

Unlocking the Potential of Telehealth in Surgery: A Comprehensive Primer for Surgeons

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Unlocking the Potential of Telehealth in Surgery: A Comprehensive Primer for Surgeons

Introduction

In the rapidly evolving landscape of healthcare, telehealth has emerged as a transformative force, challenging traditional paradigms, and offering innovative solutions to common and difficult problems. Surgeons are at the forefront of this revolution, enabling the significant changes that telehealth has brought to the delivery of surgical care. There are many resources that are available for practitioners to help understand and adopt telehealth into their practice, but this primer is tailored exclusively for surgeons, exploring telehealth's impact, benefits, and applications within the surgical domain.

The adoption of telehealth within surgery represents a paradigm shift, driven by the convergence of technological advancements, shifting patient expectations, and a growing emphasis on optimizing healthcare delivery within the context of a recent global pandemic. This primer discusses telehealth as a pivotal tool to benefit both surgeons and patients, introduces the fundamentals of telehealth, and provides ways to improve access to surgical care using telehealth. Regulatory and financial considerations that are integral to the adoption of this technology are also reviewed. Practice and patient preparation considerations for telehealth implementation are highlighted. Moreover, the experience of telehealth on the international and global stage, recognizing its potential to impact healthcare worldwide, is explored.

The Rationale for Telehealth: Benefits for Surgeons and Patients

Telehealth, broadly defined as the use of digital communication technologies to facilitate healthcare services, has ushered in a new era of healthcare delivery [1]. For surgeons, it offers an array of benefits that extend beyond the convenience of virtual consultations. Telehealth transcends geographical constraints, enabling surgeons to reach patients in underserved or remote areas. This extends their reach and impact, improving the efficiency and effectiveness of surgical practices, as well as enhancing patient access to healthcare.

From a patient perspective, telehealth offers significant advantages. Patients in underserved areas can receive timely consultations, follow-up care, and even limited surgical interventions without leaving their local communities. This increased access to care can contribute to earlier diagnosis and intervention, potentially saving lives. Patients in remote areas or those with limited access to healthcare can minimize long commutes or extended waiting times [2]. Additionally, telehealth benefits patients with physical constraints such as mobility issues, chronic illnesses, or those requiring specialized transportation. Patients can engage with their surgeons from the comfort of their personal location, using either their computers or their personal communication devices. Moreover, telehealth has the capacity to enhance patient engagement and education, enabling patients to actively participate in their care plans. Studies in surgical and non-surgical fields have demonstrated that telehealth can be provided at lower cost to the patient, requires less time off work for the patient, and has satisfaction rates nearly equivalent to in-office visits [3-5]. In essence, telehealth creates a win-win situation, where surgeons can efficiently deliver care, potentially reduce overhead costs, and expand their practice, while patients can benefit from increased convenience, reduced travel expenses, and enhanced access to expert care.

A unique benefit to utilization of telehealth is the benefit to the global environment through reduction in carbon emissions. Studies have demonstrated that telehealth visits significantly reduce carbon emissions, largely due to reductions in emissions related to commutes to in-person care [6,7]. While the most common reduction is secondary to automobile transport by patients to appointments, diminished ambulance and helicopter transport for specialty consultation in more acute settings can also yield benefits. Even when the contributions from telemedicine equipment creation, utilization, and destruction are considered, studies demonstrate a significant environmental benefit from remote care [6,7].

Supplementing In-Person Care: A Nuanced Approach

Telehealth does not seek to replace in-person care entirely; rather, it complements and augments traditional healthcare. It is essential to recognize that while telehealth can efficiently manage routine consultations, preoperative assessments, postoperative follow-ups, management of chronic conditions, and non-urgent matters, nothing can replace the value of in-person surgical evaluations and interventions in other circumstances. Likewise, complex surgical procedures and emergencies still require hands-on expertise and the infrastructure and technology of medical centers. Nonetheless, remote care limitations are increasingly mitigated with rapid advances in home monitoring devices and wearable technology. The key to successful telehealth implementation lies in discerning when to use telehealth and when to rely on traditional face-to-face interactions. This powerful tool can augment traditional surgical practice and dismantle barriers to surgical care for many.

Synchronous vs. Asynchronous Telehealth

Telehealth encompasses various modes of communication, with two primary categories being synchronous and asynchronous telehealth. Synchronous telehealth involves real-time interactions between surgeons and patients using video conferencing or telephone calls. This approach replicates the traditional clinical encounter, allowing for dynamic discussions, visual assessments, and immediate responses to patient queries. Synchronous telehealth is invaluable for addressing acute concerns, conducting initial consultations, and ensuring a personal connection between the surgeon and the patient. On the other hand, asynchronous telehealth involves the exchange of non-real-time information. Patients can upload medical records, images, and videos, which surgeons can review at their convenience. This mode is particularly useful for follow-up appointments, the sharing of diagnostic data, and storing historical patient information. Asynchronous telehealth offers flexibility and efficiency, enabling surgeons to manage a higher volume of cases with reduced time constraints. Furthermore, with advances in remote patient monitoring technology, asynchronous health data collected by patients at home will likely become increasingly available to surgeons and may prove useful in perioperative assessment and care.

The Impact of the COVID-19 Pandemic on Telehealth Adoption

The COVID-19 pandemic served as an unexpected catalyst for the widespread adoption of telehealth across the healthcare spectrum [2,8]. As the pandemic progressed, healthcare systems grappled with the urgent need to provide care while minimizing in-person interactions to decrease transmission of the disease. For surgeons, this facilitated a rapid pivot towards telehealth, especially for non-emergent cases and routine consultations. The pandemic underscored the importance of telehealth in maintaining continuity of care and minimizing disruptions during crises. It also illuminated the potential for telehealth to enhance the resilience and adaptability of healthcare systems. In the early post-pandemic period, the surgical community has continued to embrace virtual consultations, telemedicine platforms, and remote monitoring to ensure that patients continue to receive care. In many ways, this experience propelled the surgical field into a new era, where telehealth has become an integral part of the surgical practice.

Diverse Settings for Telehealth in Surgery

Telehealth in surgery is a versatile tool, applicable in various settings to address a wide range of patient needs. We explore some of the main clinical environments in which telehealth has been most utilized:

1. Outpatient Visits:

- **Follow-Up Visits:** Postoperative follow-up appointments are often well-suited for telehealth. Patients can provide updates on their recovery progress, share photos of incisions, and discuss any concerns with their surgeon. This approach minimizes the need for in-person visits, reducing the burden on both patients and surgical practices.
- **Consultations:** Initial consultations, especially for non-emergent cases, can occur virtually. Surgeons can review medical records, diagnostic imaging, lab values and conduct preliminary

assessments, and discuss treatment options with patients. Patient visits can be augmented by home assessment devices that can provide additional data to facilitate decision making. This not only expedites the consultation process but also accommodates patients who might otherwise face challenges to an in-person visit.

- **Multidisciplinary Care:** Complex cases often require input from multiple specialists. Telehealth facilitates multidisciplinary care conferences, where surgeons, radiologists, oncologists, and other experts can collaborate remotely to develop comprehensive treatment plans.

2. Intra-Hospital and Inter-Hospital Consultation:

- **Emergency Department:** Telehealth can be instrumental in providing rapid expert consultations in emergent situations. Surgeons can remotely assess patients in the emergency department – either at their primary hospital or at referring hospitals – guide onsite staff and determine the urgency of surgical interventions. This real-time collaboration can significantly improve patient outcomes.
- **Intensive Care Units (ICU):** Patients in the ICU often require close monitoring and frequent assessments. Telehealth enables surgeons to conduct virtual rounds, review patient data, and coordinate care with critical care specialists. This not only enhances the efficiency of ICU care but also reduces the exposure of healthcare workers to infectious diseases.
- **Inpatient Ward:** Telehealth consultations can facilitate rapid assessment and care of hospitalized patients in a variety of settings including standard medical and surgical units, rehabilitation wards, and transitional care wards.

In summary, telehealth has emerged as a powerful tool that offers numerous benefits to surgeons, patients, and the healthcare system at large. By expanding access to care, supplementing in-person interactions, and distinguishing between synchronous and asynchronous telehealth, surgeons can harness this technology to improve patient outcomes and enhance their own practice. The COVID-19 pandemic has accelerated the adoption of telehealth in the surgical community, highlighting its value in maintaining continuity of care during crises. As we continue to explore the diverse settings where telehealth is applicable, it has become evident that this technology is not just a trend but a pivotal component of modern surgical practice. In the following sections of this primer, we will delve deeper into the practical aspects of implementing telehealth in surgery, addressing regulatory considerations, ethical challenges, and best practices for optimizing the patient-surgeon telehealth experience.

Improving Access to Surgical Care with Telehealth

Access to surgical care is a critical determinant of patient outcomes and overall well-being. Unfortunately, disparities in access to surgical care persist, stemming from a complex web of socioeconomic, gender, race, and location-related factors. In this section, we will delve into these disparities and explore how telehealth serves as a powerful tool for enhancing access to surgical care, bridging gaps in healthcare delivery, and ultimately improving patient outcomes.

Disparities in Healthcare Access

Access to surgical care remains elusive for many individuals due to a multitude of factors, including socioeconomic status, gender, race, and geographical location.

1. Socioeconomic Disparities: Socioeconomic disparities play a significant role in limiting access to surgical care. Patients with lower income levels may face financial barriers that deter them from seeking surgical consultations and interventions. Costs associated with transportation, time off from work, and out-of-pocket expenses can be insurmountable for economically disadvantaged individuals. Additionally, patients lacking health insurance or those with high deductible plans may delay or forego surgical care due to concerns about the financial burden. These disparities in access can lead to delayed diagnoses and more advanced disease stages, negatively impacting patient outcomes.

2. Gender and Race Disparities: Gender and race disparities in healthcare access are well-documented and persist within surgical care. Studies have shown that women and racial minorities face disparities in surgical referral rates, access to specialty care, and timely interventions [9-12]. These disparities can result from a variety of factors, including implicit biases among healthcare providers, systemic inequities, and cultural differences in healthcare-seeking behaviors. Addressing these disparities is essential to ensuring that all patients have equal access to surgical care.

3. Location-Related Disparities: Geographical location is a key determinant of healthcare access. Rural and remote areas often lack the healthcare infrastructure necessary to provide specialized surgical care. Patients in these regions may face long travel distances, limited healthcare facilities, and a scarcity of surgical specialists. Moreover, even in non-remote locations, access to sub-specialty surgical care can be limited. Smaller healthcare facilities may lack the expertise and resources needed to offer specialized surgeries, requiring patients to travel to urban centers for treatment.

Inefficiencies in Traditional Surgical Care

Traditional models of surgical care inherently have inefficiencies that limit access for patients. These inefficiencies stem from the way clinics is structured, the challenges of handling appointment scheduling, and the need for in-person visits with surgeons.

1. Clinic Structure: Traditional surgical clinics often follow a rigid structure that may not align with the needs of all patients. In-person visits typically require patients to travel to the clinic, taking time off from work and facing potential transportation challenges. This structure can be particularly burdensome for patients with mobility issues or those living in remote areas.

2. Appointment Scheduling: Managing appointment schedules in surgical practices can be challenging. Overbooked clinics, long wait times, and last-minute cancellations due to emergencies or no-shows can disrupt the patient care continuum. These challenges limit the number of patients that can be seen in a day, contributing to access issues.

3. Surgeon vs. Advanced Practice Provider: Surgical practices often rely heavily on the presence of the surgeon for every patient interaction. This approach can create bottlenecks and delays, particularly in cases where advanced practice providers could manage routine follow-ups or preoperative evaluations.

Telehealth as an Access Enhancer

Intuitively, one would assume that telehealth could worsen disparities, given the potential for technology deserts, such as rural areas that lack broadband, or the expense of communication technology ownership that may be difficult for some socioeconomic demographics. According to a 2021 Pew Research Survey, 97% of Americans own a cellphone of some kind, with 85% owning a smartphone, and 77% owning a desktop or laptop computer. In addition, in the US, there is apparent equity in technology access. Smartphone ownership is similar across White, Black/African American, and Hispanic/Latino adult demographics (85%, 83% and 85% respectively). Moreover, 80% of rural adult Americans own a smartphone, as do 76% of adult Americans who earn less than \$30,000 per year. However, access to broadband is less equitable. Approximately three-quarters of American adults have broadband internet service at home. White adult Americans are more likely to have access to broadband internet service (80%), compared to Black/African Americans (71%) and Hispanic/Latinos (65%). Similar inequities are seen comparing rural (63%) to Urban/Suburban (77-79%), and for adults who make < \$30,000 per year (56%) [13].

Additionally, there are significant disparities in digital literacy, resulting in improved healthcare access for those already competent at navigating the healthcare system, widening the gap for those who are not. Patients from different cultural backgrounds, ethnicities, socioeconomic backgrounds, and ages may have differing levels of digital literacy. For those without smartphones, empowering patients and providers to use phone calls in appropriate clinical settings (follow-up appointments, routine check-ins, etc.) can allow for patients to stay engaged in the healthcare system without losing them to technological or transportation barriers.

The COVID-19 pandemic generated strategies to overcome access barriers to healthcare while also limiting risk to vulnerable populations. At the beginning of the pandemic, it was clear that the burden of COVID-19 was not borne equally. People of color, particularly Black/African Americans, Hispanic/Latinos, and Native Americans, suffered COVID-19 infection and related death disproportionately. Telehealth was viewed as a means to mitigate health access disparities. Telehealth could continue outpatient evaluations for underserved populations without risking COVID-19 exposure. Telehealth could allow for outpatient surgical evaluation, such as cancer surgery evaluation and decision making, for patients with transportation challenges or even contact worries [14,15].

During the COVID-19 Pandemic, the Coronavirus Aid, Relief, and Economic Security (CARES) Act was passed. With the CARES act, there was a Center for Medicare and Medicaid Services (CMS) Waiver 1135 [16], which stated:

- Patients living in any geographic area can receive telehealth services.
- Patients can access video visits from their home.
- Video visits can be delivered via smartphones (Skype, FaceTime OK).
- Requirements for preexisting relationships between patient and provider are removed.
- Reimbursements are the same as in-person visits.

Post-pandemic, the policies of the CARES act will undoubtedly change. Surgeons should stay abreast of these changes as they integrate telehealth into their practice.

The rapid adoption and development of telehealth that occurred during the COVID-19 pandemic provided clear examples of how telehealth can improve patient access to surgical care. In addition, the pandemic experience highlighted possible ways that telehealth could mitigate the built-in inefficiencies of traditional care models. Examples include:

1. Improved Access for Remote and Rural Patients: Telehealth breaks down geographical barriers, allowing patients in remote or rural areas to access surgical care without the need for long and often arduous journeys. Patients in underserved regions can now receive consultations, follow-ups, and even postoperative care through secure and convenient telehealth encounters. This expanded access is particularly crucial for patients facing time-sensitive conditions or those requiring specialized surgical expertise that may not be available locally. Although telehealth visits facilitate expedited access to a surgical specialist, the surgeon should keep in

mind that in-person visit may still be necessary to properly examine the patient as is relevant to the patient's case.

2. Enhanced Access to Sub-specialty Surgical Care: Telehealth facilitates access to sub-specialty surgical care that may be unavailable at smaller healthcare facilities. Patients no longer need to travel great distances to urban centers for specialized consultations. Telehealth connects them directly with sub-specialists, ensuring timely and expert care. This improved access can lead to earlier diagnoses, more targeted treatments, and ultimately better outcomes for patients with complex medical conditions.

3. Streamlined Clinic Efficiency: Telehealth can significantly enhance the efficiency of surgical practices. By incorporating telehealth into their care models, surgeons can optimize their schedules, reduce no-shows, and manage overruns more effectively. Routine follow-ups and non-emergent consultations can be seamlessly conducted via telehealth, freeing up valuable in-person clinic time for more complex cases. This streamlined efficiency benefits both patients and surgeons. Patients experience shorter wait times and greater scheduling flexibility, while surgeons can increase their patient volume and provide timely care to those in need.

Financial Impact of Improved Access

Improved access to surgical care through telehealth also carries financial implications that extend beyond individual patient outcomes.

1. Reduced Healthcare Costs: Telehealth can help reduce healthcare costs for both patients and healthcare systems. Patients can avoid the financial burdens associated with travel, including transportation, accommodation, and missed workdays. Healthcare systems benefit from reduced administrative overhead, including appointment scheduling and check-in processes.

2. Enhanced Revenue Generation: Telehealth expands the patient base for surgical practices, increasing the potential for revenue generation. Surgeons can reach a broader population of patients, including those in remote areas and those seeking specialized care. Additionally, telehealth can help surgeons reduce the number of no-shows and late cancellations, optimizing their schedules and revenue streams.

3. Reduce Costs of Readmissions and Improve Throughput: By increasing patient access to skilled providers, telehealth *may* help reduce readmissions from lapses in treatment, freeing up hospital beds and improving efficiency in bed utilization.

How do Diverse Patients View Telehealth?

It is important to understand the strengths and weaknesses of telehealth from the perspectives of diverse patients, so we can understand how to support all our patients as healthcare races forward with these new technologies for communication and care. One of the authors (DTC), at the University of California, Davis Comprehensive Cancer Center convened key stakeholder Black/African American focus groups to investigate the feasibility and receptivity of telehealth, including face-to-face "video visits" to enhance access to advice and care, during the COVID-19 pandemic. Black/African American stakeholders included patients, family members, nurses, trainees, and physicians. When asked the question "What is your experience with Telemedicine," answers by the group included "clunky," they wished there were better "staffing to address real time complications with technology," and some of their past in-person traditional visits "could have been done by telemedicine"[14].

Some remarkably interesting comments were that some physicians who they knew who had good bedside manners had "poor technology bedside manners." And that there should be better "provider training on how to use telemedicine." Some participants expressed concern about "technology deserts" and that there should be "advocacy for increased broadband." And finally, the issue of "trust" was highlighted by the group. Many underserved communities do not trust the healthcare system because of structural racism and because, in

many instances, the healthcare system has shown to not be “trustworthy.” The participants stated not only did they have to determine if they could trust healthcare providers, but could they also trust the technology? They stated that frequent use of telehealth may increase that trust in the technology. In addition, providers must optimize communication style (technology bedside manner) in a “supportive and information providing way.”

It is important for providers to remember that the value derived from virtual engagement with patients is directly correlated to the amount of energy both parties are willing to invest. Respecting the time allocated to a telemedicine visit as dedicated time for that patient, as well as using telemedicine with prudence, allows patients to continue to have a trusting relationship with their provider. Knowing that their provider would choose telemedicine and in-person visits appropriately for them, as well as respecting their preferences, allows patients to maintain engagement with the healthcare system. Engaging with patients in private, protected encounters without distraction applies to both in-person and virtual visits. Quality time without distraction or feeling rushed remains important no matter the modality.

Conclusion

Telehealth has emerged as a powerful tool for improving access to surgical care, addressing disparities, and enhancing efficiency in surgical practices. By breaking down geographical barriers, streamlining clinic operations, and expanding access to sub-specialty care, telehealth not only benefits patients but also offers potential financial advantages and may boost job satisfaction for surgeons. As healthcare continues to evolve, the integration of telehealth into surgical practice represents a significant step towards a more equitable and patient-centered future.

Telehealth Reimbursement, Billing, and HIPAA Compliance for Surgeons

The successful integration of telehealth into surgical practice is contingent upon understanding and navigating the dynamic landscape of reimbursement, billing, and regulatory considerations. In this section, we will delve into these crucial aspects of telehealth, providing insights into credentialing, financial implications, and evolving regulatory issues.

Credentialing Surgeons for Telehealth

Telehealth credentialing is vital for ensuring that surgeons are qualified and competent to provide remote surgical consultations and interventions. This section explores the complexities of credentialing, encompassing inter-hospital and interstate challenges.

Inter-Hospital Credentialing: Surgeons within the same healthcare system where they are credentialed for in-person care often find it more straightforward to extend their practice to telehealth. However, even within a single healthcare system, telehealth credentialing may involve additional steps. These steps typically include a review by the organization's credentialing committee to ensure that the surgeon meets the qualifications for telehealth practice. Surgeons may need to demonstrate proficiency in using telehealth technology, adherence to telehealth-specific policies, and the ability to maintain the same high standards of care virtually as they do in-person. The COVID-19 pandemic accelerated the adoption of telehealth, leading many healthcare organizations to streamline their telehealth credentialing processes. These changes aimed to facilitate rapid deployment of telehealth services while ensuring patient safety and maintaining clinical care quality. Surgeons should engage with their institution's credentialing bodies to understand these streamlined processes, which may involve expedited reviews of qualifications and the inclusion of telehealth competencies in existing credentialing criteria.

Interstate Credentialing. While telehealth facilitates care delivery between surgeon and patient regardless of distance, the practice of telehealth across state lines comes with unique challenges. Each state in the United States maintains distinct licensing requirements and telehealth regulations, posing a significant challenge for surgeons who wish to practice telemedicine with patients located in other states. To navigate interstate credentialing challenges, surgeons must adhere to the specific rules and regulations of the state where the patient is located. This is a key point as surgeons cannot only comply with their home state regulations but must familiarize themselves with and adhere to the licensing, billing, and credentialing standards of the state in which each respective patient resides. The implementation of the Interstate Medical Licensure Compact (IMLC) [17] has alleviated some of these barriers by allowing eligible physicians, including surgeons, to apply for expedited multi-state licensure. Surgeons must ensure they meet the requirements of the IMLC and any additional state-specific regulations. Additionally, some states have embraced telehealth-friendly policies that facilitate cross-border telemedicine practice. Understanding the legal frameworks and requirements of each state where they intend to provide telehealth services is essential for surgeons to ensure compliance with telehealth licensing laws. It may also be prudent to seek legal counsel or consult with medical boards for guidance on navigating the complexities of interstate telehealth credentialing. Another consideration relates to medical liability issues in interstate practice. Surgeons are encouraged to engage with a resource who can evaluate risk in various locations. In particular, surgeons should review their own liability insurance plans. Surgeons should confirm whether their insurance policies cover telehealth services and whether their policies cover services in the states where they wish to deliver telehealth care. Some insurance companies/policies include telehealth as a routinely covered service. Other companies may require providers to purchase a supplemental telehealth insurance policy. Surgeons should also be aware that individual states may have specific regulations as to how a provider collects and stores protected health information. Surgeons should understand and comply with these regulations in all of the states where they deliver care. The United States Health and Human Services Department Telehealth website provides useful information and guidance regarding legal considerations in the delivery of telehealth care (Table 1).

Financial Implications and Considerations for Surgeons in Telehealth

The financial aspects of incorporating telehealth into surgical practice are multifaceted, encompassing reimbursement, relative value units (RVUs), expenses, insurance, deductibles, and facility fees.

Reimbursement and Surgeon Compensation: Reimbursement for telehealth services remains dynamic and evolving with variations in rates based on payer policies, geographic location, and the specific telehealth modality employed. Private payers, Medicare, and Medicaid have adapted their reimbursement policies to include a broader range of telehealth services, encompassing surgical consultations, preoperative evaluations, and postoperative follow-ups. However, it is important to recognize that the reimbursement landscape is not uniform, and rates may differ from in-person encounters. Medicare, for example, has established specific billing codes for telehealth services, which surgeons must use to accurately document and bill for their services [18]. It is crucial for surgeons to familiarize themselves with the specific billing codes applicable to their telehealth services and stay updated on any changes to ensure appropriate reimbursement. Moreover, surgeons should proactively engage with payers, advocating for equitable reimbursement rates that reflect the complexity and value of telehealth surgical consultations. Many surgical societies and organizations, including the American College of Surgeons, have actively lobbied for fair reimbursement policies to support telehealth in surgery. It is important to note that the expanded reimbursement of telehealth services only became available during the COVID-19 pandemic under the Coronavirus Aid, Relief, and Economic Security (CARES) Act. This legislation significantly broadened the scope of telehealth services covered under the Centers for Medicare and Medicaid Services (CMS) rules. While the expanded reimbursement largely persists today, surgeons must be aware that these policies are dynamic and that future changes may occur.

Relative Value Units (RVUs) and Expense Considerations: RVUs play a critical role in determining the relative value of surgical services, which, in turn, influences reimbursement rates. Accurate coding and documentation are essential to ensure that surgeons receive appropriate RVUs for telehealth encounters. Surgeons must also consider the expenses associated with telehealth adoption. These expenses encompass staff training in telehealth technology and procedures, investment in secure and reliable telehealth platforms, and the acquisition of telemedicine equipment. While telehealth may reduce certain overhead costs associated with in-person visits, such as office space and administrative staff, it introduces new technology-related expenses. Understanding the cost-benefit analysis of telehealth adoption is essential. Surgeons should assess whether the expansion of their patient base through telehealth can offset the initial investment in technology and training. Additionally, exploring reimbursement opportunities for telehealth can help surgeons gauge the financial viability of incorporating telehealth services into their practice.

Insurance and Deductible Issues: Telehealth services can present unique insurance and deductible challenges for both surgeons and patients. Insurance coverage for telehealth may vary among payers, and patients may have different co-pays, co-insurance, or deductible requirements for telehealth services compared to in-person visits. Surgeons should proactively communicate these potential costs to patients during the informed consent process to ensure transparency and avoid surprise billing. Moreover, surgeons can explore strategies to facilitate insurance pre-authorization for telehealth services, helping patients understand their financial responsibilities in advance. To address patient concerns related to telehealth costs, surgeons can collaborate with their billing departments to provide patients with accurate estimates of their out-of-pocket expenses for telehealth consultations. By proactively addressing insurance and deductible issues, surgeons can enhance the patient experience and minimize financial barriers to accessing telehealth services.

Facility Fees and Reimbursement: In certain telehealth scenarios, facility fees may come into play, particularly when telehealth consultations occur in hospital-affiliated outpatient settings. Facility fees, which encompass the cost of providing healthcare services in a hospital or healthcare facility, can impact the overall financial landscape of telehealth services. The reimbursement of facility fees for telehealth encounters varies among payers and may depend on whether the encounter is considered an extension of a hospital or outpatient visit. Surgeons and healthcare institutions should collaborate with payers to clarify the reimbursement policies for telehealth facility fees and understand how these fees may affect the financial sustainability of telehealth services. By proactively addressing the financial implications of telehealth adoption, surgeons can make informed decisions regarding the integration of telehealth services into their practice. This includes assessing the feasibility of expanding their patient base, optimizing reimbursement, and managing technology-related expenses.

Regulatory Landscape: Government Regulations Impacting Telehealth Reimbursement

The regulatory landscape surrounding telehealth reimbursement is subject to ongoing changes and government interventions at both the federal and state levels. Surgeons must remain vigilant in staying informed about the latest government regulations that directly affect the reimbursement landscape for telehealth in surgery.

Federal Regulations: The federal government has played a significant role in expanding telehealth reimbursement through legislation and policy changes. The Coronavirus Aid, Relief, and Economic Security (CARES) Act, along with other legislative efforts, has significantly broadened the scope of telehealth services covered under Medicare and Medicaid [16]. These changes have facilitated the reimbursement of telehealth services provided by surgeons and other healthcare providers. However, it is important to note that these changes may not be permanent, and ongoing advocacy efforts are essential to ensure the continued expansion of telehealth reimbursement. Surgeons can engage with professional organizations and associations to advocate for the retention and expansion of telehealth reimbursement policies that support surgical practice.

State Regulations: State governments hold significant authority over telehealth reimbursement, with each state having the autonomy to define its telehealth policies, regulations, and reimbursement standards. Surgeons must navigate the diverse state-level landscape to ensure compliance with specific requirements, licensing, and reimbursement policies. To address state-specific regulations, surgeons should actively engage with their respective state medical boards and healthcare associations. These organizations can provide guidance on state-specific telehealth policies, licensing requirements, and reimbursement guidelines. Staying informed about state-specific changes and advocating for telehealth-friendly policies at the state level can enhance reimbursement opportunities for surgeons.

Telehealth Parity Laws: Many states have enacted telehealth parity laws, which mandate that telehealth services be reimbursed at the same rate as in-person services for comparable medical conditions. These laws aim to eliminate disparities in reimbursement rates between telehealth and traditional in-person visits, ensuring that patients receive equitable access to care. Understanding the presence and nuances of telehealth parity laws in a surgeon's practice area is essential for maximizing reimbursement opportunities. Surgeons can leverage these laws to advocate for fair reimbursement policies and educate patients about their rights to equitable telehealth services.

In summary, the successful incorporation of telehealth into surgical practice hinges on a comprehensive understanding of credentialing, financial implications, and the regulatory landscape. Surgeons must proactively navigate inter-hospital and interstate credentialing challenges, advocate for equitable reimbursement, manage expenses, and stay informed about evolving government regulations. By addressing these considerations thoughtfully and strategically, surgeons can optimize the integration of telehealth services, ensuring the delivery of high-quality surgical care while maintaining financial sustainability in the evolving landscape of virtual healthcare.

Readiness for Telehealth in Surgical Practice

The adoption of telehealth in surgical practice is a transformative step that requires careful preparation and planning. Before embarking on this digital journey, surgeons must ensure they have the necessary infrastructure, policies, and strategies in place to provide high-quality telehealth services. This section, tailored for surgeons, provides an in-depth exploration of the readiness factors crucial to successful telehealth implementation.

Understanding Local Policies and Regulations

Surgeons contemplating the integration of telehealth into their practice must first gain a comprehensive understanding of the local policies and regulations that govern telehealth services. This understanding involves considering hospital, health system, and state-level perspectives.

Hospital and Health System Policies: Begin by consulting with the hospital or healthcare system where you practice. Different institutions may have varying policies and protocols related to telehealth. Understanding your organization's stance on telehealth is critical, as it can impact credentialing, reimbursement, and technological support.

Key questions to explore with your institution include:

- Does the hospital system have appropriate infrastructure to conduct telehealth visits?
- What are the hospital's policies on telehealth credentialing?
- Are there specific guidelines for billing and reimbursement?
- Does the institution have a preferred telehealth platform or software?
- Is the preferred telehealth platform secure and HIPAA compliant?
- How does the hospital handle patient consent and privacy concerns?

Understanding these considerations will lay the foundation for a seamless telehealth integration process within your healthcare institution.

State Regulations: In addition to institutional and federal policies, it is essential to familiarize yourself with state-level regulations governing telehealth. During the COVID-19 pandemic, some states temporarily relaxed or modified their licensing requirements to allow out-of-state providers to offer telehealth services. At the time of this writing, most state level emergency declarations have ended. State laws vary considerably in terms of licensure, reimbursement, and telehealth-specific requirements. Surgeons must comply with the rules and regulations of the state where the patient is located during a telehealth consultation. Telehealth licensing requirements and reciprocity agreements are mechanisms that allow healthcare providers to offer services across state lines or in areas where they might not be physically present. These requirements and agreements are designed to ensure that patients receive high-quality care while also allowing for the flexibility and convenience that telehealth can offer.

- **State-specific Telehealth Licenses:** Some states offer a special telehealth license that allows out-of-state providers to deliver telehealth services to patients in that state. This license is separate from the full medical license and is specifically for telehealth services. States that offer these special licenses include Alabama, Delaware, Florida, Georgia, Minnesota, Nevada, New Mexico, Oklahoma, Tennessee, Texas, West Virginia. In all cases, a valid medical license from the state where the clinician is physically residing and performing services is required.
- **Interstate Medical Licensure Compact :** The IMLC is an agreement among participating U.S. states to expedite the licensing process for physicians who want to practice in multiple states. This makes it easier for physicians to obtain licenses in multiple states, facilitating telehealth services across state lines [17].

Other key areas to understand at the state level include telehealth parity laws, reimbursement policies, and consent and privacy regulations.

- **Telehealth parity laws.** Telehealth parity laws are designed to ensure that telehealth services are recognized and reimbursed similarly to traditional in-person services. The primary motivation behind these laws is to promote the adoption of telehealth by ensuring that providers, including surgeons, are fairly compensated for their expertise, regardless of the mode of delivery. There are two main facets to telehealth parity laws. The first, known as "payment parity," dictates that telehealth services should be reimbursed at rates comparable to in-person consultations. This ensures healthcare providers are not financially disadvantaged when offering telehealth options. The second aspect, "service or coverage parity," mandates that telehealth services cover the same range of medical services as in-person visits. While this ensures consistency in the services offered, it is important to note that it does not always guarantee identical reimbursement rates. As surgeons navigate the evolving telehealth landscape, understanding these parity laws is crucial for both patient care and practice economics.
- **Billing and reimbursement.** Billing guidelines predominantly fall into three categories: Medicare, Medicaid, and commercial payers. In 2020, the Centers for Medicare & Medicaid Services (CMS) significantly expanded the scope of reimbursable telehealth services for Medicare beneficiaries. This expansion means that a diverse group of providers, ranging from physicians to licensed clinical social workers, can offer a broader spectrum of virtual services to Medicare patients. As of January 1, 2023, a new fee schedule for Medicare reimbursement was implemented by CMS [18]. However, it is essential to note that while some telehealth reimbursements under this schedule are extended, others are slated to conclude by the end of 2024. Additionally, individual states are continually revising telehealth reimbursement policies, affecting both commercial payor and CMS services. On the Medicaid front, coverage policies for telehealth services differ from state to state. In light of the COVID-19 public health crisis, numerous states expanded Medicaid's telehealth service coverage. By fall 2022, the Center for Connected Health Policy (CCHP) had released a comprehensive summary detailing state-specific telehealth laws and Medicaid policies [19]. As of this publication, all 50 states and the District of Columbia have established both coverage and payment parity laws for Medicaid. When it comes to private insurance, billing procedures for telehealth vary with each insurer. However, legislation in 43 states, the District of Columbia, and the Virgin Islands mandates private insurance providers to offer reimbursement for telemedicine services. Surgeons can refer to the CCHP Policy Finder Tool to stay updated on the latest telehealth regulations in their respective states.
- **Informed consent and privacy regulations.** Informed consent is a pivotal aspect of telehealth and is mandated by the majority of states either through statutes, administrative codes, or Medicaid policies. For Medicare, informed consent is particularly tied to Communication Technology-Based Service (CTBS) codes, where patients must be apprised of any cost-sharing responsibilities [20]. While the specifics of informed consent laws may vary across states, adhering to the following prudent steps can ensure a smooth telehealth interaction:
 - **Clarifying Expectations:** During the initial interaction, elucidate what the patient can anticipate from the telehealth visit, along with their rights.
 - **Patient Responsibilities:** Engage with the patient regarding their obligations during online consultations, such as ensuring privacy by using headphones and securing a private space during the visit.
 - **Observer Disclosure:** If the session is being observed, inform the patient and obtain their consent at the outset.
 - **Pre-Visit Documentation:** Advise patients to complete any requisite forms prior to the visit and to have them ready for review.
 - **Consent Documentation:** Ensure that informed consent and other compliance documentation are duly received and/or documented during check-in, inclusive of verbal consent. A telehealth consent form can be accessed from the Agency for Healthcare Research and Quality [20].

Navigating the intricate landscape of state regulations is crucial to ensure legal and ethical telehealth practice.

Developing a List of Indications and Diagnosis for Telehealth

Telehealth is a versatile tool, but not all medical conditions or patient problems are suitable for remote consultations. Surgeons must develop a clear list of indications and diagnoses that they are willing to address via telehealth. This list should be based on clinical appropriateness and safety considerations.

Common indications for telehealth in surgical practice may include:

- Surgical counseling and education.
- Preoperative evaluations and consultations.
- Postoperative follow-up visits.
- Non-emergent surgical evaluations.
- Chronic disease management and monitoring.
- Wound care and dressing changes.
- Medication management and prescription refills.

It is important to strike a balance between expanding access to care and ensuring patient safety. Some conditions may require in-person evaluation and intervention due to their complexity or urgency. That being said, numerous surgical specialties can benefit from and effectively implement telehealth. A prospective cohort study was conducted during the COVID-19 California stay-at-home orders within an academic medical center's department of surgery, shedding light on the adaptability of various surgical specialties to telehealth. The specialties examined included Bariatric/Minimally Invasive Surgery, Cardiac, Colorectal, General, Plastics, Surgical Oncology, Thoracic, Transplant, Trauma, and Vascular. The data collected from these clinics was compared to the usage data from the same period a year later, revealing that telehealth served as a viable ambulatory visit option for both surgical specialists and their patients. Interestingly, nearly half of all the visits conducted during this period did not necessitate a physical examination, underscoring the potential of telehealth in providing effective patient care across a broad spectrum of surgical specialties [21].

Ensuring Technological Readiness

To provide seamless telehealth services, surgeons must have the appropriate equipment and technological support in place. This includes:

- **Secure Connection:** A secure and reliable internet connection is paramount to maintaining patient confidentiality and ensuring the quality of the telehealth interaction. Surgeons should establish a process for evaluating the stability and security of their internet connection before conducting telehealth visits.
- **Appropriate Environment:** Surgeons should designate a private and quiet space for telehealth consultations. This environment should be free from distractions and background noise, ensuring a professional and focused interaction.
- **Telehealth Integrative Software:** Utilizing the right telehealth integrative software is crucial for facilitating digital interactions with patients. Many healthcare institutions use electronic health record (EHR) systems like Epic, which offer telehealth capabilities. Surgeons should familiarize themselves with these tools and leverage them to streamline telehealth visits.

Patient Education and Expectations

Successful telehealth encounters hinge on informed and engaged patients. Surgeons should invest in patient education to ensure that patients understand what to expect from telehealth visits and what constitutes a billable encounter.

Key elements of patient education should include:

- What qualifies as a billable telehealth visit?
- The consent process for telehealth, including privacy considerations.
- Setting expectations for optimal patient care during telehealth consultations.
- The importance of conducting telehealth visits in a secure and private environment.
- The protection of personal health information (PHI) during telehealth encounters.
- What to do and who to call if there are technical and connectivity issues.

Surgeons should provide patients with clear instructions and resources to prepare for telehealth visits, including guidance on technology requirements and how to access the telehealth platform.

Access to Patient Information

Having access to critical patient information is essential for telehealth consultations. Surgeons should ensure they can obtain:

- Imaging studies (X-rays, MRIs, CT scans).
- Laboratory values and test results.
- Previous medical history and records.
- Consulting reports from other healthcare providers.
- Review of imaging studies with the patient, which can be done via “sharing screen.”
- Discussing surgical care/plans with multiple patient family members/stakeholders who may not be able to attend in-person visits with the patient.

Having this information readily available allows surgeons to make informed decisions and provide comprehensive care during telehealth encounters. Surgeons should establish efficient processes for requesting and receiving patient records and test results in advance of telehealth visits.

Pre-Visit Considerations

Before telehealth encounters, certain patient related factors should be considered and addressed to optimize care delivery.

- **Language Interpretation Services:** The presence of qualified interpreters during the telehealth encounter should be arranged prior to the visit. Interpreters can be in-person at either the patient or provider location or virtual.
- **Special Considerations:** Patients who have visual impairment, auditory impairment, or physical limitations regarding interface with technology should be identified. A plan to address these issues should be created prior to the telehealth visit.

Intra-Visit Considerations

During telehealth encounters, certain technical factors can impact the quality of the interaction. Surgeons should consider:

- **Lighting:** Adequate lighting is crucial to ensure that patients can see and interact with the surgeon clearly. Surgeons should position themselves in well-lit areas to maintain a professional appearance. Harsh backlighting should be avoided. Specifically designed lighting technologies such as ring lights and camera lights may facilitate communication of facial expressions.
- **Camera Position:** The placement of the camera is vital for engaging with patients effectively. Surgeons should position their camera at eye level to establish direct and natural eye contact, creating a more personal and engaging experience.
- **Handling Delays and Technical Issues:** Telehealth visits may encounter delays or technical glitches. Surgeons should be prepared to manage these situations professionally. Strategies for managing overrunning clinic schedules, addressing no-shows, and troubleshooting technology issues should be in place. Surgeons should consider developing a back plan that can be employed when technology issues arise. Such a backup plan could include an alternative telehealth platform or simply a transition to an audio only phone visit.

After-Visit Considerations

After telehealth visits, documentation, billing, and patient communication are critical components of effective telehealth practice.

- **Documentation:** Surgeons should document telehealth encounters accurately in the electronic medical record (EMR). Thorough documentation ensures that the patient's medical history is well-documented and can be easily shared with other providers. Specific templates and guidelines for telehealth documentation may be available within the EMR system.
- **Billing:** Surgeons should follow appropriate billing codes and documentation guidelines for telehealth visits. Understanding the specific codes and modifiers for telehealth services is crucial to ensure accurate billing and reimbursement. Billing procedures should align with the telehealth policies of the

healthcare institution and the requirements of the patient's insurance. At the initiation of telehealth services, follow up on collections should be planned, so appropriate changes to assure payment can be made.

- **Patient Communication:** Surgeons should provide patients with a verbal summary of the visit's outcomes and instructions. Additionally, a written summary of the telehealth visit should be made available to the patient via a HIPAA compliant modality. This summary should include information on the patient's condition, treatment plan, medications, and follow-up instructions.

Addressing Billing and Decision-Making Processes

Telehealth billing has evolved with new guidelines that emphasize the importance of medical decision-making in determining the level of service provided. Surgeons should be well-versed in these guidelines and ensure that their documentation accurately reflects the complexity of the decision-making process during telehealth encounters. When initiating a telehealth program, a follow up of all submitted claims should be scheduled on a regular basis so that errors in billing can be avoided.

After-Visit Summary and Patient Instructions

Providing an after-visit summary and patient instructions is crucial for patient understanding and continuity of care. These instructions should be conveyed verbally during the telehealth visit and sent to the patient digitally. An effective after-visit summary should include:

- A summary of the patient's condition and diagnosis
- Treatment recommendations and medications prescribed.
- Instructions for follow-up care and appointments.
- Contact information for questions or concerns.
- Any additional resources or educational materials.

Sending this information to the patient's and referring provider's (if appropriate) email, fax or regular address ensures that both the patient and any other healthcare providers involved in the patient's care are kept informed about the progress and management of the patient.

In conclusion, readiness for telehealth in surgical practice is a multifaceted process that encompasses understanding of policy, patient education, technological preparedness, access to patient information, intra-visit considerations, and post-visit documentation and communication. By carefully addressing each of these elements, surgeons can confidently embark on their telehealth journey, providing high-quality care and enhancing patient access to surgical services while ensuring compliance with regulations and best practices.

Training the Next Generation of Surgeons to Effectively Use Telehealth

As telehealth continues to revolutionize healthcare delivery, it is imperative for surgical trainees and new providers to adapt to this evolving technology. This section of the primer focuses on strategies for incorporating and training surgical residents and other healthcare professionals on ways to utilize telehealth to achieve optimal surgeon-patient experience. We will explore formal training strategies to ensure effective patient interaction, empathy building, surgical procedure communication, and patient comprehension. Additionally, we will distinguish this training from the concept of telerounding, which involves surgical provider-to-provider guidance via telehealth.

Formal Training Strategies

Integrating telehealth training into surgical residency and healthcare provider education is essential to prepare future professionals for the evolving healthcare landscape. A structured approach ensures that trainees understand the nuances of telehealth and can deliver high-quality care.

- 1. Didactic Training:* Start with didactic training sessions that provide a foundational understanding of telehealth concepts, regulations, and best practices. Cover topics such as telehealth etiquette, privacy and security considerations, and the use of telehealth technology. These sessions can be conducted through lectures, workshops, or online courses.
- 2. Simulation and Role-Playing:* Simulated telehealth encounters and role-playing exercises are effective tools for trainees to practice patient interactions and communication skills specific to telehealth. This hands-on approach allows them to refine their telehealth etiquette, empathy, and clinical decision-making in a controlled environment.
- 3. Observation and Mentorship:* Encourage trainees to observe experienced providers conducting telehealth visits. This can be achieved through shadowing opportunities or by reviewing recorded telehealth encounters. Mentorship from experienced telehealth surgical providers can provide valuable insights and guidance.
- 4. Patient-Centered Communication Training:* Trainees should be equipped with skills to engage patients effectively in a virtual setting. Emphasize the importance of clear and concise communication, active listening, and the ability to address patient concerns and questions.
- 5. Cultural Competence and Empathy:* Cultural competence and empathy are essential components of effective telehealth interactions. Trainees should learn to recognize and respect cultural differences while conveying empathy and understanding to patients from diverse backgrounds.

Effective Patient Interactions

Effective patient interactions in telehealth are distinct from in-person encounters and require specific considerations. Trainees should be prepared to navigate these differences to ensure a positive patient experience.

- 1. Building Empathy Virtually:* Empathy is a cornerstone of patient-centered care, and it can be effectively conveyed through telehealth. Trainees should learn to express empathy through verbal cues, active listening, and acknowledgment of patient emotions. Non-verbal cues, such as maintaining eye contact with the camera and using empathetic body language, can also play a crucial role.
- 2. Describing Surgical Procedures:* Explaining surgical procedures in a telehealth context requires clear and concise language. Trainees should practice breaking down complex medical terminology and surgical details into understandable terms for patients. Visual aids, such as anatomical diagrams or illustrations, can be used effectively in telehealth to enhance patient comprehension. The screen sharing function available on many telehealth platforms can facilitate the use of digital media for these purposes.
- 3. Ensuring Patient Comprehension:* Ensuring that patients understand their medical and surgical conditions is vital. Trainees should employ effective patient education techniques, such as summarizing key points, encouraging questions, and providing written materials or links to reputable online resources.

Models of Telehealth Training

Several models can be adopted to train surgical residents and new providers in telehealth. These models aim to create structured and efficient training processes.

- 1. Pre-Encounter Staffing:* In this model, trainees collaborate with a telehealth support team before patient encounters. This team assists in gathering patient information, verifying technology readiness, and preparing the

patient for the telehealth visit. Trainees can focus on clinical assessments and patient interactions, knowing that the logistical aspects are managed.

2. *Staggered Visits*: Staggered visits involve trainees initially observing experienced providers in telehealth encounters and gradually taking on more responsibility. They start by shadowing, progress to conducting parts of the encounter, and eventually lead telehealth visits under supervision. This phased approach allows trainees to build confidence and competence.

3. *Conference Calls and Feedback*: Regular debriefing sessions and feedback are integral to telehealth training. After telehealth encounters, trainees can participate in conference calls with preceptors or educators to review cases, discuss patient interactions, and receive constructive feedback.

Distinguishing Telehealth Training from Telementoring

It is important to differentiate the concept of teaching surgical trainees and new providers about telehealth from telementoring. Telementoring involves surgeons using telehealth technology to help other surgeons in clinical care, such as in the operating room. While telementoring holds promise as a new frontier in surgical education and collaboration, it comes with significant medical-legal considerations and complexities that are beyond the scope of this primer. Telementoring requires careful planning, regulatory compliance, secure telehealth platforms, and the establishment of clear roles and responsibilities between the mentor and the surgeon being mentored. Moreover, the legal and liability aspects of telementoring are substantial and require thorough understanding and adherence to state and federal regulations.

In summary, training surgical residents and new providers in telehealth is a critical component of modern healthcare education. By implementing formal training strategies, emphasizing effective patient interactions, and employing structured training models, trainees can become proficient in delivering high-quality care through telehealth. Additionally, it is important to distinguish this training from telementoring, recognizing that telementoring introduces a distinct set of challenges and considerations in the surgical context.

International, Global and Military Considerations in Telehealth for Advancing Surgical Care Worldwide

As we navigate the expansive terrain of telehealth's potential impact on surgical practice, we must recognize its global reach and the profound implications it holds for military healthcare systems. This section delves into the worldwide experience with telehealth, emphasizing the critical lessons learned from international initiatives and highlighting the transformative opportunities presented by telemedicine in both global and military contexts.

Lessons from International Telehealth:

International telehealth has provided valuable insights and lessons that can inform the future of healthcare delivery. These lessons have become especially important in the wake of the COVID-19 pandemic, which accelerated the adoption of telehealth abilities and technologies worldwide. The following are some key lessons learned:

- *Accessibility and Equity:* In many countries, telehealth has emerged as a potent equalizer, addressing healthcare disparities exacerbated by vast rural regions and limited healthcare infrastructure. These international telehealth programs have valuable lessons to impart, particularly in regions where access to surgical care remains challenging. By studying these initiatives, U.S. surgeons can gain insights into bridging geographical gaps and enhancing patient access to surgical expertise, even in remote and underserved areas.
- *Cost-Efficiency:* International telehealth programs have demonstrated remarkable cost savings by reducing the need for extensive travel and extended hospital stays. U.S. surgeons can adopt these cost-effective practices, potentially reducing healthcare expenditures for both patients and institutions without compromising care quality.
- *Healthcare Worker Training:* International telehealth endeavors often involve training local healthcare providers to effectively utilize telehealth tools. U.S. surgeons can embrace this model to enhance the proficiency of their colleagues, including advanced practice providers and nursing staff, in leveraging telehealth to support surgical care.
- *Multidisciplinary Collaboration:* International telehealth initiatives frequently involve diverse healthcare professionals, such as surgeons, specialists, nurses, and technicians, in collaborative patient care. U.S. surgeons can take inspiration from these initiatives to foster multidisciplinary collaboration, particularly in complex surgical cases where diverse expertise is indispensable.

Telehealth for Global Surgical Outreach:

Telehealth opens an array of opportunities for U.S. surgeons engaged in global surgery or providing care in underserved international communities:

- *Preoperative Workup:* Telehealth facilitates comprehensive preoperative assessments, encompassing remote consultations, diagnostic test reviews, and surgical planning. Surgeons can collaborate with local healthcare providers in the patient's home country, ensuring optimal medical conditions before surgery, reducing complications, and enhancing surgical outcomes.
- *In-Country Surgical Missions:* Telehealth serves as a valuable preparatory tool for surgeons embarking on surgical missions abroad. Through virtual consultations with local patients before their arrival, surgeons can ensure thorough case preparation, minimize delays, and maximize their in-country time for surgical procedures.
- *Postoperative Follow-Up:* Post-surgery, telehealth streamlines postoperative monitoring and follow-up care. Surgeons can remotely evaluate surgical outcomes, manage complications, and provide guidance to local healthcare teams, ensuring continuous patient care even after the departure of the surgical team.
- *Global Partner Institutions:* U.S. surgical organizations, like the American College of Surgeons (ACS), can establish collaborative partnerships with international institutions and organizations to drive the adoption of telehealth in global surgical outreach. These partnerships can create sustainable telehealth initiatives, benefiting U.S. surgeons and the communities they serve abroad.

Collaborative Endeavors with Global Partners:

ACS Fellows play a pivotal role in promoting the use of telehealth in global surgical outreach through collaborations with global partner institutions. The ACS Health Outreach Program for Equity in Global Surgery aims to improve access to optimal surgical care for medically underserved communities through surgical service and education. In a recent review, Punchak and colleagues highlight the applications of telemedicine in current global health partnerships [22]. Potential benefits of telehealth with respect to global surgery include:

- *Knowledge Exchange:* Collaborative initiatives with international institutions provide a platform for knowledge exchange and the sharing of best practices. Surgeons from diverse regions can glean insights from one another's experiences with telehealth, fostering a global community of surgical excellence.
- *Resource Sharing:* Partnering with global institutions facilitates the sharing of telehealth resources, including software, training materials, and best practice guidelines. This resource-sharing model ensures that telehealth initiatives are efficiently implemented and sustained, benefiting all parties involved.
- *Capacity Building:* By working collaboratively, ACS and global partner institutions can collectively enhance the telehealth capabilities of healthcare professionals in underserved regions. This capacity building not only bolsters local healthcare systems but also strengthens the global surgical community, fostering a sense of shared expertise and cooperation.

Military Implications of Telehealth:

In the context of military healthcare systems, telehealth assumes paramount significance, especially in austere and operational environments where access to traditional healthcare facilities may be severely limited due to deployment, geographic isolation, or logistical constraints. These military scenarios can be categorized into *austere clinical environments*, characterized by limited resources that challenge optimal patient outcomes, and *operational environments*, where caregivers and resources face significant risks in the context of war, natural disasters, humanitarian missions, and mass casualty events.

Telehealth has become an indispensable tool in these challenging military environments, delivering several key advantages:

- *Enhancing Local Caregiver Capabilities:* Telehealth empowers local caregivers, even in austere environments, by providing them with access to remote expertise, guidance, and consultations. This capability ensures that patients receive timely and effective care, particularly when evacuation is delayed or impossible.
- *Reducing Costs and Risks:* Telehealth minimizes the costs and risks associated with unnecessary evacuations by enabling on-site healthcare teams to consult with specialists remotely. This capability conserves resources and enhances the medical response during missions.
- *Combat Effectiveness:* Telehealth supports combat effectiveness by allowing military surgeons to provide critical care to service members, even in the most challenging operational environments. It ensures that troops remain mission-ready by addressing healthcare needs swiftly and effectively.
- *Data Security:* Given the sensitivity of medical information, particularly in the military context, robust encryption and cybersecurity measures are paramount when handling patient data via telehealth. These measures ensure that patient data remains secure and protected. It should be noted that in some austere situations, telecommunications bandwidth may be limited, and medical communications may not be prioritized. In these situations, intermittent, store-forward type interactions can be valuable as they still facilitate shared expertise and collaboration.

Incorporating these lessons from military telehealth initiatives and international experiences, U.S. surgeons can prepare for scenarios where access to traditional healthcare facilities is limited, such as remote rural regions or disaster-stricken areas. Surgeons can leverage telehealth to extend their expertise, collaborate with multidisciplinary teams, and deliver comprehensive care to patients, regardless of their physical location.

The intersection of telehealth with military healthcare systems underscores the adaptability and resilience of this transformative healthcare tool. It ensures that the benefits of telehealth are accessible to all, both in times of

peace and during the most challenging of circumstances. Surgeons are poised to lead the way in delivering quality care to patients across the globe, wherever they may be, as the global healthcare community continues to explore the possibilities of telehealth.

Comprehensive Telehealth Integration Checklist for Surgeons

Initial considerations:

Before starting a new telehealth program, or expanding an existing one, consider your answers to these questions:

1. What does your organization want to accomplish with telehealth? Which types of patients? What are your objectives?
2. Develop your telehealth workflow - identifying patients that are “telehealth appropriate,” create a flow document for reference, how will options be communicated? Develop a script for what is telehealth. Develop a patient reference document to send them ahead of a visit. Plan on training for staff to implement this workflow.
 1. Specifically: Identify which patients are in and out of scope for virtual care
 2. Determine whether patients will have a choice for a virtual or in-person visit depending on their appointment type and considerations.
 3. Review or develop processes for scheduling and communicating telehealth appointments.

Administrative:

Regulatory/Financial:

- a) **Credentialing:** Complete the necessary credentialing and licensing requirements to offer telehealth services in your state and healthcare institution.
- b) **Billing Procedures:** Develop clear billing procedures for telehealth visits, including code selection and documentation requirements. Ensure staff members are trained in telehealth billing.
- c) **Insurance Contracts:** Review your contracts with insurance providers to understand reimbursement rates and requirements for telehealth services.

Technology:

- a) **Telehealth Platform(s):** Select a secure and compliant telehealth platform for your practice. Train staff members in using the platform effectively. Delineate a protocol for a backup telehealth platform or procedure (e.g., audio only telephone call) to be used if your primary telehealth platform fails.
- b) **Technical Support:** Establish a technical support system to troubleshoot any technology issues that may arise during telehealth visits.
- c) **Data Security:** Implement robust data security measures to protect patient information during telehealth interactions.

Process:

- a) **Patient Education:** Develop patient education materials and resources to guide patients through the telehealth process. Ensure that patients are informed and comfortable with the technology.
- b) **Staff Training:** Train staff members in telehealth processes, including appointment scheduling, patient onboarding, and EMR documentation specific to telehealth.
- c) **Support Plan:** Establish a support team and plan for real time provider help.
- d) **Quality Assurance:** Implement a quality assurance program to monitor the quality of telehealth interactions, patient satisfaction, physician satisfaction, address any issues, and continuously improve the telehealth service.
- e) **Supportive Services:** Make certain that interpretation services are available for language interpretation including sign language services.

For Physicians:

Regulatory/Financial:

- a) **State Licensure:** Verify the telehealth licensing requirements in your state and any other states where you plan to see patients remotely. Comply with state regulations regarding telehealth practice.
- b) **Reimbursement Knowledge:** Familiarize yourself with the reimbursement policies of your healthcare institution and third-party payers. Ensure that you understand billing codes and modifiers specific to telehealth.
- c) **Insurance Coverage:** Check with your medical malpractice insurance provider to confirm coverage for telehealth services. Ensure that your telehealth practice complies with your insurance policy.

Technology:

- a) **Secure Telehealth Platform:** Choose a secure telehealth platform that complies with HIPAA regulations. Work with your IT champions in choosing a secure platform that integrates well with your electronic medical record and your referring centers and complies with regulations. Ensure that the platform supports audio and video interactions and provides encrypted communication.
- b) **Reliable Internet Connection:** Ensure you have a reliable and high-speed internet connection for seamless telehealth interactions. Test your connection regularly to maintain stability.
- c) **Telehealth Equipment:** Invest in appropriate telehealth equipment, including a high-quality camera, microphone, and headphones. Ensure that your device is up-to-date and properly configured. Confirm a back-up audio/visual component should there be technical difficulties.

Process:

- a) **Telehealth Etiquette:** Train yourself in telehealth etiquette, including maintaining eye contact with the camera, using empathetic body language, and actively listening to patients during virtual visits. Establish guidelines on where telehealth visits can and will be conducted.
- b) **Patient Education:** Develop resources and guidelines for educating patients about telehealth visits. Ensure they understand the process, technology requirements, and how to access the telehealth platform.
- c) **Health Equity Considerations:** Identify how different patient cohorts will be supported in using virtual care platforms (e.g., patients with vision or hearing difficulties or from culturally or linguistically diverse backgrounds).
- d) **Technical Difficulties:** As you are the main point of contact for the patient, assure you know how to assist the patient with the platform or how to refer for technical assistance. Have a backup plan in case of loss of internet (e.g., phone call).
- e) **Documentation:** Establish templates and guidelines for documenting telehealth encounters in the electronic medical record (EMR). Document patient consent, diagnoses, treatment plans, and other essential details.

For Patients:

Regulatory/Financial:

- a) **Insurance Coverage:** Verify with your insurance provider that telehealth visits are covered under your policy. Understand any co-pays or deductibles associated with telehealth services.
- b) **Consent:** Provide informed consent for telehealth visits. Understand your rights, privacy protections, and the scope of care provided through telehealth.
- c) **Billing Information:** Ensure that your billing information is accurate and up-to-date with the healthcare institution or provider offering telehealth services.

Technology:

- a) **Device Compatibility:** Confirm that your device (computer, smartphone, tablet) meets the technology requirements for the telehealth platform being used. Install any necessary apps or software.
- b) **Internet Connection:** Ensure you have a stable internet connection and a quiet, private space for the telehealth visit. Test your connection before the appointment.
- c) **Camera and Microphone:** Verify that your camera and microphone are working correctly. Adjust lighting to ensure a clear video feed.

Process:

- a) **Appointment Scheduling:** Follow the healthcare provider's instructions for scheduling telehealth appointments. Be punctual and prepared for the virtual visit.
- b) **Special Considerations or Needs:** Alert the healthcare team to any specific needs you may have such as language interpretation services, vision aids, hearing aids.
- c) **Privacy:** Ensure that you are in a secure and private environment during the telehealth visit. Avoid distractions and maintain confidentiality.
- d) **Medical Records:** Provide access to your medical records, including previous test results, imaging studies, and relevant medical history. Share this information with the provider before the telehealth visit.

This comprehensive checklist addresses the key elements for administration, surgeons, and patients, to ensure a successful integration of telehealth into surgical practices. It encompasses regulatory/financial, technology, and process considerations, helping to optimize the delivery of surgical care through telehealth while maintaining compliance and quality of care.

The Future of Telehealth in Surgical Practice

In this comprehensive primer on telehealth for surgeons, we have explored the transformative potential of telehealth and its multifaceted applications within the realm of surgical care. From its inception as a solution to bridge geographical gaps and enhance access to care, telehealth has evolved into a powerful tool that benefits both patients and surgeons in numerous ways.

In this primer we established the rationale for telehealth adoption in surgical practice. Telehealth, with its ability to overcome geographical constraints, has emerged as a crucial method to reach underserved and remote patient populations. It offers an opportunity to improve the efficiency and effectiveness of surgical care, to reduce overhead costs, and to expand surgical practices, while simultaneously enhancing patient access, reducing travel expenses, and empowering patients to take an active role in their care.

We delved into the critical aspects of telehealth reimbursement, billing issues, and HIPAA compliance. Surgeons must navigate the intricacies of credentialing, understand the financial implications, and stay updated on ever-evolving regulations to ensure the seamless integration of telehealth into their practices. The financial impact of improved access to surgical care through telehealth is significant, as it can reduce healthcare costs, enhance revenue generation, and contribute to job satisfaction for surgeons.

This primer also addressed readiness for telehealth, emphasizing the importance of understanding local policies, developing lists of indications for telehealth, acquiring appropriate technology, educating patients, and optimizing the environment for telehealth encounters. Surgeons must have access to patient information, laboratory values, and imaging studies to provide the best care possible. Efficient intra-visit and after-visit processes, along with proper documentation, ensure that telehealth visits are effective and well-documented.

Telehealth also has the potential to improve access to surgical care by addressing disparities in healthcare access driven by socioeconomic factors, gender, race, and geographical location. Telehealth serves to overcome healthcare access barriers and rectify built-in inefficiencies in traditional care models, making specialized surgical care more accessible and efficient for patients.

The primer provided insights into training surgical residents and new providers in telehealth. Structured training strategies, patient interaction skills, and effective communication techniques were discussed, ensuring that future healthcare professionals are well-prepared to deliver care through telehealth.

The Future of Telehealth:

As we look to the future, telehealth is poised to play an increasingly pivotal role in surgical practice. It has the potential to enhance access to care, improve efficiency, and advance patient-centered care.

Integration for Quality Improvement:

Telehealth's integration with surgical practice aligns with the broader goal of improving healthcare quality. By expanding access to surgical care, particularly in underserved and remote areas, telehealth can facilitate earlier diagnoses and interventions, resulting in better patient outcomes. The ability to provide follow-up care and education through telehealth contributes to enhanced patient engagement and adherence to treatment plans. Furthermore, telehealth can facilitate greater collaboration among multidisciplinary healthcare teams, leading to more comprehensive and holistic patient care.

Telehealth also offers an innovative approach to advancing research within the field of surgery. Through telehealth platforms, surgeons and researchers can connect with patients and colleagues across geographical boundaries. This expanded reach opens new possibilities for clinical trials, data collection, and collaborative research initiatives.

Consider the potential for telehealth in conducting postoperative follow-up studies. Surgeons can remotely monitor patients after surgery, collecting data on recovery progress, complications, and patient-reported outcomes. This real-time data collection not only accelerates research but also enhances the quality of data by reducing recall bias. Researchers can access a wealth of information to analyze, leading to more robust findings and, ultimately, improved surgical techniques and patient care.

Furthermore, telehealth can facilitate international collaborations and knowledge sharing among surgeons and researchers. The ability to connect with experts from diverse backgrounds can lead to cross-cultural insights, the exchange of best practices, and the acceleration of medical advancements. Telehealth can function as a conduit for innovation and discovery, bolstering the quality of surgical care on a global scale.

In essence, telehealth's impact on surgical practice extends beyond clinical care; it reaches into the realm of research and innovation. By enhancing research capabilities, telehealth becomes a tool for refining surgical techniques, advancing medical knowledge, and ultimately raising the standard of surgical care, all while ensuring that patients receive the highest quality of healthcare, regardless of their location.

Optimal Use with Electronic Health Records (EHRs):

The seamless integration of telehealth with electronic health records (EHRs) represents a potential significant advance for surgical practice. This symbiotic relationship holds the potential to revolutionize how surgeons access patient data, collaborate across specialties, and ultimately enhance patient care.

Wearable Technology Integration: Picture a patient equipped with wearable health devices—a smartwatch that monitors vital signs, a doppler probe, a device that assesses neurologic function, or even specialized medical sensors. In this envisioned future, the data generated by these wearables seamlessly flows into the patient's EHR in real-time. During telehealth consultations, surgeons have immediate access to this wealth of data, enabling them to track a patient's progress, identify early warning signs, and personalize surgical treatment plans. This integration transcends mere video interactions, evolving into a comprehensive and dynamic approach to the care of the surgical patient.

Seamless Video Integration: The telehealth encounters of the future will be characterized by high-definition video quality seamlessly integrated within EHRs. Surgeons will conduct virtual consultations with clarity, enabling detailed visual assessments of patients. Whether examining postoperative wounds, assessing joint mobility, or reviewing diagnostic images, this visual clarity will facilitate diagnostic accuracy and the overall telehealth experience.

Multi-Disciplinary Collaboration: Complex surgical cases often demand the collective wisdom of multi-disciplinary teams. EHRs of the future will serve as the virtual space where surgeons, specialists, nurses, and other healthcare professionals converge. In these virtual "roundtable" sessions, each team member can actively participate, contribute expertise, and jointly craft comprehensive treatment plans. Telehealth, within the EHR ecosystem, fosters a collaborative approach to patient care that transcends geographical boundaries.

Real-Time Data Exchange: The integration between telehealth and EHRs facilitates real-time data exchange. Surgeons can seamlessly access and share patient records, diagnostic images, laboratory results, and clinical notes during telehealth encounters. This dynamic data exchange ensures that surgeons are working with the most up-to-date information. It accelerates decision-making, streamlines care coordination, and supports continuity of care, even in cases where patients receive services from multiple providers.

Enhanced Documentation: The future of telehealth and EHR integration brings forth enhanced documentation capabilities. Surgeons can efficiently document virtual consultations, capturing critical clinical findings, treatment plans, and patient instructions. This documentation serves multiple purposes, acting as a legal record, facilitating communication among the care team, and providing patients with accessible records of their healthcare journey. These comprehensive records are instrumental in ensuring that every aspect of the patient's care is thoroughly documented and understood by all stakeholders.

In this visionary future, the improved integration of telehealth with EHRs enhances surgical practice. It transforms surgical care into a data-driven, collaborative, and patient-centric endeavor. Surgeons, armed with real-time patient data, empowered by clear video interactions, and supported by multi-disciplinary teams, can provide patients with the highest standard of care, regardless of their physical location.

In conclusion, telehealth is not a novel concept and has been utilized with varying degrees of success in the past. However, large-scale and sustainable implementations are lacking, which temper expectations. Key

deficiencies of prior approaches to using telehealth to enhance surgical care delivery include lack of multi-stakeholder engagement, assessment of shared values, consensus-based prioritization of key aims and objectives and a rigorous evaluation of the impact of telehealth on surgical healthcare outcomes. These deficiencies must be overcome to ensure wider and sustainable implementation of telehealth in surgery and realize its true potential as the next generation surgical healthcare delivery paradigm. Surgeons who embrace telehealth as an integral part of their practice stand to benefit not only in terms of patient care but also in terms of practice efficiency and financial sustainability. By harnessing the full potential of telehealth, surgeons can continue to advance the art and science of surgery while providing optimal care to their patients, regardless of geographical or other boundaries and access challenges.

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Table 1: Telehealth Resources (updated 12.21.23)

Information	Agency	Website
Up to date information regarding Coronavirus waivers and flexibilities.	Centers for Medicare and Medicaid Services (CMS)	https://www.cms.gov/coronavirus-waivers .
Information on interstate licensing requirements for surgeons looking to practice in multiple states	Interstate Medical Licensure Compact	https://www.imlcc.org .
Information for health care providers and patients about the latest federal efforts to support and promote telehealth	Health and Human Services Department	https://telehealth.hhs.gov .
National telehealth policy resource center.	Center for Connected Health Policy (CCHP)	https://www.cchpca.org .
Information for health care providers and patients about the latest federal efforts to support and promote telehealth.		
Sample informed consent form for telehealth care.	Agency for Healthcare Research and Quality	https://www.ahrq.gov/health-literacy/improve/informed-consent/index.html .
Information regarding the Department of Health & Human Services' telehealth efforts to expand access and improve health outcomes.	Health Resources and Services Administration Office for the Advancement of Telehealth	https://www.hrsa.gov/about/organization/bureaus/oat .
Broad telehealth information and resources.	American Telemedicine Association	https://www.americantelemed.org/resource/