding-male-reproductive-health-and-covid-19/>. Accessed September 26, 2020.
7. Vance A, Chen SH, Berman LM, Bumpers B. Telehealth during the pandemic and beyond: a tool for your clinical arsenal. April 17, Available at: <https://www.asrm.org/resources/videos/covid-19-webinars-and-videos/telehealth-during-the-pandemic-and-beyond-a-tool-for-your-clinical-arsenal/>. Accessed September 26, 2020.
8. McKinsey and Company. Telehealth: a quarter-trillion-dollar post COVID-19 reality? May 29, 2020. Available at: <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality>.
9. Novara G, Checcucci E, Crestani A, Abrate A, Esperto F, Pavan N, et al. Telehealth in urology: a systematic review of the literature. how much can telemedicine be useful during and after the Covid-19 pandemic? *Eur Urol*. Published online ahead of print June 18, 2020.
10. Viers BR, Lightner DJ, Rivera ME, Tollefson MK, Boorjian SA, Karnes RJ, et al. Efficiency, satisfaction, and costs for remote video visits following radical prostatectomy: a randomized controlled trial. *Eur Urol* 2015;68:729–35.
11. Finkelstein JB, Cahill D, Kurtz MP, Campbell J, Schumann C, Varda BK, et al. The use of telemedicine for the postoperative urological care of children: results of a pilot program. *J Urol* 2019;202:159–63.
12. Miller GG, Levesque K. Telehealth provides effective pediatric surgery care to remote locations. *J Pediatr Surg* 2002;37:752–4.
13. Leong JR, Sirio CA, Rotondi AJ. eICU program favorably affects clinical and economic outcomes. *Crit Care* 2005;9:E22.
14. Antonioti NM, Drude KP, Rowe N. Private payer telehealth reimbursement in the United States. *Telemed J E Health* 2014;20:539–43.
15. Castaneda P, Ellimoottil C. Current use of telehealth in urology: a review. *World J Urol* 2020;38:2377–84.
16. Witherspoon L, Fitzpatrick R, Patel P, Flannigan R, Roberts MT, Krakowsky Y, et al. Clinical pearls to managing men's health conditions during the COVID-19 pandemic. *Can Urol Assoc J* 2020;14:E161–6.
17. Gerris J, Delvigne A, Dhont N, Vandekerckhove F, Madoc B, Buyle M, et al. Self-operated endovaginal telemonitoring versus traditional monitoring of ovarian stimulation in assisted reproduction: an RCT. *Hum Reprod* 2014;29:1941–8.
18. Pereira I, von Horn K, Depenbusch M, Schultze-Mosgau A, Griesinger G. Self-operated endovaginal telemonitoring: a prospective, clinical validation study. *Fertil Steril* 2016;106:306–10.e1.
19. Tuckson RV, Edmunds M, Hodgkins ML. Telehealth. *N Engl J Med* 2017;377:1585–92.
20. Gadzinski AJ, Gore JL, Ellimoottil C, Odisho AY, Watts KL. Implementing telemedicine in response to the Covid-19 pandemic. *J Urol* 2020;204:14–6.
21. Boehm K, Ziewers S, Brandt MP, Sparwasser P, Haack M, Willems F, et al. Telemedicine online visits in urology during the Covid-19 pandemic-potential, risk factors, and patients' perspective. *Eur Urol* 2020;78:16–20.
22. Ramaswamy A, Yu M, Drangsholt S, Ng E, Culligan PJ, Schlegel PN, et al. Patient satisfaction with telemedicine during the Covid-19 pandemic: retrospective cohort study. *J Med Internet Res* 2020;22:e20786.
23. Pinar U, Anract J, Perrot O, Tabourin T, Chartier-Kastler E, Parra J, et al. Preliminary assessment of patient and physician satisfaction with the use of teleconsultation in urology during the Covid-19 pandemic. *World J Urol* 2020.
24. Chu S, Boxer R, Madison P, Kleinman L, Skolarus T, Altman L, et al. Veterans Affairs telemedicine: bringing urologic care to remote clinics. *Urology* 2015;86:255–60.
25. Duffy S, Lee TH. In-person health care as option B. *N Engl J Med* 2018;378:104–6.
26. Safir IJ, Gabale S, David SA, Huang JH, Gerhard RS, Pearl J, et al. Implementation of a tele-urology program for outpatient hematuria referrals: initial results and patient satisfaction. *Urology* 2016;97:33–9.
27. Miah S, Dunford C, Edison M, Eldred-Evans D, Gan C, Shah TT, et al. A prospective clinical, cost and environmental analysis of a clinician-led virtual urology clinic. *Ann R Coll Surg Engl* 2019;101:30–4.
28. Granja C, Janssen W, Johansen MA. Factors determining the success and failure of eHealth interventions: systematic review of the literature. *J Med Internet Res* 2018;20:e10235.
29. Farr C. How men's health start-ups are turning erectile dysfunction and hair loss treatment into a booming business. CNBC; November 17, 2019. Available at: <https://www.cnbc.com/2019/11/17/hims-aims-to-raise-200-million-as-sales-of-mens-health-products-grow.html>.
30. Houman JJ, Eleswarapu SV, Mills JN. Current and future trends in men's health clinics. *Transl Androl Urol* 2020;9(Suppl 2):S116–22.