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Telehealth in Orthopedics: An Essential Technology

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Introduction

As patients increasingly seek improved access and convenience, a well-designed and well-adopted telehealth platform using modern digital technologies, allows your practice to deliver on both access and convenience to patients. The healthcare consumer increasingly carries the expectation of virtual care capabilities and convenience is becoming a major determinant of patient satisfaction. In addition, these technologies allow many routine visits to be completed in a fraction of the time leading to improved practice efficiencies.

Telehealth (also referred to as telehealth) refers to the provision of healthcare services through communication between the healthcare provider in one location and patient in another. The purpose of this paper is to:

- define the different telehealth technologies,
- suggest appropriate indications for use of telehealth services in orthopedic practices,
- discuss the legal and regulatory landscape concerning use, and
- explore the economic opportunities offered by this technology.

Definitions

Synchronous telehealth (live video) refers to a real-time interaction between the patient and the healthcare provider.

Asynchronous telehealth (store and forward) refers to written communication, with or without added data files (photos, movie clips), transmitted electronically between the patient and the healthcare provider.

Combined Platform refers to a platform that combines the benefits and efficiencies of asynchronous telehealth with the option for the more personal touch of synchronous communication.

In addition to direct telehealth exchanges, a number of companies are introducing or incorporating either specialist curated clinical assessment tools or artificial intelligence to ask clinically relevant questions to the patient in advance of their visit.

Synchronous v. Asynchronous:

Advantages and Disadvantages of these Platform Options

Synchronous telehealth is most similar to a traditional office visit between the patient and provider and; hence, enjoys greater acceptance for both regulatory and reimbursement concerns while also providing a more personal interaction.

There are some important disadvantages of this platform. First, technology limitations (bandwidth, software malfunction, user understanding) exist for both the provider and patient. Second, since the provider and patient must be present at the same time, scheduling complexities similar to an in-person visit exist. Lastly, this platform lacks efficiency. A synchronous visit generally requires the

same amount of interview time for the provider as an in-office visit and requires the provider to simultaneously or subsequently record documentation of the video encounter.

Asynchronous telehealth lacks the face-to-face element of synchronous. However, if used for established patients, where patient and provider know each other, this may not be a significant barrier. In addition, while slowly gaining payment parity, asynchronous telehealth may suffer a more difficult route to reimbursement. With asynchronous visits there is also the inability to gain information from facial features or the tone of a patient's voice.

The advantages of asynchronous telehealth, however, are significant. Clinical assessment tools that provide relevant questions to patients and records their answers prior to the investment of time by the physician, vastly improves visit efficiencies. Based on experience of the authors, it is estimated that an asynchronous visit requires only 20% of the time required for a synchronous visit or in-office visit. This time savings can create availability for more in-office new patients, resulting in improved community access and practice productivity. Additionally, an asynchronous visit does not require tight scheduling, freeing up both the patient and provider to conduct the exchange in a convenient manner. Lastly, the digital nature of this platform facilitates an automated encounter note that can be integrated into the EHR, further reducing the administrative burden on the provider and practice.

Combined Platform capitalizes on the advantages of each platform while avoiding the disadvantages. A single platform, which harnesses the efficiency of asynchronous telehealth through the use of clinical assessment tools with the option of adding real-time video for the feeling of familiarity, offers the ability to meet both patient and provider needs equally.

Table 1. Advantages and Disadvantages of Synchronous vs. Asynchronous Telemedicine

Synchronous Telemedicine	Asynchronous Telemedicine
<ul style="list-style-type: none">• Advantages<ul style="list-style-type: none">• Widely accepted• Personal and formal• Easier reimbursement pathway• Disadvantages<ul style="list-style-type: none">• Significant bandwidth, spacial and technology limitations• Rigid scheduling requirements• Lacks time efficiency• Lower return on investment	<ul style="list-style-type: none">• Advantages<ul style="list-style-type: none">• Less technical or spatial limitations• Less rigid scheduling requirements• More convenient for patient and provider• Greater time efficiency• Greater ROI potential• Disadvantages<ul style="list-style-type: none">• Less universal reimbursement• Less personal and formal

A Combined Platform is ideal by providing the advantages of both Synchronous and Asynchronous Technologies

Indications for Telehealth in Orthopedics

Utilizing modern digital technologies, telehealth is capable of delivering equal quality care when the visit; (1) does not require a procedure or manual physical exam, (2) an in-person examination can be conducted through on-site assistance, or (3) if the absence of an in-person examination is recognized but is determined less important than expeditious care.

Indications: New Patients

The value of telehealth for new orthopedic patients is found in the ability to initiate care in a more expeditious manner with improved content and security between the initiating and responding provider or between the patient and provider. Hence, initial patient visits can be provider to provider whereby the consultant is using data to give advice to a colleague who has examined the patient, or patient initiated whereby a doctor-patient relationship is initiated by examining the patient remotely.

Provider-initiated Consults

Emergency Room, Urgent Care and Athletic consultations provide good opportunities for improvement through a well-designed telehealth platform. Specialist consultation via synchronous or asynchronous telehealth can facilitate care delivery in orthopedics and add security and formality to the encounter. Emergency Room or Urgent Care physicians often seek phone consultations without compensation to the specialist and/or transmit images in a potentially unsecure manner. A well-designed telehealth platform can better ensure privacy in the communication and provide documentation of the visit in a manner that allows for specialist reimbursement.

Patient-initiated Treatment Requests

Patients suffering from simple conditions are often easily and effectively provided first stage treatment via telehealth. In these cases, a history (and potentially a limited exam) can direct early treatment with the understanding that failure of the patient to respond will necessitate an in-office consultation. In orthopedics or musculoskeletal care, this would include patients seeking treatment for such conditions as; non or minimally traumatic low back or neck pain, sprains/strains, arthritic flare-ups, bursitis, or trigger finger.

Employer-initiated Treatment Requests

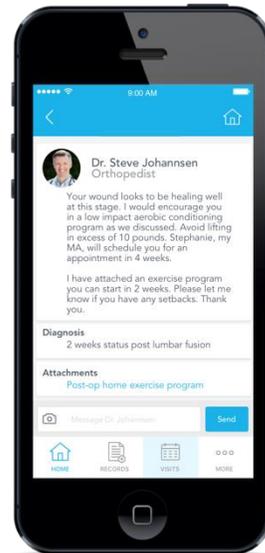
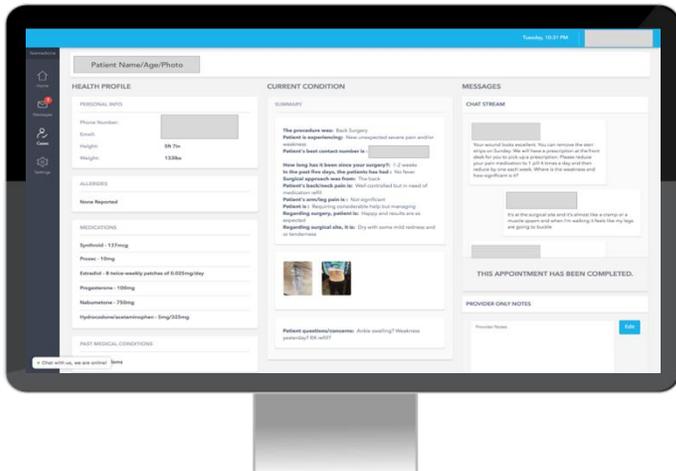
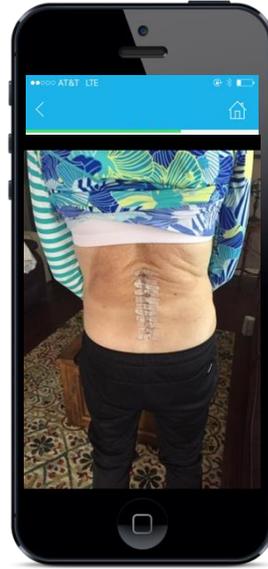
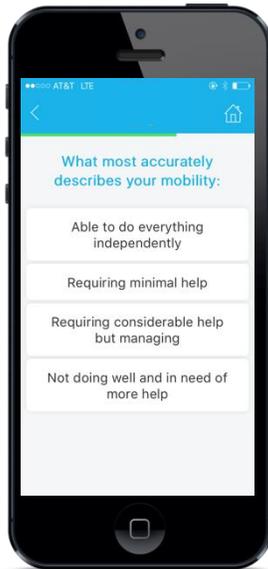
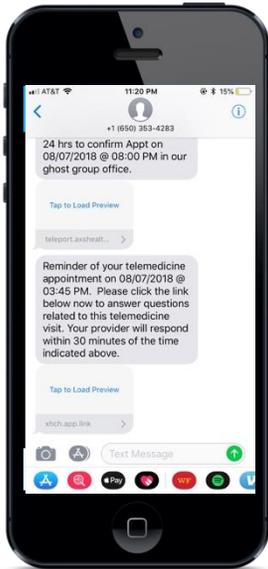
Orthopedic specialists are often consulted on injured workers only after a considerable amount of failed treatments are expended. The literature and specialists' experience would often support that the treatment never should have been expected to enhance recovery or expedite a return-to-work. Facilitating early intervention by the orthopedic specialist is yet another clear benefit of telehealth.

Indications: Established Patients

Established patients are ideal for telehealth as the relationship has been established and an exam has been performed. This method of care delivery offers both the patient and provider valuable convenience and efficiency when a repeat detailed, in-office exam is not necessary.

Post-operative visits

Many post-operative visits are well suited for telehealth given the routine nature of post-operative care, the ability to photograph and send images of the wound and given the relative immobility of the patient in the early post-operative period. In addition, these non-reimbursable visits are provided at less cost to the practice via telehealth.



Routine follow-up visits

For routine follow-up visits, the relationship has been established, an exam has been performed and a treatment or diagnostic course has been outlined. Often the follow-up is to simply evaluate the treatment response or to evaluate imaging studies. These cases will often present as good candidates for telehealth.

Table 2. Indications for Telemedicine in Orthopedics

<ul style="list-style-type: none">• New Patients• Goal: Facilitate the initiation of treatment• Indications:<ul style="list-style-type: none">• Provider Initiated<ul style="list-style-type: none">• ER or Urgent Care Physician to Orthopedic Specialist• ATC to Sports Medicine Specialist• Patient Initiated<ul style="list-style-type: none">• Initial care for simple conditions	<ul style="list-style-type: none">Established Patients• Goal: Provide patient convenience and practice efficiency• Indications:<ul style="list-style-type: none">• Post-operative patients• Routine follow-up• Registry or outcomes monitoring
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Legal and Regulatory Considerations of Deploying Telehealth

The Telehealth Advancement Act of 2011 repealed and replaced the Telemedicine Act of 1996, creating the legislative framework for care delivery through digital technologies. The Telehealth Advancement Act is codified by the California Business & Professions (B&P) Code Section 2290.5 which defines telehealth (previously telemedicine) as the “mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient’s health care while the patient is at the originating site and the health care provider is at a distant site. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward transfers.”

While B&P 2290.5 establishes telehealth law, the Medical Board of California (MBC) establishes additional conditions regarding the conduct of medical practice.

“Physicians using telehealth technologies to provide care to patients located in California must be licensed in California. Physicians are held to the same standard of care, and retain the same responsibilities of providing informed consent, ensuring the privacy of medical information, and any other duties associated with practicing medicine regardless of whether they are practicing via telehealth or face-to-face, in-person visits.”¹

The site of service is determined by the patient’s geographic location at the time of the service. Many practitioners in telehealth are practicing in multiple states through **The Interstate Medical Licensure Compact (IMLC)**. The IMLC is in agreement between 24 states and 1 territory and 31 medical and osteopathic boards in those states and territories to allow for voluntary expedited pathway to licensure. Unfortunately, California is currently not a member of the IMLC and therefore, at this time, the patient **must** be physically located in California at the time of the consult.

Standard of Care

¹ (<http://www.mbc.ca.gov/Licensees/Telehealth.aspx>)

The MBC states that telehealth is a tool of medical practice not a separate practice of medicine and the, “standard of care is the same whether the patient is seen in-person, through telehealth or other methods of electronically enabled health care.”

Patient Consent

Existing law under California Business & Professions Code Section 2290.5 (as revised by 2015 AB 809) establishes that “prior to the delivery of health care via telehealth, the health care provider initiating the use of telehealth shall inform the patient about the use of telehealth and obtain verbal or written consent from the patient for the use of telehealth as an acceptable mode of delivering health care services and public health. The consent shall be documented.

While recognizing the B&P 2290.5 requirement to obtain and document consent for services via telehealth, the MBC has maintained that, “The Medical Practice Act, including informed consent, applies to all medical practice settings and circumstances.”²

The patient should have a basic understanding of how telehealth technology will be used, limitations of those technologies, credentials of the healthcare professionals involved in the telehealth interaction, and expectations of the patients in those telehealth interactions.³

Confidentiality/HIPAA

California Business & Professions Code Section 2290.5 states that all laws regarding confidentiality of medical information and patient’s rights regarding medical information apply to telehealth interactions. HIPAA applies the same requirements to telehealth as to in person interactions. Protecting patient privacy will require the same secure transmission and storage of patient medical information as with face-to-face interactions.

Documentation

Consistent with standards of care, relevant medical information transmitted via telehealth must be documented in the patient’s medical record, including consent.

Prescribing

California Business & Professions Code 2242.1 makes it illegal to prescribe medications on the internet for delivery in California without an appropriate prior medical examination and medical indications. While the law does not explicitly require an in-person examination, the MBC has weighed in asserting that a review of a patient questionnaire is insufficient to legitimize internet prescribing and that “In-person examinations not only enhance the opportunity to confirm if a patient needs the identified medication or to rule out other medical conditions, but ensures the patient is advised of alternative treatment options and is aware of potential side effects.”⁴

In summary, with The Telehealth Advancement Act, the California Legislature provides broad regulatory support for the delivery of care through a wide range of digital technologies. The MBC guidance affirms that the expectations for medical practice remain consistent regardless of method of health care delivery or practice setting. Practicing physicians must use their best medical

² (Revisiting Informed Consent for Telehealth, Medical Board of California Newsletter, Vol 123, Summer 2012, Page 13).

³ (Legal Guidelines for Healthcare Providers Who Provide Telehealth Services in California, Tyson & Mendes, February 5, 2018)

⁴ (http://www.mbc.ca.gov/Licensees/Prescribing/Internet_Prescribing.aspx)

judgement in determining if the degree of the information the telehealth consult provides is adequate to justify the need for a prescription or other treatment modalities.

Reimbursement for Telehealth Visits in Orthopedic Surgery

California has adopted a more progressive reimbursement policy for telehealth services than many other states. The Telehealth Advancement Act prohibits a health plan from requiring face-to-face contact and requires health plans to adopt payment policies to compensate health care providers for telehealth services.

While California law compels health plans to adopt payment policies, there is an absence of consistent reimbursement and payment by commercial payers. Payment for designated telehealth services will require the orthopedic practice to contract, in advance, directly with payors for these services.

Payment by the Centers for Medicare and Medicaid Services (CMS) for telehealth services is limited to Medicare beneficiaries that reside outside of a Metropolitan Statistical Area and further requires interactive audio and visual communication that allows real time communication between the health care provider and patient. For professional (synchronous) telehealth services, CMS has assigned Place of Service code 02: Telehealth to designate the location where health services or health related services are provided or received.

Effective January 1, 2019, CMS approved payment to health care providers for HCPCS G2020 for “remote professional evaluation of patient-transmitted information conducted via pre-recorded store and forward video or image technology.”⁵ Of note, CMS does not classify G2020 as Medicare telehealth services which means G2020 is not subject to the same geographic and other restrictions that currently exist under Section 1834(m) of the Social Security Act. In addition, The Bipartisan Budget Act of 2018 allows Medicare Advantage plans to include “additional telehealth benefits” (telehealth benefits beyond what Original Medicare allows) in their bids for the basic Medicare benefits, starting in plan year 2020.

Medi-Cal provides for payment of evaluation and management services but adopted the CMS requirement that telehealth services require interactive audio and visual communication that allow real time communication between the health care provider and patient. Medi-Cal does not impose geographic or location restrictions and Managed Medi-Cal plans are free to separately contract for these services at their discretion.⁶

There are a growing number of large health systems within California that are establishing telehealth programs that successfully allow reasonable reimbursement for their physician services.

Economic Opportunities for Orthopedic Practices Employing Telehealth Services

Telehealth services provide numerous important economic benefits to orthopedic practices by reducing costs typically associated with in-office visits, reducing the staff and possibly the physician’s time associated with in-office visits and converting this time savings to open slots for new

⁵ <https://federalregister.gov/d/2018-24170>

⁶ (CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth).

patients. Increased new patient visits will result in increased surgical volumes and ancillary visits for the practice, while also extending services to the community without the need to hire more providers.

To be most useful, this technology needs to integrate with the practice EHR platform to allow for seamless scheduling and documentation. A considerable benefit of asynchronous telehealth is that it is performed in a digital text format that can be automatically stored.

This discussion on the economic benefits of telehealth in orthopedics will focus primarily on asynchronous or combined platform technologies as the ability of these platforms to reduce costs, expand access and improve practice revenues far exceeds that of pure synchronous options.

Post-Operative Telehealth

Within the global period, post-operative visits are generally bundled into the surgical fee and, hence, not separately reimbursed. Surgeries will typically include 2-3 post-operative visits.

Understanding the financial benefit of post-operative telehealth starts with an understanding of the costs to the practice to see a post-operative patient in-office. This is a complex calculation that must take into account fixed and variable costs but can be estimated, in most cases to be between \$55 and \$75 per visit. The in-office cost then needs to be compared to the costs of seeing a patient via asynchronous telehealth. This requires the same complex analysis but can be estimated, depending on level of practice adoption, to be between \$25 and \$30 per visit.

The next item to understand is the difference in provider time required for the telehealth post-operative visit vs. the in-office post-operative visit. In one author's experience, a post-operative asynchronous or combined platform telehealth visit generally requires, on average, 20% of the time of an in-office visit, meaning that for every 5 post-operative telehealth visits the provider should be able to open three to four in-office new patient slots. Thus, five costly non-reimbursed in-office visits are converted, in the same time frame to five less costly non-reimbursed telehealth visits and 3-4 in-office new patient visits. Over the course of a year this can amount to a remarkable return on investment for the practice.

Telehealth for Routine Follow-up on Established Patients

There exist many situations where a follow-up visit does not require a physical exam and is therefore an ideal candidate for telehealth. Such situations include:

- Follow-up on a response to a prescribed treatment plan
- Follow-up to review lab tests or diagnostic imaging
- Follow-up while awaiting authorization or medical clearance

As indicated above, a well-designed telehealth platform can allow the provider the ability to complete these types of visits in a fraction of the time required for an in-office visit and at a fraction of the cost to both the practice and possibly the patient while increasing patient convenience. The most significant economic benefit comes from converting these time savings into new patient visits.

Routing patient inquiries through an asynchronous telehealth platform as opposed to answering them on the phone can assist in documentation and provide a source for equitable compensation for this work.

Telehealth for Managing Patients in a Bundled Payment Arrangement

Preventing one re-admission on a bundled patient can save in excess of \$20,000. This can potentially be achieved by allowing convenient digital access to the patient for timely telehealth evaluation in a manner that prevents them from seeking evaluation in an ER.

Aggregate Financial Impact of Telehealth to small, medium and large orthopedic practices

Following is an analysis of the financial benefit to a typical orthopedic practice available through telehealth. This analysis requires certain assumptions that are presented in Table 3. These assumptions are constructed so as to give a conservative assessment of a mature and reasonably well adopted telehealth platform.

**Table 3. Time and Cost Assumptions
In-Office Visit vs Telemedicine Visit**

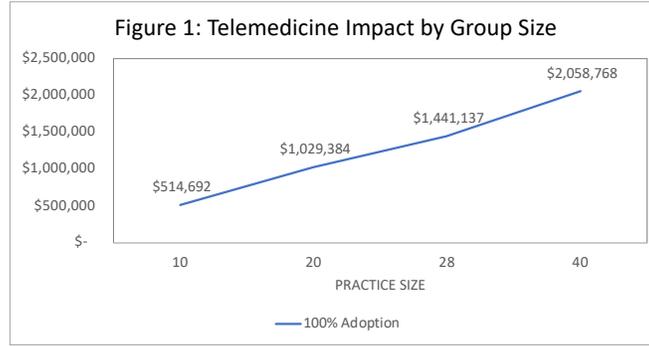
Time Requirements	In-Office	Telemedicine
• MD/DO Post-op	(10 Min) \$41.67	(2Min) \$8.22
• MA Post-op	(17 Min) \$5.67	(5 Min) \$1.67
• Staff Post-op	(30 Min) \$8.00	(5Min) \$1.33
• MD/Do Follow-up	(10 Min) \$41.67	(3 Min) \$12.50
• MA Follow-up	(17 Min) \$5.67	(7 Min) \$2.33
• Staff Follow-up	(30 Min) \$8.00	(7 Min) \$1.87

• Appointments/Physician/Day	40
• Clinic Days/Week	2.5
• Work Weeks/Year	44
• Surgical Procedures/Year	440
• Appointments/Year	4400
• Follow-up	1848
• In-office/Telemedicine	1421/427
• Post-op:	1100
• In-office/Telemedicine.	846/254

• Telemedicine Appts/Day	6.2
• Physician Min Saved/Day	49.5
• Physician Min for New Pt.	13.0
• Additional New Visits/day	3.8

Figure 1. Illustrates the potential financial impact for the orthopedic practice based on the number of providers.

Telemedicine Impact: Practice of 28	
Total Annual Additional Revenue	\$1,466,743
Total Annual Savings	\$108,458
Total Annual Platform Fees	\$134,064
Total Impact	\$1,441,137



Adding nearly \$1.5M in revenue to a mid-size Orthopedic practice without adding providers or staff is significant. In areas with tight labor markets or with recruiting challenges, telehealth may be one of the few opportunities to achieve substantial revenue growth and meet the demands of the community without hiring new surgeons or staff.

Telehealth for Physical and Occupational Therapy

For those practices offering the ancillary services in physical and occupational therapy, the benefits outlined above regarding convenience, cost savings and increased revenue can all be realized by extending telehealth to rehabilitation services. The Center for Connected Health Policy has reviewed State policies for all 50 states⁷. In California, Physical and Occupational therapists are permitted to use both synchronous and asynchronous telehealth technologies. Similar to medical practices, these telerehabilitation services are held to the same standard of care and require verbal or written consent of the patient.

⁷ Bierman, R. T., Kwong, M. W., & Calouro, C. (2018). State Occupational and Physical Therapy Telehealth Laws and Regulations: A 50-State Survey. *International Journal of Telerehabilitation*, 10(2), 3-54. doi:10.5195/ijt.2018.6269

Table 4. California State Occupational and Physical Therapy Telehealth Laws and Regulations	
Occupational Therapy	Physical Therapy
Telehealth/Telemedicine/Telecommunications Definition	
<p>“Telehealth” means the mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient’s health care while the patient is at the originating site and the health care provider is at a distant site. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward transfers.</p> <p>Source: Cal. BPC §2290.5</p>	<p>“Telehealth” means the mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient’s health care while the patient is at the originating site and the health care provider is at a distant site. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward transfers.</p> <p>Source: Cal. BPC §2290.5</p>
Modality	
<p>Occupational therapists are permitted to use synchronous and store-and-forward telehealth.</p> <p>Source: Cal. BPC §2290.5</p> <p>“Synchronous interaction” means a real-time interaction between a patient and a health care provider located at a distant site.</p> <p>“Asynchronous store and forward” means the transmission of a patient’s medical information from an originating site to the health care provider at a distant site without the presence of the patient.</p> <p>Source: Cal. BPC §2290.5</p>	<p>Physical therapists are permitted to use synchronous and store-and-forward telehealth.</p> <p>Source: Cal. BPC §2290.5</p> <p>“Synchronous interaction” means a real-time interaction between a patient and a health care provider located at a distant site.</p> <p>“Asynchronous store and forward” means the transmission of a patient’s medical information from an originating site to the health care provider at a distant site without the presence of the patient.</p> <p>Source: Cal. BPC §2290.5</p>
Location- Type of site/Geography	
<p>“Distant site” means a site where a health care provider who provides health care services is located while providing these services via a telecommunications system.</p> <p>Source: Cal. BPC §2290.5</p>	<p>“Distant site” means a site where a health care provider who provides health care services is located while providing these services via a telecommunications system.</p> <p>Source: Cal. BPC §2290.5</p>

The challenges of implementing a telehealth program in an established orthopedic practice

The single greatest obstacle that practices will encounter in trying to implement a telehealth program will not be patient adoption but rather physician adoption. Change generally does not come easily for surgeons, who, as a group, can be expected to adhere to “what has always worked.” In addition, the impediments brought on by electronic health records tends to create skepticism surrounding any new digital solution.

Successful implementation will generally require a product champion followed by early adopters as the typical diffusion of innovation takes its course. Administration must also embrace a focused training, implementation and possibly incentivization program for staff. Once the physician moves beyond the personal adoption hurdle, the staff must be in a position to readily support the telehealth visit in the same manner the staff is ready to support and provide service to in-office patients.

As telehealth increases, there is likely to be outside pressures applied by patients desiring to achieve the convenience and access offered by this technology. **On demand information and digital applications to solve daily problems drive the decisions of this generation.** There is no reason to believe medicine will forever defy this digital sophistication and it is reasonable to expect that most currently practicing orthopedists will face an increasing demand for this technology.

Combined platform telehealth may be a suitable first step toward meeting this expectation for patients, while improving practice financials and quality of life for the providers.

Summary

Telehealth offers remarkable advantages to the modern orthopedic practice. A well-designed platform can improve patient convenience, improve community access and reduce practice costs. Your bank does not require you to come into the bank to utilize their services, your travel interests do not require you to sit down with a travel agent and even your grocery store no longer requires you to come into the store to shop. Digital telehealth can enhance the modern orthopedic practice for the benefit of patients, the community and the practice.

Table 4. Summary: Telemedicine in the Modern Orthopedic Practice

- **Improved Patient Convenience**
Convenience is increasingly becoming a consumer mandate and in-office visits will increasingly be questioned as to their necessity.
- **Improved Community Access to Orthopedic Specialists**
Reducing the time to care for established patients increases the time available for new patient visits, hence, improving community access.
- **Reduced Practice Costs**
Digital technologies such as telemedicine offer vast opportunities to reduce the cost of providing care.
- **Improved Practice Revenues**
Converting non-reimbursed postoperative visits and marginally reimbursed follow-up visits to new patient slots provides healthy growth for the practice.

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