CLINICAL OBSTETRICS AND GYNECOLOGY
Volume 64, Number 2, 392–397

Use of Telemedicine and Smart Technology in Obstetrics: Barriers and Privacy Issues

HARI ESWARAN, PhD,*† and EVERETT F. MAGANN, MD*

**Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine; and †Institute of Digital Health and Innovation, University of Arkansas for Medical Sciences, Little Rock, Arkansas*

Abstract: While telemedicine had been utilized in varying ways over the last several years, it has dramatically accelerated in the era of the COVID-19 pandemic. In this article we describe the privacy issues, in relation to the barriers to care for health care providers and barriers to the obstetric patient, licensing and payments for telehealth services, technological issues and language barriers. While there may be barriers to the use of telehealth services this type of care is feasible and the barriers are surmountable.

Key words: telemedicine, telehealth, obstetrics, smart technology, COVID-19

Introduction

COVID-19 led to one of the largest shifts in clinical practice in obstetrics in recent history. Almost overnight, obstetricians began virtual visits and fewer in-person and overall appointments, altering the 12 to 14 visit schedule which has been the standard since the 1930s, despite a lack of scientific evidence upon which it is based.[1] Such a shift will always have some barriers to ideal implementation. While COVID-19 caused a rapid shift, telehealth has been used in various ways in obstetrics for many years. For example, the Medical University of South Carolina (MUSC) Center for Telehealth operates in 6 locations across South Carolina, a state with one third of its population considered rural.[2] The program may have as many as 50 to 60 telemedicine appointments a week and is available 24/7.[2] The UAMS High-Risk Pregnancy program (HRPP-ANGELS) experienced over 2300 telemedicine visits in fiscal year 2019 to 2020; 1 rural hospital estimated that 10% of their patients participate in telehealth visits via the UAMS HRPP, in no small part due to the difficulty of transportation to the UAMS Hospital

Correspondence: Hari Eswaran, PhD, Department of Obstetrics and Gynecology, University of Arkansas for Medical Sciences, Little Rock, AR. E-mail: eswaranhari@uams.edu

The authors declare that they have nothing to disclose.

campus.[3] This program has dramatically improved care access to a geographically vulnerable population.

Studies have shown that, while medically high-risk patients may benefit from closer monitoring, lower-risk patients may benefit from receiving some of their care via other methods such as nutritional counseling, peer groups, and telehealth visits as opposed to in-person visits at the standard intervals.[1] A Michigan study reported higher satisfaction with care and lower stress among study participants in their OB Nest program, which had participants have 8 in-person visits and 6 virtual visits with a nurse where blood pressure and fetal heart rate were evaluated.[4] The control group experienced the typical in-person, 12-visit regimen. It has also been shown that telehealth provides comparable outcomes compared with traditional care without compromising the patient-provider relationship.[5] High-risk patients can also be seen using telehealth, allowing patients in rural areas to access the specialist care available to their urban counterparts; although, this is often in a clinical setting instead of at home with patient, primary provider, and specialist all attending.[2] According to Lowery,[2] telehealth also allows for home monitoring of high-risk patients, which can reduce potentially dangerous travel, alert to any problems, and avoid unnecessary hospital admissions. Overall, telehealth has been shown to be an effective form of health care, especially in areas with limited access to care, and is a useful adjunct to traditional care.[6]

Privacy Issues

Privacy issues are a commonly cited roadblock to telehealth implementation. Telehealth requires the use of HIPAA-compliant software for the visit, as well as for transfer of any images, such as real-time ultrasound or ultrasound images.[7] Under the state of public health emergency issued January 31, 2020, and renewed January 7, 2021, HIPAA laws and penalties have been waived; however, facilities should always look to what they will do when the state's public health emergency is over and aim to implement and use HIPAA-compliant software as soon as possible, even while the waiver is in place.[8,9] Multiple HIPAA-compliant platforms exist, such as Amwell, Microsoft 365, and Zoom, all having systems available for purchase that utilize HIPAA-compliant systems and alert providers to any areas lagging in HIPAA compliance.[10–12] Despite the pandemic not being over and the public health emergency mandate still being in place, this may be an ideal time to evaluate HIPAA and its components; lessons learned from this pandemic may be useful in any process to reconsider patient data governance.[13]

Specifically, with respect to the UAMS High-Risk Pregnancy program, we offer tools that will ensure HIPAA compliance in both real-time interactive sessions, and data at rest and in transit. This is a combination of encryption protocols, business associate relationships, and both on and off premises storage environments. We have workflows in place that ensure the patient is presented informed consent before every video session using our telehealth platform. In addition, we have the ability to exchange more detailed information and gain e-signature in these sessions as well. This suite of tools can be used for our consumer facing audience (from the home), as well as provider-to-provider consultative services, and site facilitated patient visits. We ensure that all parties involved only have the required level of access to patient information that is needed to provide their service(s). We also have design specialty built telemedicine systems that can be used with almost all video and telemedicine platforms while integrating peripheral devices and the

ultrasound machine into the video channel for real-time interaction. These systems would be available in clinical locations (eg, Inpatient, Outpatient, Emergency Department) and would function to facilitate a higher level of care to the patients remotely.

For most types of services, patients can see their providers for routine follow up visits from the comfort of their home or other private locations. However, for some in rural America, it is increasingly hard to find the specialized care that can be provided in more urban settings. These situations generally benefit from the patient being "presented" from a location that has medically trained staff that help to facilitate the patient interaction with a remote specialist. This is done (in most cases) over real-time audio and video and for High-Risk Pregnancy patients, will include live ultrasound readings with access to a remote Maternal Fetal Medicine and genetic counselors where needed. Patients and providers should be informed about the limitations of security and HIPAA in telehealth. It is important for telehealth providers to be aware of the unique security risks in virtual health care, which can be more susceptible to outside intrusion. Data should be encrypted even though there is a small chance encrypted data could be compromised. Patients should be made aware that their smartphones rarely have the same level of security as telehealth equipment at telehealth sites.[14] Electronic medical records can usually be customized based on site needs.[14] If >1 electronic medical record is used between facilities and an interfacing software is unavailable, another secure means of sharing data should be utilized, such as fax or secure email to ensure continuity of care if integration is not possible.[14]

Barriers to Providers

The obstetrical field would be well-served, and are encouraged by American College of Obstetricians and Gynecologist (ACOG), to become familiar with and adept at telehealth services, especially in this time of COVID-19. Rapid implementation, as required by COVID-19, can be costly to providers and hospitals with high start-up costs, a potential lack of technology, and provider malpractice insurance needing to be calculated into the overall cost.[15] These are factors for any implementation project, but the costs can be accounted for when carefully planned as opposed to the emergency twist COVID-19 necessitated.[15]

LICENSING AND PAYMENT PARITY

Licensing and payment parity are also barriers to widespread implementation of telehealth in obstetrics. Licensing is state-specific, making it difficult for physicians to provide services outside their state of employment, even if they may be the best resource for the patient. This certainly acts as a deterrent to telehealth implementation.[6] Health care professionals must go through the credentialing and privileging process for the hospital where their services are used, even if they are not physically present.[16] There are programs for both nurses and physicians to assist with this issue. The "Nurse Licensure Compact allows nurses to have one license viable in other compact member states, allowing for a nurse to practice in both their home state and other states which have signed on to the compact."[17] The Interstate Medical Licensure Compact (IMLC) is an "agreement among participating states that allows physicians who are licensed in a state that has joined the compact, and who meet the qualifications defined in the compact, to be eligible for licensure in any other state that has joined the compact."[18] Of course, joining the IMLC is not inexpensive. If the state of practice participates in the program, there's a $700 fee, plus whatever the cost of licensing is in the additional state in which the doctor wants to practice.[18]

Fourteen states do not currently participate in the IMLC or are not pursuing legislation to allow participation.[18]

Telemedicine payment parity refers to the equivalent health insurance reimbursement for similar in-person and telemedicine services. Not all states have parity laws, and they vary from state to state and by insurance provider.[19] Some have also been altered or waived to cope with COVID-19 concerns.[19] All 50 states and Washington, DC provide reimbursement for some form of live video in Medicaid fee-for-service.[19] Eighteen states have reimbursement for Medicaid store-and-forward claims.[19] Twenty-one states provide reimbursement for remote patient monitoring, while 10 states reimburse for all 3 methods, some restrictions may apply.[19] As of January 1, 2021, 7 states have laws requiring providers be paid the same amount for a telehealth visit as for a similar in-person visit, although most states have a law regulating private payer telehealth reimbursement in some way.[19] Even though each state has its own rules and regulations regarding payment, parity can be quite confusing, especially for telehealth participants or when a health care system operates in multiple states.[19]

Under the CARES Act, telehealth visits by telephone (as opposed to video-audio) are covered by Medicaid, but at a lower rate—a 10-minute visit that would bring in $100 in-person only brings in $37.29 in Mississippi.[20] Also when the pandemic ends, telephone-only visits may no longer be covered unless nonemergency regulations are altered, despite the fact that in some areas, a landline may be a far more reliable source of connection than a cellular or internet connection due to a lack of cellular coverage or the potential for cut cables.[20] Some patients have expressed a preference for telephone-only appointments, especially when a visual visit is not needed for a diagnosis.[21]

INTERNET SPEEDS/CONNECTIVITY

While the barrier to sufficient internet is generally on the patient side, it is also a potential barrier for providers, especially in rural areas. The United States government's health Information Technology (IT) website advises a "10 Mbps connection is suitable for smaller rural health clinics. Such speeds can support things like High-Definition video consultations, remote monitoring, image, and file downloads (though not in real-time). It suggests a 25 Mbps connection would be needed for real-time file download, and recommends a 100 Mbps connection for larger facilities like hospitals that need simultaneous High-Definition video streaming, continuous remote monitoring, and quick file transfers."[22] In some rural areas, this kind of speed may simply not be available.

TECHNOLOGICAL ACCESS

While video conferencing does provide a platform that is generally acceptable, remote patient monitoring allows for objective clinical data.[23] This is particularly important when only audio calls can be managed. Aside from potential issues with connectivity, there are currently no Doppler available to evaluate the fetal heart rate or nonstress test monitors available for home use, due to a lack of validated remote patient monitoring systems.[23] While fetal movement and fetal kick counts are allowed to assess fetal well-being, in some cases a more in-depth option may be desired but none are currently available outside of a clinical setting.[23]

Barriers to Patients

INTERNET SPEEDS/CONNECTIVITY

A barrier to wider implementation of telehealth in general is internet access. Patients in rural or lower-income areas may have difficulty accessing the Wi-Fi and/or data speeds needed for a video

conference in a private place.[24] While almost 83% of Americans had broadband internet access, in a rural state like Arkansas that number dropped to 73%, and while 90% of Americans had a computer in the home, the question remains whether those would be adequate for video transmission.[25] Access to adequate broadband is necessary for telehealth interactions and transmissions without a crippling lag, on both the provider and patient sides, along with adequate technology for telehealth for the provider.[14] Despite these potential concerns, programs with a largely low-income urban patient population have had success with telehealth OB programs.[21]

TECHNOLOGICAL ACCESS AND COMFORT

Another important factor is the patient's comfort and competence with technology.[24] Essentially, patient engagement with video conferencing can sometimes be difficult, although this can be attributed to a lack of access to a smartphone or computer.[21] Patients in some areas may not have access to a device or computer at home, particularly in remote areas.[20] Another factor affecting the use of this technology is the patient's comfort and competence with technology.[24]

Obstetrical care via telehealth is augmented by patient utilization of a home scale, blood pressure cuff, and ideally a fetal heart rate Doppler monitor. This can create a financial barrier for some patients and programs should be prepared to handle such a barrier.[15] An Amazon search shows that a digital blood pressure cuff can cost $20 to $40, a scale can cost $15 to $30, and a fetal Doppler monitor can cost ~$75 (Amazon search on February 24, 2021). This type of home surveillance requires a nurse to inform patients on how to properly use these instruments at their initial in-person visit. Some methods that have been used to help provide these instruments to obstetrical patients include community donations and financial support through grant funding,[15] although more sustainable approaches to scaling will be needed if these strategies are more routinely and broadly deployed.

LANGUAGE BARRIERS

Communication can be a barrier to providing obstetrical care when the care provider does not speak the language of the patient. Ideally, questions related to their health would be asked in the patient's native language to prevent confusion or having the questions asked being "lost in translation."[26] In person, this issue can extend to those women who are hearing impaired or deaf. Some of these women rely on lip-reading which is impossible with most masks.[26] Telehealth can help with this by removing the need to wear a mask. It is generally best to use an interpreter to ensure the provider is understood. An interpreter should be available to assist with all telehealth appointments. All written or emailed materials should be in the preferred language of the patient, especially those materials related to COVID-19 screenings.[26]

Conclusion

In summation, while there may be barriers to the use of telehealth obstetric services, including access and privacy issues, these barriers are surmountable and a telehealth approach is a valid and sound approach to care.[27] In the COVID-19 era, with restrictions on how many people can attend doctor's visits, childcare closed, and many obstetric patients working from home, telehealth obstetrics visits can help alleviate some of the stress of organizing childcare, transportation, leave from employment, and the time spent in an office waiting room waiting for care. However, from the many lessons learned during the pandemic, telehealth as a viable and optimal strategy will likely continue as an integral part of obstetric care long term.

References

1. Peahl AF, Howell JD. The evolution of prenatal care delivery guidelines in the United States. *Am J Obstet Gynecol*. 2020;S0002-9378:31391.
2. Lowery C. Telehealth: a new frontier in OB/GYN. *Contemporary OB/GYN Journal*. 2018;64:8.
3. University of Arkansas for Medical Sciences Institute for Digital Health and Innovation. High Risk Pregnancy Program Annual Report 2019-2020. 2020. Available at: https://angels.uams.edu/wp-content/uploads/sites/81/2021/02/2006298-2020-HRPP-annual-report_Schaffner-FINAL.pdf. Accessed December 23, 2020.
4. Butler Tobah YS, LeBlanc A, Branda ME, et al. Randomized comparison of a reduced-visit prenatal care model enhanced with remote monitoring. *Am J Obstet Gynecol*. 2019;221:638.e1–638.e8.
5. Danbjørg DB, Wagner L, Kristensen BR, et al. Intervention among new parents followed up by an interview study exploring their experiences of telemedicine after early postnatal discharge. *Midwifery*. 2015;31:574–581.
6. Odibo IN, Wendel PJ, Magann EF. Telemedicine in obstetrics. *Clin Obstet Gynecol*. 2013;56:422–433.
7. Greiner AL. Telemedicine Applications in Obstetrics and Gynecology. *Clin Obstet Gynecol*. 2017;60:853–866.
8. US Department of Health and Human Services. Determination that a Public Health Emergency Exists. 2020. Available at: www.phe.gov/emergency/news/healthactions/phe/Pages/2019-nCoV.aspx. Accessed November 4, 2020.
9. US Department of Health and Human Services. Renewal of Determination That A Public Health Emergency Exists. 2021. Available at: www.phe.gov/emergency/news/healthactions/phe/Pages/covid19-07Jan2021.aspx. Accessed February 3, 2021.
10. Amwell. Coronavirus: How telehealth can help. 2020. Available at: https://business.amwell.com/. Accessed February 3, 2021.
11. Williams E Empowering care teams with new tools in Microsoft 365. 2020. Available at: www.microsoft.com/en-us/microsoft-365/blog/2020/03/06/empowering-care-teams-with-new-tools-in-microsoft-365/. Accessed February 3, 2021.
12. Zoom. Zoom for Healthcare. 2020. Available at: https://zoom.us/healthcare. Accessed February 3, 2021.
13. Shachar C, Engel J, Elwyn G. Implications for Telehealth in a Postpandemic Future: Regulatory and Privacy Issues. *JAMA*. 2020;323:2375–2376.
14. American College of Obstetricians and Gynecologists. Implementing telehealth in practice. ACOG Committee Opinion No. 798. *Obstet Gynecol*. 2020;135:e73–e79.
15. Fryer K, Delgado A, Foti T, et al. Implementation of Obstetric Telehealth During COVID-19 and Beyond. *Matern Child Health J*. 2020;24:1104–1110.
16. Center for Connected Health Policy. Credentialing and Privileging. 2021. Available at: www.cchpca.org/telehealth-policy/credentialing-and-privileging. Accessed February 3, 2021.
17. Center for Connected Health Policy. Cross State Licensing. 2021. Available at: www.cchpca.org/telehealth-policy/cross-state-licensing. Accessed February 3, 2021.
18. Interstate Medical Licensure Compact. Information for Physicians. Available at: www.imlcc.org/information-for-physicians/. 2020. Accessed February 3, 2021.
19. Center for Connected Health Policy. Fall 2020 State Telehealth Laws & Reimbursement Policies. 2020. Available at: https://www.cchpca.org/resources/category/report-publication-policy-brief/. Accessed February 3, 2021.
20. Sklar J. Why Rural Hospitals May Not Survive COVID-19. *Natl Geogr Mag*. 2020. Available at: https://www.nationalgeographic.com/science/article/why-rural-hospitals-may-not-survive-coronavirus-telemedicine.
21. Dosaj A, Thiyagarajan D, ter Haar C, et al. Rapid Implementation of Telehealth Services During the COVID-19 Pandemic. *Telemed J E Health*. 2021;27:116–120.
22. Cooper T. Widespread Telehealth Adoption in Rural Communities Requires Widespread Broadband Availability. *Broadband Now*. 2020. Available at: https://broadbandnow.com/report/telehealth-requires-broadband-availability/.
23. Krenitsky NM, Spiegelman J, Sutton D, et al. Primed for a pandemic: Implementation of telehealth outpatient monitoring for women with mild COVID-19. *Semin Perinatol*. 2020;44:151285.
24. Madden N, Emeruwa UN, Friedman AM, et al. Telehealth Uptake into Prenatal Care and Provider Attitudes during the COVID-19 Pandemic in New York City: A Quantitative and Qualitative Analysis. *Am J Perinatol*. 2020;37:1005–1014.
25. US Census Bureau. U.S. Quickfacts. 2020. Available at: www.census.gov/quickfacts/fact/table/AR,US/INT100219. Accessed January 13, 2021.
26. Onwuzurike C, Meadows AR, Nour NM. Examining Inequities Associated With Changes in Obstetric and Gynecologic Care Delivery During the Coronavirus Disease 2019 (COVID-19) Pandemic. *Obstet Gynecol*. 2020;136:37–41.
27. DeNicola N, Grossman D, Marko K, et al. Telehealth interventions to improve obstetric and gynecologic health outcomes: a systematic review. *Obstet Gynecol*. 2020;135:371–382.