DIGITAL HEALTH IMPLEMENTATION
PLAYBOOK SERIES

AMA
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AMA Telehealth Clinical Education **Playbook**

AMERICAN MEDICAL ASSOCIATION®
TELEHEALTH CLINICAL EDUCATION PLAYBOOK

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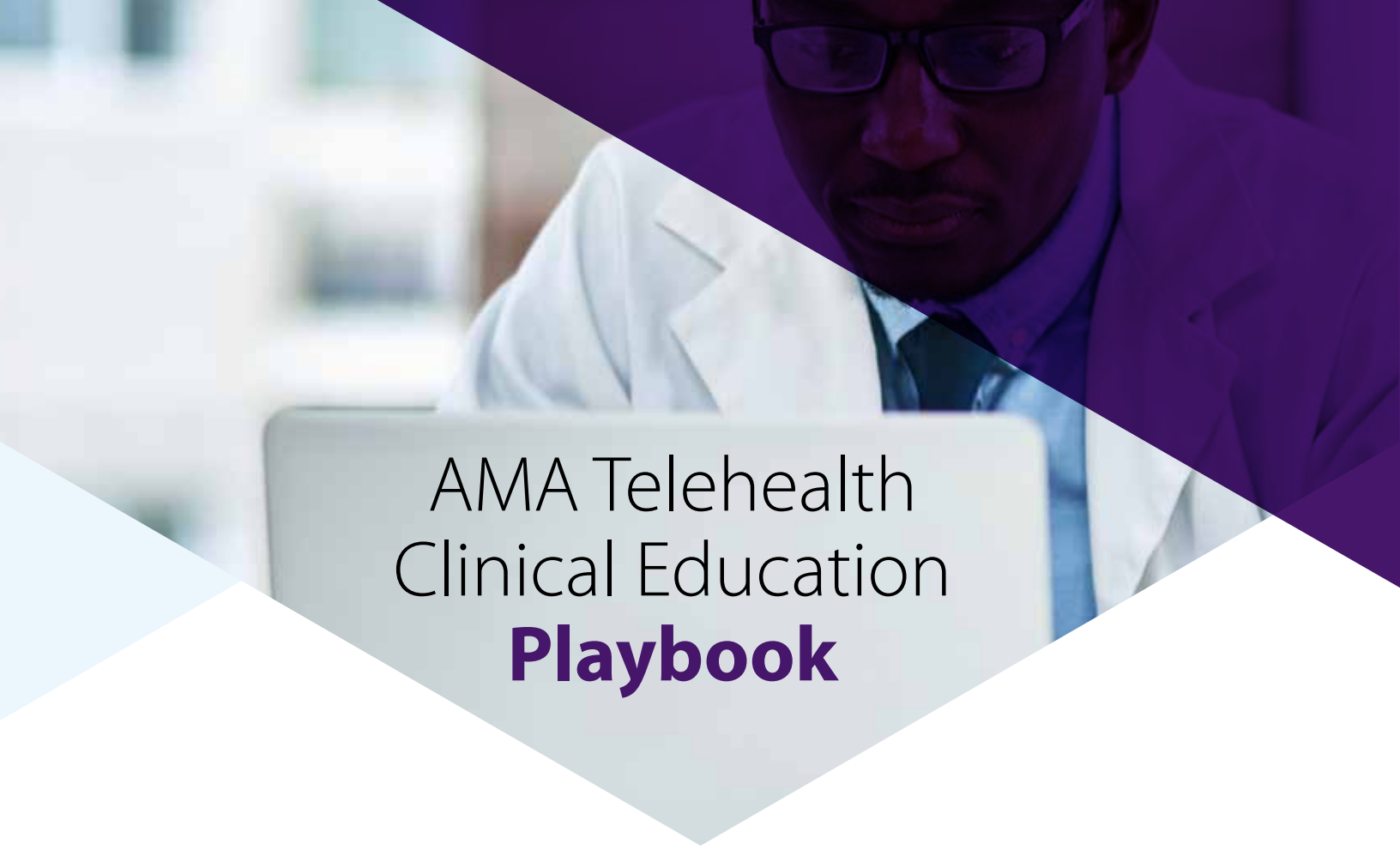

AMA Telehealth Clinical Education **Playbook**

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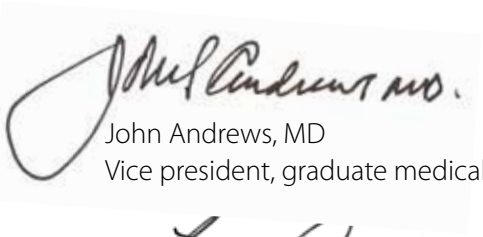
PREFACE

We are pleased to offer the **AMA Telehealth Clinical Education Playbook** as part of our telehealth playbook series.

This volume focuses on embedding educational interactions within a telehealth patient encounter, including the provision of high-quality patient care using telehealth modalities *and* the training that medical students need to develop telehealth fluency and literacy. It builds off the significant work of the AMA "Accelerating Change in Medical Education" initiative in this area.

The AMA launched this initiative in 2013. After awarding initial grants to 11 medical schools from across the country, the AMA brought these schools together to form the AMA Accelerating Change in Medical Education Consortium—a unique, innovative collaboration that allowed for the sharing and dissemination of groundbreaking ideas and projects. Another 21 schools were added in 2016, and five were added in 2019. The consortium's work expanded into graduate medical education in 2019 with the launch of the Reimagining Residency program.

One area of focus among consortium members has been the incorporation of educational technologies to support emerging competency demands. Member institutions have collaborated in creating this guide to best practices in including learners in telehealth visits.



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Warm-up

Introduction to the AMA Telehealth Clinical Education Playbook

This book builds off the success of the AMA's first playbook, *The Telehealth Implementation Playbook*.[1] Like that first playbook, the book you have now is not designed to be a comprehensive resource. Rather, it provides a framework for thinking about what telehealth education is (the provision of high-quality patient care using telehealth modalities *and* the training that medical students, residents, and fellows need to develop telehealth fluency) as well as a model for best practices for integrating active learning rather than "tacking them on" to telehealth platforms.

Why this book?

The prevalence of telehealth in response to the COVID-19 pandemic has resulted in an increase in telehealth education, first at the graduate and then the undergraduate medical education levels. The lack of training and experience for those new to telehealth is matched by a similar lack of preparedness to make the transition from face-to-face precepting to precepting in telehealth settings, where clinicians, students, and patients may all be located in different places.

Initially, the cognitive burden of telehealth and the physical and emotional pressure associated with the pandemic required physicians and other health care professionals to (rightly) prioritize patient care over medical education. Now, with our growing familiarity and comfort with the telehealth process comes an increased capacity to expand our focus to include education again. Yet as we do so, many are finding that education under these conditions must be reconceptualized, just as telehealth required us to reconceptualize how health care is delivered and how the clinical encounter is structured. Education workflows in telehealth environments should therefore be reconceptualized to achieve the same outcomes as the in-person event by using different *approaches* that account for the strengths and limitations imposed by technology and distance.

While it may be tempting to long for a "return to normal" in providing patient care and education, the reality is that, like telehealth, teleprecepting is *the new normal (or at least a significant part of the new normal)*. Accordingly, just as we recognize the need to develop and implement best practices in telehealth, we must also consider what the best practices of telehealth education are in order to train the medical workforce of the future who need to be better prepared for pandemics and other health care emergencies.

How should you use this book?

A "one size fits all" approach to telehealth education is impossible given the variation in experience and training that preceptors and learners have, the different telehealth platforms that are utilized, and the resources (time, money, and technology) that are available. Even were this not the case, telehealth technology and our fluency will continue to evolve as demand and utilization increase.

We hope to provide in this playbook a framework to organize and implement telehealth clinical education—especially at the patient encounter level. We want to emphasize that "telehealth clinical education" is a multi-dimensional concept. You may choose (or need) to focus on education that is specific to telehealth competency such as camera presence, voice modulation, patient-centeredness, or remote communication with a surrogate co-located with the patient. This is fundamentally different from focusing on providing quality patient care in telehealth settings (e.g., the methods and quality of history-taking when completed via telehealth platforms or the application of educational tasks via telehealth). Each of these goals is equally valid and important to pursue, yet not all need be pursued simultaneously nor in any particular sequence because of the unique needs and resources of each health care clinical education setting. Because this book is designed to support you in all of these areas, at times we will discuss competency in the context of telehealth itself, clinical skills and attitudes during telehealth, and precepting/learning within telehealth platforms.

The book is divided into three main sections. Part 1 (Warm-up) provides an orientation to the framework, history, and common terminology for telehealth clinical education as discussed in the text. Part 2 (Pre-game) describes some of the key concepts, tasks, and considerations that should precede the telehealth clinical education encounter. Part 3 (Game time—telehealth) describes some of the processes and approaches for applying pre-game decisions during the telehealth clinical education encounter itself. We have broken each of these parts into separate steps in order to help you think through them incrementally, and we have provided checklists you can use outside the book to help make the key ideas and tasks concrete and applicable in your own environment. Where possible, we have also provided examples and key takeaways from the perspective of different specialties. While not comprehensive, we hope these will help you see how the principles apply to different specialties.

Because every environment, system, preceptor, and student is different, you will find some steps and principles more relevant to you than others.

Finally, you will note the use of sidebars to help identify key ideas and takeaways for different situations and for faculty development, as well as the use of checklists at the end of each step. You may find it helpful to copy these and distribute them for use during team meetings for planning the encounters.

Common terms and definitions

Learner: In a "continuously learning and improving health system," learners include students, trainees, researchers, practitioners, educators, staff, and administrators—all participants that co-construct the learning environment.[2]

Learning environment: The network of "social interactions, organizational cultures and structures, and physical and virtual spaces which surround and shape learners' experiences, perceptions, and learning." It is the bridge between practice and education.[2]

Telehealth: Telehealth, telemedicine, and related terms generally refer to the exchange of medical information from one site to another through electronic communication.[3] The Centers for Medicare and Medicaid Services (CMS) defines telehealth as a two-way, real-time interactive communication between a patient and a physician or practitioner at a distant site through telecommunications equipment that includes, at a minimum, audio and visual equipment.[4] While telemedicine has historically referred to remote clinical services, telehealth now refers to broader services.

Common definitions of telemedicine and telehealth terminology:

- **Synchronous telehealth:** Real-time, audio-video communication that connects physicians and patients in different locations. (Note: This definition is used for telehealth for CMS coverage and payment.)[5]
- **Asynchronous telehealth:** Refers to store-and-forward technologies that collect images and data to be transmitted and interpreted later. These can be patient to physician or other health care professional in the form of online digital visits and/or brief check-in services furnished using communication technology employed to evaluate whether or not an office visit is warranted (via patient portals, mobile communications, or other electronic means). They can also be interprofessional consultations facilitated with the help of the internet between physicians and/or other qualified health care professionals to improve care coordination for patients by sharing verbal or written reports for further assessment and/or care management.[5]
- **Remote patient monitoring:** Refers to patient data being collected and transmitted outside of the office, mostly asynchronously, which results in clinical decision-making and care management follow-up that may be provided in-person or virtually. Tools and wearable devices (which may involve the use of mHealth apps) that measure weight, blood pressure, pulse oximetry, respiratory flow rate, musculoskeletal system status, therapy adherence, therapy response, and other patient generated data for review and treatment management.[6]

A brief summary of the history of contemporary telehealth

Prior to February 2020 and the COVID-19 pandemic, telehealth utilization grew slowly but steadily. The COVID-19 pandemic facilitated an immediate and dramatic rise in monthly claims for telehealth services, according to a survey by the COVID-19 Healthcare Coalition.[7]

CLINICAL OUTCOMES
More than 75% of clinicians surveyed indicated that telehealth enabled them to deliver high quality care in the areas of COVID-19-related care, acute care, chronic disease management, hospital follow-up, care coordination, preventive care, and mental/behavioral health. Additionally, 60% of clinicians reported that telehealth improved the health of their patients.

PATIENT EXPERIENCE
More than 80% of survey respondents indicated that telehealth improved the timeliness of care for their patients. A similar percentage said their patients reacted favorably to using telehealth for care.

COST
Respondents indicated that telehealth decreased the costs of care for their patients (61% either agreeing or strongly agreeing) and improved the financial health of their practices (56% either agreeing or strongly agreeing).

PROFESSIONAL SATISFACTION
A majority of respondents indicated that telehealth improved the satisfaction of their work (55%).

MAINTAINING THE PATIENT-PHYSICIAN RELATIONSHIP AND PRESERVING CONTINUITY OF CARE
- 78% of patients indicated they received telehealth services from their own provider.
- 81% of patients felt that telehealth provided them with a sense of access and continuity of care.
- 71% felt a personal connection with their provider during the telehealth visit.
- 83% felt appropriate and strong communication between patient and provider.

REMOVING BARRIERS TO ACCESSING CARE
- 76% of patients indicated that telehealth removed transportation as a barrier.
- 65% no longer had to take time off work for a doctor's appointment.
- 67% had lower costs related to their telehealth visit versus an in-person visit.

VISIT QUALITY
- 79% of patient respondents indicated that they were satisfied with their telehealth visit.
- 91% of patients reported that their provider explained things in a way that was easy to understand.
- 88% of patients reported that their provider listened carefully to their needs.
- 81% reported that the provider was thorough during the visit.
- 78% of patients felt their health concern could be addressed via telehealth.
- 83% reported good overall visit quality.

USE OF TECHNOLOGY AND THE IMPACT ON PRIVACY
- 84% of patients felt their information was secure and private during the visit.
- 72% reported that they had sufficient training to be successful during their telehealth visit.
- 79% found it easy to use the technology.

Barriers and challenges to successful telehealth during COVID-19

Additional findings of the survey by the COVID-19 Healthcare Coalition:[7]

73.3% **of clinician respondents** indicated that no or low reimbursement will be a major challenge post-pandemic.

64% **of respondents** indicated technology challenges for patients as a barrier to sustainable use of telehealth. Perceived barriers for patients included lack of access to technology and internet/broadband along with low digital literacy.

58% **of physician respondents** are not able to currently access their telehealth technology directly from their electronic health record (EHR).

ANTICIPATED WORKFLOW CHALLENGES include integration with EHR (30.3%) and other health care technologies (27.9%), building telehealth-specific workflows (25.7%), and lack of technical support (25.3%).

Basics of telehealth practice

Telehealth rules and regulations vary from state to state. If your patient has out-of-state health insurance or wants to receive care outside of your state, make sure you are meeting the state's guidelines where your patient is receiving care (e.g., reimbursement policies, clinician licensure). Below is a checklist of items for consideration before initiating telehealth in your practice:

- Include your legal and billing team as early in the process as possible.
- Ensure compliance with payer requirements and regulations.
- Identify in which states your clinicians need to be licensed as well as in which states they are currently licensed.
- Research interstate licensure, including the Interstate Medical Licensure Compact.
- Check with your malpractice insurance carrier to ensure you are covered to provide telehealth services.
- Determine the best reimbursement model for your system and patient population.

Billing insurance (e.g., private, Medicaid, Medicare)

Reimbursement rates vary by payer, and there may be specific criteria your platform and/or use case must meet in order to be reimbursed.

Practices that primarily plan to bill insurance payers should consider the following to ensure success:

- Understand the ins and outs of CPT® codes, including modifiers and correct language to use and billing practices with learners.
- Research which payers do and do not cover telehealth.
- Consider negotiating with individual payers regarding coverage and health outcomes.
- Understand the geographic restrictions for an originating site as well as any restrictions on qualifications as a distant site.
- Consider focusing your telehealth program on patients who use the primary payer at your practice, especially if they already cover telehealth.

Documentation is critical to reimbursement

Be sure to document when your visit begins and ends to meet the length requirements for payer and/or state. Based on the requirements of coding and billing, keep a checklist for how you must document in order to meet regulations.

Stay up to date

Telehealth rules, regulations, and reimbursement rates are continuously evolving. Ensure your practice or organization is staying up to date with the latest information by checking your state's rules and regulations as well as the reimbursement rates and payer guidelines most commonly used at your practice.

For additional detailed information, please refer to the AMA Telehealth Implementation Playbook.

Here are some additional helpful links:

- The AMA Advocacy Resource Center provides materials for physicians and physician advocates focused on state telehealth policies and issues.
- The Federation of State Medical Boards provides telehealth policies by state.
- The Center for Connected Health Policy has various state-based resources.

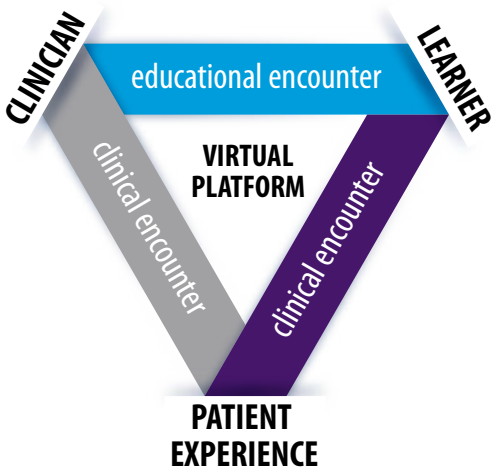
Education framework

Defining the telehealth education encounter

There are myriad ways to conceptualize the telehealth educational encounter, and throughout this playbook we advocate for adapting the encounter based on personnel, resources, setting, and goals.

As Figure 1 shows, the patient experience is the result of the management of the clinical encounter as mediated by the virtual platform and managed by both preceptor and student. This playbook focuses on the sides of the triangle (the clinical encounter) and the base of the triangle (the educational encounter). How does the virtual platform (including resources, technology, and co-location) modify both encounters? We argue that, of necessity, health care professionals when practicing telehealth have focused on the clinical encounter and largely ignored the educational encounter.

Figure 1. The Telehealth Education Framework



Telehealth education should focus on three elements: the learner, the learning environment, and the educator. **Learners** include students, trainees, researchers, practitioners, educators, staff, and administrators—all participants that co-construct the learning environment. **The learning environment** includes the network of social interactions; organizational cultures and structures; and physical and virtual spaces which surround and shape learners' experiences, perceptions, and learning. It is the bridge between practice and education. **The educator** provides instruction or education and is essentially a teacher.[8]

The path to implementation

Now that we've established some of the basic parameters of telehealth clinical education, we shift now to the practical application of those parameters to the design, implementation, and evaluation of telehealth clinical education encounters. The balance of this book is organized into two sections, Pre-game and Game time, each with its own set of steps. While the nature of each step will be different based on your audience, resources, and purposes, steps should be used in the order presented. Each step builds upon the previous step and provides input for the next. We recognize that you may not have time to build the "gold standard" version of each step, but there is always time to do something, even if that means just taking five minutes to think through the *implications* of a step.

In Part 2: Pre-game, we present four steps that will help you focus on the most important aspects of telehealth education for your environment, think through the three phases of synchronous telehealth encounters and the adaptations you will make to account for them, and specify your goals, outcomes, and objectives for the encounter. In Part 3: Game time—telehealth, we show you how to build on the first four steps by implementing them during your educational and clinical encounters and how to evaluate your success and build on the lessons learned for the next encounter.

Part 2:
Pre-game

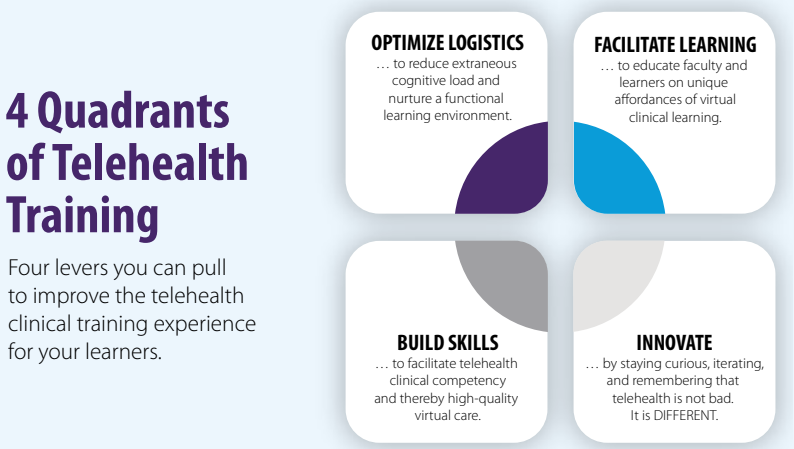
Telehealth education does not begin and end with the clinical telehealth patient encounter. There are key considerations and planning decisions required before the encounter and, in many cases, after the encounter that can greatly extend the quality and power of the learning experience. In fact, integration of telehealth across preclinical, clinical, and graduate medical education curricula is critical to building the mental model of health care that learners will need for the future. Telehealth education can and should be a part of almost all educational events as resources allow, including brief mentions, full clinical or simulated encounters, and everything in-between. In this section, we describe four key steps to prepare your clinic or your institution for an intentional incorporation of telehealth into existing educational and clinical infrastructure.

In Step 1, we introduce the 4 Quadrants of Telehealth Training framework as a way to explore the strengths and areas for improvement within your institution with regard to supporting faculty, learners, and staff in virtual clinical learning. In Step 2, we introduce a second framework—Pre-, Intra-, and Post-encounter—to develop a common vocabulary around synchronous telehealth clinical educational encounters. In Step 3, we explore some practical examples on how to adapt your teaching to the virtual clinical encounter. In Step 4, we show you how to specify the right competencies for your institution, purposes, and team.

Step 1: Use the 4 Quadrants to identify your needs

The 4 Quadrants of Telehealth Training (Figure 2), developed by Ben Li, MD, MBA, and Julian Genkins, MD, provides a simple framework on which you can overlay your existing curriculum to think systematically about how to incorporate telehealth training. The 4 Quadrants are designed to help you identify those areas in which you may already feel comfortable and other areas in which you may need work to deliver the best possible educational experience for your learners and meet your personal or institutional goals. The 4 Quadrants therefore can act as a systematic audit and needs assessment of the current state, while also allowing you to target specific areas for focused attention.

Figure 2. The 4 Quadrants of Telehealth Training



Optimize logistics: These are perhaps the most visible aspects of the telehealth encounter and are understandably the first place many will start. Logistics are especially relevant in the telehealth setting because, when they are suboptimal, they can add substantial extraneous cognitive load to the learning task, thereby diminishing capacity for the germane load associated with both learning and patient care. Addressing logistics can include guidelines for setting up the space at home and ensuring equitable setup for both learners and preceptors. Such situational factors help prepare your team for an effective education encounter as well as for any necessary pivots during a patient telehealth visit.[9]

Optimization of logistics also encompasses tool-specific training such as the video platform (e.g., *Zoom*) and quick access to technical support. Other considerations include ensuring transparent precepting logistics and expectations. Are there clear schedules for virtual precepting? Have you established a communication platform/backchannel (texting or private chat messages)? Will you conduct preclinic huddles between learners and preceptors (we recommend you do!), and if so, how?

Beyond the synchronous encounter itself, consider how you can mitigate the extraneous load of other unfamiliar workflows in telehealth, by building templates to coach students on billing and note-writing procedures, for example. Anything you can do to support team members or lighten the cognitive load of associated tasks that are not the primary educational focus can help free those resources up for more critical workflows. This quadrant also encompasses ensuring equitable engagement of trainees, as telehealth and the "work from home" environment can exacerbate inequities introduced in technical capabilities of the home environment (e.g., inadequate hardware to engage in video, lower bandwidth internet connections, etc.). See **Additional readings and references** in Part 4 for guidance on ensuring equity in telehealth, especially the work of the National Partnership for Women & Families and Ethnomed.

Build skills: This quadrant focuses on the requisite skills to achieve competency in telehealth. While provision of high-quality telehealth builds on the foundation of previously acquired in-person clinical skills, there exists a set of skills unique to virtual care delivery that require specific attention in training. For example: teaching clinical assessment via telehealth might include demonstrating graceful redirection during history-taking, cultivating virtual physical exam skills, and introducing specific criteria to help learners identify when the limitations of virtual care have been met and when follow-up necessitates an in-person visit. Beyond the synchronous encounter, training in areas like patient panel management becomes even more essential (e.g., high-risk patient identification and outreach, management of abundant patient messages, or guidelines in interaction with subspecialists or other remote care team members). This training can certainly be integrated into patient care and precepting but will also benefit from intentional curriculum design across all stages of medical education. We highly recommend the Association of American Medical Colleges (AAMC) Telehealth Competencies[10] as a guiding document for this process and encourage you to start a conversation with instructional designers and others at your institution regarding how these competencies can be integrated into all phases of the curriculum.

Facilitate learning: The virtual clinical learning environment is fundamentally different from the in-person environment. Faculty require new skills to teach effectively, and learners require new strategies to learn effectively. Many parallels exist between the affordances and limitations of **virtual clinical learning** and the more well understood **virtual classroom** learning. Similarly, strategies for effective in-person clinical learning overlap with those needed during virtual clinical learning. Applying a combination of these familiar approaches—virtual classroom learning and in-person clinical learning—to the unique virtual clinical learning environment can enhance telehealth clinical learning. For example, during a virtual visit it is easy for learners to fall back into an observer role if they are not actively engaged. Always a risk in any learning environment, this is made more challenging in virtual clinical education because of the lack of visual cues (e.g., body language) and the potential abundance of distractions introduced by the home office environment. It is incumbent on both learner and preceptor to design and maintain the encounter to minimize this risk. Another example is the lack of typical hallway conversations or safe office space in which rich, interstitial learning occurs when learner and preceptor are co-located. Establishing expectations and protocols for backchannel communication leveraging technology tools (e.g., text messaging, video platform chat) can overcome this barrier and provide a safe space to share thoughts between student and preceptor before, during, and after a virtual clinical encounter.

Innovate: This may be the most important quadrant, although it tends to be the last to get full attention. Although there are often situational or patient-related factors that become barriers to provision of optimal telehealth care, development of creative ways to overcome these barriers can provide opportunities to improve

patient care and education. Thinking innovatively can help guide us to new and better ways to do both. At its best, teleprecepting presents an opportunity for collaborative co-creation of education by both preceptor and student. Not only do Millennial and Gen Z learners appreciate co-creation as a way to flatten the hierarchy, it is also a way to share the added burden of telehealth platforms while pointing the way to an improved future for patients and populations. As each successive generation of learners has become increasingly comfortable with the rapid pace of change in technology and communication platforms, incorporation of input from all team members, particularly learners, can be a way of improving engagement and ownership in developing and implementing telehealth education.

Overall, the 4 Quadrants framework is designed to help you think about curricular design and teleprecepting at a programmatic level. We recognize, though, that there may be a tension between "doing something right" and "doing something at all" for preceptors who are often working on their own and, in the moment, may not have the time or opportunity to think globally. If this is the case, consider focusing on just one part of one quadrant which resonates most with that moment, and start there.

Checklist to apply the 4 Quadrants to your situation

It is important to recognize that there will be many different clinical situations defined by unique sets of situational factors. Considering the situational factors addressed by the 4 Quadrants in advance will prepare faculty for an effective education encounter as well as for necessary pivots during a patient telehealth visit. The checklist below is one way to guide a review of your existing curriculum and specific situation via the 4 Quadrants framework:

Optimize logistics:

- ❑ Confirm the number of learners engaging in the telehealth visit
- ❑ Confirm the location of the patient, preceptor, and other learners
- ❑ Communicate technology and equipment requirements
- ❑ Confirm learner access to required platforms with "tech checks" prior to visit time
- ❑ Communicate digital presence expectations (backgrounds, attire, naming conventions, etc.)
- ❑ Guide learners to technology trainings and support resources
- ❑ Identify available tools and features to leverage in the virtual learning environment (e.g., breakout rooms, chat, etc.)
- ❑ Identify synchronous and asynchronous tools for learners and patients

Build skills:

- ❑ Review the level of entrustment or learner supervision required
- ❑ Establish if the experience is learner-supported (shadowing) or learner-led (guiding to independent practice)
- ❑ Provide exemplars of telehealth history taking and physical exams (e.g., video)
- ❑ Communicate expectations for "webside" manner (e.g., management of screens and visual prompts)
- ❑ Provide verbal and digital communication skill development (accuracy, empathy, motivational interviewing)

Facilitate learning:

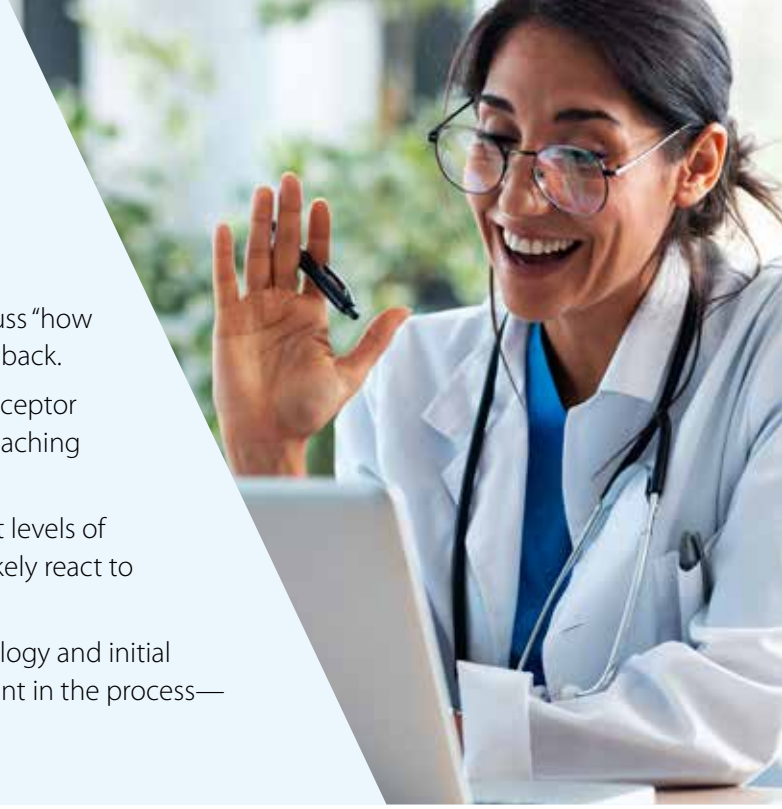
- ❑ Explore and identify mechanisms for backchannel communication, choose a standard (we recommend a HIPAA-compliant clinical text messaging app)
- ❑ Pay attention to learner engagement. Create expectations for check-ins during an encounter and encourage even minimal active participation to avoid a student taking an observer role
- ❑ Provider learners with strategies to avoid distraction
- ❑ Share information with preceptors on virtual learning best practices

Innovate:

- ❑ Establish a culture of openness to learner feedback and rapid cycle feedback
- ❑ Encourage preceptor-learner dyad debriefs specifically around logistics of the encounters
- ❑ Share wins and innovative ideas broadly to build toward best practices

LEADING UP

- ❑ How learners can use this guide to prep for inclusion of telehealth in their curriculum and evaluation:
  - One-Minute Learner: Define goals, review schedule, discuss "how much and how long," present the patient, and solicit feedback.
  - Learner can offer minimal scripts like the One-Minute Preceptor to take the load off the preceptor to come up with the teaching approach AND deliver telehealth.
  - Learner can have two to three potential ideas, at different levels of commitment and effort, and offer them. Preceptor can likely react to these and tweak to fit the workflow with minimal effort.
  - Minimal levels can include helping set up patient technology and initial connectivity and gathering the history and chief complaint in the process—report to clinician upon "entry."



STEP 1—FACULTY DEVELOPMENT TIP

- ❑ Ask your learners to identify one or two learning objectives, knowledge, skills, or attitudes they would like feedback on and direct them to ask for feedback after the encounter. Share with them, prior to the encounter, what specific knowledge, skills, and/or attitudes you will be assessing.
- ❑ These may include medical knowledge or diagnostic reasoning, procedural or communication skills, and/or attitudes such as empathy, responsiveness to feedback, or teamsmanship. How might these need to be modified or empathized within the telehealth environment?

Step 2: Three phases of the telehealth encounter

Now that you've established the quadrant(s) and associated telehealth aspects you want to focus on, we turn next to the encounter itself. As with telehealth clinical education, we recognize that there is tremendous variation in the kinds of patient encounters in which telehealth clinical education may occur, and it is, of course, not possible to account for them all here. To address this, as a reflection of its near-universality and transferability, we will assume a clinical encounter that is based on a clinic setting as opposed to a hospital or an emergency department. Further, in recognition of the best practices of active learning and the availability of technology to support it, we posit a model for the educational encounter that assumes both synchronous and asynchronous communication before, during, and after the patient encounters. While this may not hold true for every encounter you have, we hope it will be easy enough to adapt to different circumstances.

We also encourage you to think about the telehealth encounter more broadly than just what happens during the preceptor/student interaction with the patient and include a pre-encounter phase and a post-encounter phase (Table 1). The pre-encounter phase begins with establishing the learner's current competency as a clinician and in telehealth. A learner may have substantial in-person clinical skills but lack key virtual clinical skills. Other tasks involve the familiar establishment of expectations for the patient encounter, but with the additional burden of including expectations for telehealth modalities and processes, many of which will be less familiar to students and preceptors (e.g., backchannel/asynchronous communication between preceptor, student). Intra-encounter

involves things like negotiating how the learner shares the responsibility of the given type of clinical experience (e.g., e-visit, direct-to-consumer visit). If there are multiple learners, this can become increasingly complex and require additional preparation and/or a reliable synchronous backchannel for making adjustments on the fly. One model for navigating this is the spectrum of "learner-supported" and "learner-led" which is discussed more in Step 5. Finally, post-encounter involves leveraging virtual tools for timely debriefing, feedback, additional teaching, and discussions on how to improve the flow of future telehealth encounters. The latter not only allows for improvement in the specific learner-preceptor dyad but also helps both parties focus on improving their skills as virtual clinical learners or teachers more broadly.

Table 1. Comparing the stages of the synchronous and asynchronous clinical encounter

	SYNCHRONOUS	ASYNCHRONOUS
PRE-ENCOUNTER	**Student and preceptor:** • Determination of learner clinical skill and telehealth competency • Introductions, establish expectations/roles/preparation • Plan sequence of visit (who sees patient first, where to move patient, which virtual meeting space will be used for precepting)	**Student and preceptor:** • Review schedule and preemptively identify patients for learners to see, send ahead of time. • Communicate and share results of negotiated tasks from synchronous encounter
INTRA-ENCOUNTER	**Student:** • Chief complaint/history; patient technical setup **Preceptor:** • Directs student-patient communication • Asks for student input **Student and Preceptor:** • Communicate needs and requests (e.g., charting, notes, find resources)	**Student and preceptor:** • Look up resources; backchannel communication
POST-ENCOUNTER	**Student and preceptor:** • Debrief immediately after the encounter/same day • Discuss clinical skills and what can be improved in the virtual clinical learning experience • Negotiate additional research/assignments • Make plans for follow-up of clinical tasks, such as contacting consultants	**Student:** • Share results of additional assignments **Preceptor:** • Provide written, durable feedback

Deep dive into pre-encounter planning

Establish transparent and realistic expectations with everyone involved in the telehealth encounter to promote a successful educational experience and model the importance of effective planning and communication. This includes not just learners and preceptors but also virtual clinical staff. The expectations should be clearly aligned to the goals and objectives of the learning experience. This process will also create a natural pathway to discuss and define roles and responsibilities for each member of the team. The translation of roles and responsibilities in the virtual environment provides the learner and the supervisor with dedicated time to discuss, correlate, and plan the session.

Ensure all members of the team are familiar with the telehealth technology and practices associated with quality patient care. The provision of tutorials (e.g., standard operating procedures or SOPs) before the session and a quick walk-through of the technology will provide learners with knowledge to effectively utilize the technology. Basic first steps are to provide instructions on camera usage (angle, background, turning on/off) and audio usage (voice modulation, mute on/off). It is also helpful to have a backup plan in case of insurmountable technical difficulties; this can include backup text or phone numbers confirmed ahead of time in case any participant in the telehealth encounter cannot connect or becomes disconnected during the encounter.

Establishing written and verbal cues will allow learners to assist with managing the encounter. For example, verbal cues can assist learners with the proper etiquette for addressing patients, starting the telehealth encounter, conducting the history and physical, and providing next steps with diagnosis and treatment. Verbal cues can also help learners communicate with members of the care team to model and reinforce teamwork. Written cues can assist learners with managing messages via a patient portal. These cues are instrumental to establishing empathetic and respectful communication with patients and the care team.

STEP 2—FACULTY DEVELOPMENT TIP

Sharing your own level of experience with telehealth fosters a reciprocal learning environment (e.g., "I am honing my skills as well" or "I used to do one of these a month, now they make up xx% of my calendar"). Even sharing stories about unsuccessful experiences may be helpful in improving the anticipatory guidance provided for potential problems that may occur during a visit.

Step 3: Review required encounter adaptations

It is essential to "provide skills to learn, adapt, and thrive in the new environment."[11] A telehealth education encounter is a continuum with supervision on one end and autonomy on the other; learners and educators must balance/negotiate where the encounter is placed along this continuum. Doing so provides an opportunity to co-construct the education encounter and learning environment.

Discuss how the telehealth encounter compares to and contrasts from a traditional face-to-face encounter (Table 2). Review the operational and educational similarities and differences so the learner can use a familiar paradigm (in-person encounter) to better understand and prepare for the telehealth encounter. Highlight the aspects of a patient encounter that are salient for both telehealth and in-person encounters. For example, the establishment of trust through respectful communication is critical in all patient encounters. Preceptors should also review aspects of the telehealth encounter that will differ significantly from an in-person encounter (e.g., how a traditional in-person physical exam is conducted versus a telehealth physical exam). While the similarities and differences can be highlighted and discussed before the encounter, it is also important to recognize that the learner will benefit from this after the encounter as part of the educational debrief.

Preceptors should also spend time discussing the benefits and barriers created by the technologies utilized in the telehealth encounter. A key aspect of successful teleprecepting lies in how well we adapt what we want to accomplish to the strengths and weaknesses of the technology. In this regard, it is highly similar to the delivery of health care via telehealth platforms.

STEP 3—FACULTY DEVELOPMENT TIP

Discuss how much of the visit learners should do on their own before presenting a brief history or completing a physical exam. **Review** the expected time learners should spend with each patient. **Establish** the preferred time and setting for learners to ask questions and for you to provide feedback. **Specify** where and when a patient presentation should happen. **Describe** the presentation format learners should use. **Clarify** how much detail should be provided. With early-stage learners you may want more detail to ensure their knowledge base is where you expect. For advanced-stage learners, a more condensed presentation may be considered.

Table 2. Operational and educational components of an in-person encounter versus a telehealth encounter

	LEVEL OF ADAPTATION REQUIRED (0-5)*	IN-PERSON ENCOUNTER (OPERATIONAL AND EDUCATIONAL COMPONENTS)	TELEHEALTH ENCOUNTER (OPERATIONAL AND EDUCATIONAL COMPONENTS)
PRE-ENCOUNTER	**0**	OPERATIONAL Scheduling appointment	OPERATIONAL Scheduling appointment
	0	OPERATIONAL If patient is not registered in patient portal—sign patient up for portal	OPERATIONAL If patient is not registered in patient portal—sign patient up for portal
	0	OPERATIONAL Gathering pre-appointment information (intake forms)	OPERATIONAL Gathering pre-appointment information (intake forms)
	2	OPERATIONAL Information regarding appointment provided (time, directions to clinic, etc.)	OPERATIONAL Information regarding appointment provided (time, tech set up for telehealth encounter, consent for virtual encounter obtained, etc.)
	2	OPERATIONAL Scheduling or team member contacts patient on day of or day before appointment to remind patient of appointment and answer questions	OPERATIONAL Scheduling or other team member contacts patient on day of or day before appointment to remind patient of appointment AND to verify tech setup for telehealth encounter
REGISTERING AND ROOMING PATIENT	**2**	OPERATIONAL Patient arrives in clinic and is registered by clerical staff	OPERATIONAL Team member contacts patient 20 minutes before appointment to start appointment
	1	OPERATIONAL RN or other team member calls patient from waiting room and takes them to clinic room and gathers necessary pre-appointment information (medication reconcilliation, allergies, vitals, etc.)	OPERATIONAL RN or other team member rooms patient in virtual room and gathers pre-appointment information (medication reconcilliation, vitals, allergies, etc.)
	0	EDUCATIONAL RN or other team member informs patient that learner might be involved in encounter and obtains verbal consent	EDUCATIONAL RN or other team member informs patient that learner might be involved in encounter and obtains verbal consent
CLINICAL ENCOUNTER	**1**	EDUCATIONAL Physician or other health care professional enters clinic room and verifies consent for learner being present	EDUCATIONAL Physician or other health care professional enters virtual room and verifies consent for learner being present
	2	EDUCATIONAL Learner, provider, and patient are all physically present in one clinic room	EDUCATIONAL Patient and provider are in separate physical spaces but in same virtual room for encounter *Learner might be in same physical space as provider or might be in a separate physical space and joining encounter virtually.
	3	EDUCATIONAL History of presenting illness (either learner leading or learner observing or some combination)	EDUCATIONAL History of presenting illness (either learner leading or learner observing or some combination)
	5	EDUCATIONAL Exam (either learner leading or learner observing or some combination)	EDUCATIONAL Exam (either learner leading or learner observing or some combination)

… Table 2 continued on next page

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	LEVEL OF ADAPTATION REQUIRED (0-5)*	IN-PERSON ENCOUNTER (OPERATIONAL AND EDUCATIONAL COMPONENTS)	TELEHEALTH ENCOUNTER (OPERATIONAL AND EDUCATIONAL COMPONENTS)
	2	EDUCATIONAL Assessment and plan (either learner leading or learner observing or some combination)	EDUCATIONAL Assessment and plan (either learner leading or learner observing or some combination)
	1	OPERATIONAL Orders are placed according to plan (labs, tests, medications, etc.)	OPERATIONAL Orders are placed according to plan (labs, tests, medications, etc.)
	1	OPERATIONAL Finalize plan, answer any patient questions, and end encounter	OPERATIONAL Finalize plan, answer any patient questions, and end encounter
COMPLETING VISIT AND DEPARTING PATIENT	**1**	OPERATIONAL Patient education material is entered in EHR and depart summary is either sent to patient via portal or printed and given to patient	OPERATIONAL Patient education material is entered in EHR and depart summary is either sent to patient via portal or printed and mailed to patient
		OPERATIONAL Encounter note is completed	OPERATIONAL Encounter note is completed Note should include a consent statement for telehealth visit
		EDUCATIONAL *If learner is writing note—this will be completed by learner and submitted to provider for review/completion	EDUCATIONAL *If learner is writing note—this will be completed by learner and submitted to provider for review/completion
SCHEDULING FOLLOW-UP APPOINTMENT	**1**	OPERATIONAL Follow-up appointment is scheduled by RN, other team member, or clerical staff per plan before patient leaves	OPERATIONAL Provider sends a message in the EHR to RN, other team member, or clerical staff to contact family to schedule follow up appointment per plan
DEBRIEF OF ENCOUNTER	**0**	EDUCATIONAL Provider and learner debrief encounter and discuss case. Feedback is provided	EDUCATIONAL Provider and learner debrief encounter and discuss case. Feedback is provided

**Level of adaptation scale is a continuum from 0-5 where: 0 = no behavioral adaptation is needed while 5 = significant adaptation needed*

Step 4: Review goals and competencies

Designing the experience: Using backwards design

In order to design the learning experience, it is important to start with the end in mind by "identifying the desired results" through the development of learning goals and objectives.[12] Once the broad competency areas have been identified, the next step is the creation of more specific learning goals and objectives. These can help to identify content which is durable and transferrable, thus driving "intentionality" in designing a successful education encounter. Whether and to what extent the objectives are accomplished becomes a critical part of evaluating success later.

The creation of learning goals and objectives, in turn, drives the development of learner assessments (formative and summative) which allow educators and learners to determine acceptable evidence of progression through the learning experience.[12] Once formative and summative assessments are established, you can align the appropriate instructional strategies for planning the learning experience (e.g., pre-round huddles, chalk talks, demonstrations, simulations, and summarizing teaching pearls).

Assessing learner progression

It is also important to define the knowledge, skills, and attitudes you expect from your students initially and how you expect them to evolve over time. Competencies can be a valuable part of this process because they provide a roadmap for educators to create and disseminate curriculum to prove learners are able to perform the desired "abilities or capabilities."[13]

The AAMC created a set of telehealth competencies that span the medical education continuum.[10] The utilization of the AAMC telehealth competencies allows for increased alignment and applicability within and across institutions. These competencies focus on six domains:

- ❑ Patient safety and appropriate use
- ❑ Data collection and assessment
- ❑ Communication
- ❑ Ethical practices and legal requirements
- ❑ Technology access and equity

The telehealth competencies make transparent components of an encounter, inform design of an experience, and serve as a way to communicate learner progression. Identifying which competencies to focus on at each stage of the learner's development is a simple, powerful strategy for designing the learning experience. Negotiating these as a team is a good way to get everyone on the same page early on.

Telehealth lends itself to an understanding of **systems-based practice** because coordination of telehealth care differs from in-person care. Specific populations may have increased accessibility to care through telehealth, and their needs and health care inequities can be addressed. Learners should be encouraged and evaluated on their ability to identify, address, and lead innovations for these populations with the telehealth paradigm. Quality improvement initiatives should be encouraged. In telehealth systems that involve reviewing images, for example, **medical knowledge** can be evaluated by assessing the learner's ability to visually recognize common, uncommon, and rare entities in both usual and uncommon presentations. These entities can be both taught and evaluated in a more deliberate manner than in front of a patient. Because the encounter is virtual, **patient care** competency can be evaluated with a different approach. The ability to obtain adequate history and examination either asynchronously and/or virtually is different than the in-person approach. Therapeutic management is also tempered by the virtual aspect of the care paradigm. **Practice-based learning and improvement** in telehealth involves tailoring the treatment plan to a patient who is virtual. Seeking and acting on feedback on gaps between expectations and actual performance can also be assessed in the telehealth paradigm. **Interpersonal and**

communications skills with patients and team members will be fundamentally different in the telehealth model. Learning skills to best convey information to encourage shared decision-making in a virtual platform is needed. The learner may be the recipient of a virtual consult and may also need to request a consult from a different service. Responsiveness to both situations will require skills similar to that of in-person consults. **Professionalism** manifests in ensuring that caring for patients via telehealth is ethical and fair. Tasks are different in telehealth delivery, so accountability and timeliness need to be assessed. Ability to recognize and seek help if needed is also necessary, as it is with in-person care.

Because telehealth is a fairly new care paradigm, the structure of telehealth education needs to be embedded in the educational framework of the system. This can take the form of a block schedule in a resident's curriculum; for instance, every resident can have two one-month blocks of a telehealth rotation during the course of their residency. This can also take the form of part of a medical student's rotation. For instance, during the dermatology month rotation, the student spends four days on the teledermatology service, shadowing the resident and attending. Bidirectional evaluations and feedback mechanisms would be ideal to enhance the learning contract.

STEP 4—FACULTY DEVELOPMENT TIP

Designing the experience affords educators and learners prior to and at the start of the encounter the opportunity to:

- ❑ Review learning goals and objectives for the encounter (e.g., "This is what we will do or achieve.")
- ❑ Discuss expectations, including roles and responsibilities for yourself, the learner, and care team members (e.g., "This is how we will work together.")
- ❑ Determine the type of telehealth encounter: learner-supported or learner-led
- ❑ Conduct a pre-assessment/self-assessment of learner knowledge, skills, and prior experience (e.g., "This is how we will assess and individualize learning.")
  - What have your experiences been?
  - Have you done this before, with this type of patient, with this complaint, in this type of environment?
  - Where are your current gaps?
- ❑ Facilitate just-in-time, focused didactics through chalk talks, learner huddles, micro lectures, etc.
- ❑ Allow time for learners to ask questions and summarize the "game plan" in their own words prior to initiating the patient/clinical encounter.
- ❑ Determine the extent to which these precepts are shared and supported by the health care system to ensure that designs and expectations are supportable within the system.

Part 3:
Game time—telehealth

Step 5: The educational encounter

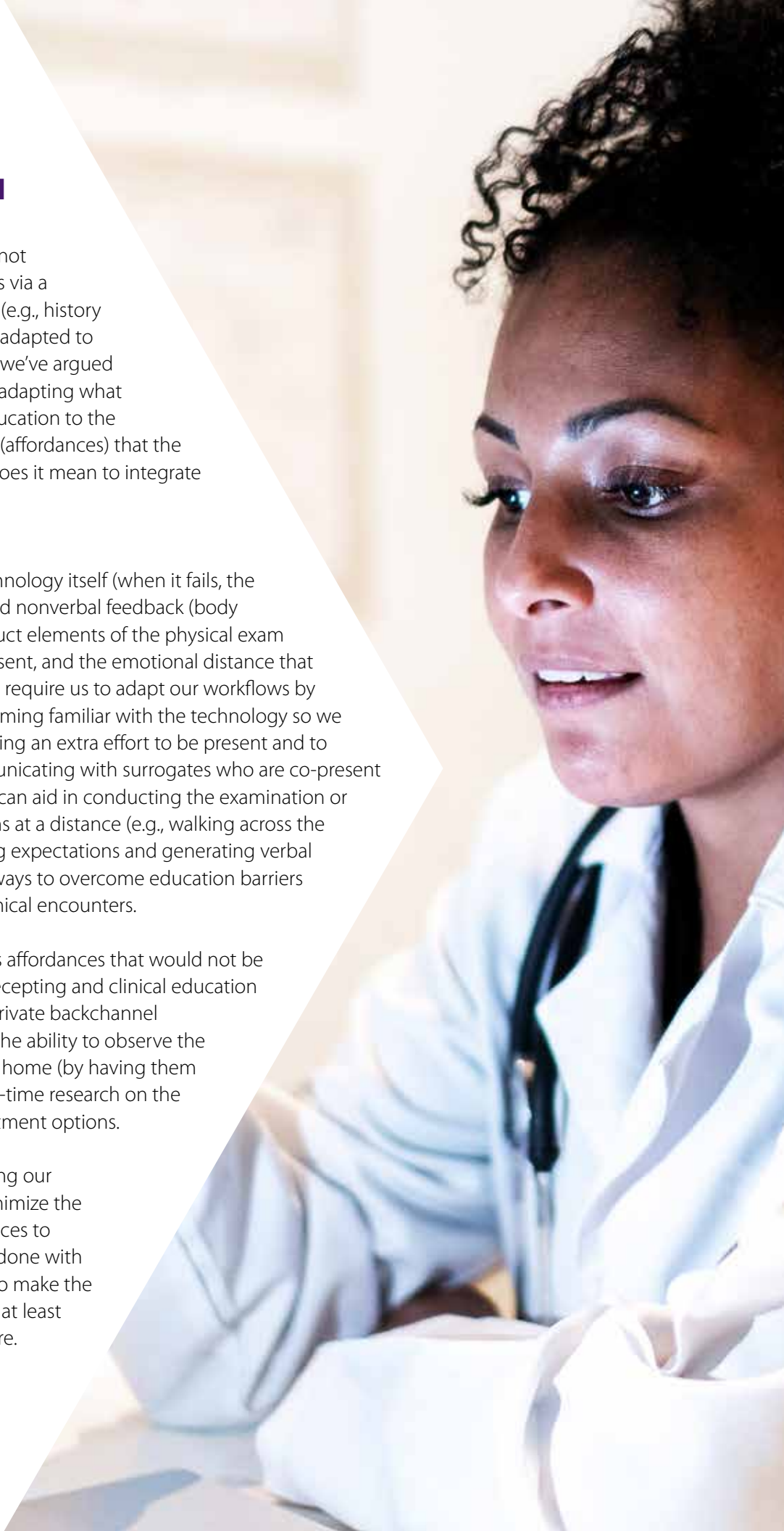
We've discussed how telehealth is not merely delivering the same process via a new technology. The process itself (e.g., history and physical) must be modified or adapted to the technology platform. Similarly, we've argued that telehealth education requires adapting what we always have done in clinical education to the limitations (barriers) and strengths (affordances) that the new technology allows. So, what does it mean to integrate telehealth into education?

Barriers and affordances

Telehealth barriers include the technology itself (when it fails, the setup required in advance), reduced nonverbal feedback (body language), not being able to conduct elements of the physical exam that require us to be physically present, and the emotional distance that can result. These and other barriers require us to adapt our workflows by allowing extra time for setup, becoming familiar with the technology so we can provide our own support, making an extra effort to be present and to gauge connectedness, and communicating with surrogates who are co-present with the patient. These surrogates can aid in conducting the examination or guiding the patient through actions at a distance (e.g., walking across the room in a straight line). Establishing expectations and generating verbal and written cues are examples of ways to overcome education barriers that can arise during telehealth clinical encounters.

At the same time, telehealth allows affordances that would not be possible, especially in regard to precepting and clinical education encounters. Telehealth allows for private backchannel conversations between clinicians, the ability to observe the patient in the context of their own home (by having them walk around), and student and real-time research on the electronic health record or for treatment options.

By thinking through and redesigning our educational workflows, we can minimize the barriers and maximize the affordances to optimize learning, just as we have done with our patient-encounter workflows to make the patient encounter, if not the same, at least as effective as in-person patient care.



Learner-supported versus learner-led

It is important to consider whether the telehealth encounter will be learner-supported or learner-led.[14] For in-person encounters, there is a range of independent care provided by learners with which we are all familiar. In general, this range spans the MS1/pre-clinical student shadowing (complete supervision = **learner-SUPPORTED**) to the experienced residents and fellows executing independent clinical visits (supervision only as needed, driven by learner = **learner-LED**). Where the learner-educator dyad falls on this spectrum is largely a product of trust, which in turn is generally a product of demonstrated competency (trust-oriented model). However, this equation is disrupted by three unique factors introduced by the telehealth environment: logistics and limitations in the "virtual office," the extraneous cognitive load associated with learning new skills required by the virtual visit platforms, and technology inequities. Table 3 shows how these two paradigms and three categories intersect. Note that these are arbitrary categories and most educational encounters will fall somewhere on a continuum between the two due to learner competency and technical limitations.

Table 3. Learner-supported versus learner-led telehealth education

	LEARNER-SUPPORTED (▲supervision, ▼trust) *Likely best for undergraduate medical education and subspecialty care*	**LEARNER-LED** (▲supervision, ▼trust) *Likely best for graduate medical education*
LOGISTICS	• Faculty have their own virtual office to which learners connect, and patients are scheduled with faculty's virtual office. • Learners can engage either shadowing or leading visits; faculty in control of degree of supervision. • Breakout rooms are created for multiple learners/patients such that the faculty's "office" is the central hub.	• Patients are scheduled with the learner's virtual office and connect directly. • Learners guide visit, including managing when ready for preceptor to join visit or discuss case. • Can be managed by 1:1 precepting and pre-clinic huddles. • While direct observation is limited, it is still possible. • Hybrid: "Co-hosting"—allow virtual offices to persist when the host has left.
COGNITIVE LOAD	• Faculty is the "moderator," carrying the burden of connection with patients and students. • Focus on germane load for clinical care/medical knowledge rather than on virtual visit logistics. • An experienced student can also assist/guide faculty if needed.	• Learners must understand how to troubleshoot with patients, deal with "failed" video visits, etc. • Also, time and commitment must be managed with the preceptor WHILE in call, i.e., have familiarity with platform and backchannels. • Logistics = intrinsic/germane load (NOT extraneous), learners are learning clinical skills AND management of telehealth encounters.
TECH INEQUITIES	• When student technology is limited, consider shadowing, where the student can listen and observe and there is no need for video (can just connect by phone).	• If executed from home, learners must have adequate bandwidth and be set up to manage video visit platforms, EHR, texting, etc.

Master Adaptive Learner and self-regulated learning

Whether learner-supported or learner-led, the educational experience has the potential (by design) to foster self-regulated learning and self-assessment. In practice, preparing learners to thrive in this new environment can be informed by the Master Adaptive Learner (MAL) framework. The MAL framework integrates the Plan > Do > Study > Act cycle with ongoing coaching.[15] MAL provides a shared mental model[15] for both learners and supervisors to be intentional about and descriptive of their teaching and learning goals by promoting the planning of the educational encounter, adoption of active learning attitudes and strategies during the clinical encounter, incorporation of assessment and feedback opportunities, and the deliberate use of information to make adjustments to advance medical knowledge and clinical skills.

All the planning and design completed in previous steps should be used to inform this step to ensure all members have the resources and tools needed for each encounter. This involves chart review (including medication reconciliation), other recent clinical encounters, messaging, and review of other pertinent clinical data (e.g., laboratory values, imaging studies). Additional materials specific to certain specialty clinicians (e.g., cardiac monitors or continuous glucose monitors) should be reviewed and discussed to ensure the team has a shared understanding of the materials and their role in the encounter. Team members, including students, residents, or fellows who will be part of the encounter, should be identified in advance, particularly when team members are not in the same physical location. All members of the team should be encouraged to provide input on workflow at initiation of telehealth encounters and ongoing as experience builds. Learners should prepare in advance how to perform different parts of the encounter (Table 2) and be able to describe the similarities and differences in initiation of an in-person versus virtual encounter.

In summary

Learners and educators should:

- ❑ Recognize (and articulate) clear goals, competencies, objectives, and expectations
- ❑ Be introduced as members of the team
- ❑ Identify (and articulate) the roles of interprofessional team members
- ❑ Describe the technology in use
- ❑ Differentiate between a virtual clinical encounter and an informal video call
- ❑ Be provided with necessary resources (e.g., a tutorial on telehealth skills/technology; access to charts or images; compatible technology)
- ❑ Be prepared to provide basic anticipatory guidance to the patient for technological barriers or failures that may arise
- ❑ Describe the similarities and differences between virtual and in-person clinical encounters
- ❑ Employ the technology in use for virtual clinical encounters
- ❑ Describe the workflow of the virtual visits
- ❑ Recognize when escalation of care is appropriate and describe how to do so

Step 6: The clinical encounter

Having planned out the educational components of the encounter, we turn now to the specifics of the clinical encounter. There are multiple logistical steps required to account for both the telehealth itself and the educational parameters identified in Step 5. As with the previous steps, some of what we discuss here will require advance planning and action before the actual encounter.

Patients may have varying skills and comfort levels with technology, and potential barriers to consider include limited patient access to technology, availability of private areas for conducting the visit, language challenges, or other factors that may impact the flow of the encounter. The patient should be advised to conduct the visit in a safe location, (e.g., visits should not be performed while the patient is driving a motor vehicle). Of course,

non-verbal cues may not be as apparent with a telehealth encounter as they are in an in-person encounter. Therefore, observational, listening, and verbalization skills become more important than ever. Some patients may have a better experience if they have a trusted friend or family member available to assist with the encounter. As much as possible, these factors should be evaluated in advance, perhaps with a pre-encounter test from a member of the care team or within the team. A single unsuccessful attempt should not preclude future attempts at telehealth, as patients, learners, and preceptors can and will become increasingly comfortable and confident with ongoing practice and shifting cultural norms.

Everyone should be aware of their defined role in the telehealth team, including scheduling, where physicians and other health care professionals are located, who may need to be on the video interaction, and who will be involved in follow-up prior to the next encounter. Backup forms of communication such as secure text/chat or telephone should be clarified prior to initiation of the encounter for all team members and for the patient by the start of the encounter. Learners, including students and residents, can be pulled in at any point in the encounter, ranging from initiation to wrap-up. Setting expectations for learners prior to the start of the appointment will allow for a smoother learner and patient experience. Examples include level and duration of direct observation by the preceptor; what discussions should occur with the patient present or with the preceptor and learner only, perhaps "offline" or in a "breakout room"; and how to escalate care if the learner feels that telehealth is not appropriate for the clinical situation. Learners may "flow" to some patients or spend extra time with others as appropriate. This is covered in detail later in this document. Appropriate training is imperative for all team members, including students and residents. This may include formal instruction in the pre-clinical curriculum, virtual practice scenarios and observations, or other learning methods in advance of telehealth encounters.

Decide how to set up the encounter with respect to what device(s) will be used, the number of screens or split screen, lighting, "framing the shot," and privacy in each location where learners, preceptors, and team members will be. Review sound, video, and internet or cellular data quality. In-clinic hub and home hub sites should project professionalism, with the use of virtual backgrounds if needed. Patients may also be considered in the pre-brief with a tutorial on the technology. Consider whether electronic waiting rooms (so-called "breakout rooms") may be appropriate and whether these virtual spaces will be managed by a provider or additional staff members (such as a nurse, patient care technician, registration clerk, etc.). This pre-brief allows for more focus on the patient.

To start the visit, it's important to inform the patient that this is a formal telehealth visit—for example, classic telehealth to include facility to facility, home device to facility, or device to device by a physician or other health care professional. It is helpful to specifically state, "this is an appointment," so that the patient understands there are similar expectations, such as timeliness and billing to insurance for the services provided. Clear scheduling guidelines should determine the most suitable type of telehealth encounter. Consent should be obtained from the patient and documented in the electronic health record encounter note, if not already automatically a component of the registration or scheduling process for the telehealth encounter. Consent should be verbally reviewed again during the encounter itself. If a trusted friend or family member is on the encounter with the patient, introductions and appropriate documentation should be completed. It will be helpful to know the laws, regulations, licensing, and organizational requirements in your particular location. Consider the level of autonomy required/possible for the students and consider delegating these tasks to the student as appropriate with the necessary supervision and support.

This patient-physician encounter uses a secure interactive video network between our organization and the patient's home/personal device. This medical encounter is determined appropriate for virtual care as defined by our organization's protocols and/or individual chart review. The patient has given consent to participate in virtual care.

Example of patient consent statement

As with any other clinical encounter, usual practices are observed such as obtaining vital signs when able, medication reconciliation, and reviewing of other documentation such as past history and problem lists. If the patient is at home, vital signs such as weight, heart rate, oxygen saturation, and blood pressure might be obtained with home devices. In the hub and spoke telehealth model where a patient is checked into another clinical facility near the patient's home, vital signs can be obtained by clinic support staff (nurses, patient care technicians, etc.).

Elements of a typical hub and spoke model where the patient is checked into another clinical facility near the patient's home (originating site) and the physician is offsite (this model is supported by clinical staff—LPN, RN, or telepresenter—at the originating site to assist with the physician exam and with collecting clinical data):

- ❑ Check in at reception at clinic in a remote site ("spoke")
- ❑ Nurse or medical assistant obtains vitals, reconciles medications, manages data, and other duties at spoke site
- ❑ Interact with patient with appropriate team members at hub site, including students and residents, with usual clinical encounter components (e.g., chief complaint, history of present illness, problem list, medications, tailored physical exam components, assessment, and plan)
- ❑ Nurse or medical assistant stays in room with patient for at least part of the visit to facilitate communication and engage with physician extender devices (stethoscope, ophthalmoscope, otoscope, and others)
- ❑ Charting, wrap-up, and plans for follow-up similar to in-person encounters

Elements of a physician device to patient device (**direct to consumer**) encounter, because there are fewer support staff, differs inherently from the in-person encounter:

- ❑ Patient and physician ideally check in at the predetermined time
- ❑ Home vital signs such as weight or blood pressure are obtained from the patient and/or family members
- ❑ The usual clinical encounter elements (e.g., history of present illness, problem list, medications, tailored physical exam components, assessment, and plan) are collected directly from patient by provider with, at most, the assistance of a patient's friends or family

A telehealth video encounter should replicate an in-person clinical encounter as closely as possible, and strategies for incorporating learners into the visit should be the same as for in-person counters. This includes clear explanation to the patient of the roles of each team member, learner, and preceptor. The experiences should be richer than a simple video call. Inform the patient with regard to actions during the visit ("I'm looking at your chart on this screen now").

Checklist: Characteristics of a high-quality telehealth encounter to create a digital presence

- ❑ Avoid distractors in the video frame (eating, drinking, on phone, looking around, distracting movements)
- ❑ Make sure you are in a private space (don't do your visit at a coffee house!)
- ❑ Look into the camera to create the illusion of eye contact; positioning the view of the patient close to the team member's camera can make this feel more natural

- ❑ Project voice "through" the microphone
- ❑ Sit up straight
- ❑ Make sure you have good lighting
- ❑ Dress professionally as if you were in clinic
- ❑ "Frame the shot" (center yourself in the frame)
- ❑ If on phone, place the phone on a stable surface (ideally, use a cell phone stand), as background motion from holding the phone in your hand can be very distracting for the patient
- ❑ Create a clinical experience, not just a video call, which includes seamless communication between team members, learners, and preceptors
- ❑ Allow sufficient pauses between each person speaking on the telehealth encounter, because of delays that can occur with voice and video transmission in order to avoid the impression of being cut off or interrupted; this becomes increasingly important with three or more individuals in an encounter.
- ❑ Follow best practices (AAMC, AMA, etc.), credentialing, licensing, HIPAA

On the physician and learner side, there should be a quiet, private environment, preferably in a room with a door that closes. Extraneous noise should be eliminated; headsets are very helpful for this purpose. However, bulky headsets can be a perceived barrier. A professional background mimicking a clinic office is ideal. It can be a virtual background if needed. Be aware of any background motion, such as ceiling fans or windows facing onto street traffic, which can reduce the professional-looking quality of any virtual backgrounds in use. All of these should combine into what appears to be a professional health care encounter.

The patient should have a clear understanding that this is a health care encounter such as in a clinic or other health care setting. The encounter can be linked to other communication modalities such as secure messaging, phone follow-up, or data review for a more comprehensive telehealth approach. Examples of data reviewed include laboratory values, imaging, or other information (e.g., remote cardiac monitoring, continuous glucose monitoring). Vital signs such as weight or blood pressure may be obtained from the patient as part of the encounter. The ability to "share screen" with the patient to review data can greatly facilitate the feeling of an in-person encounter within a video visit.

Patient factors may be different at each telehealth encounter including vision, hearing, language barriers, patient technology familiarity, confidence, access, quality of internet or cellular data, location, privacy, or other social factors. In a facility-to-facility encounter (hub to spoke), many of these factors are managed by nurse or medical assistant facilitation, high-quality broadband internet, and equipment at the hub and spoke sites. In this case, transportation to the spoke site may still be an issue. Health literacy and numeracy, availability of an interpreter, and other patient-specific needs should be considered when determining the appropriateness of a telehealth visit to assure equal quality to an in-person encounter.

Consistency with encounters and best practices will help build telehealth experience satisfaction. Telehealth relationships must be built between the clinicians—including students and residents—and the patient that complement in-person encounters. These are supplemented with ongoing support between telehealth encounters with other communication methods and staff.

Consider providing the patient with opportunities to provide feedback to team members and learners as well. This can be done informally at the end of the encounter by asking the patient, "Do you think our medical student did well today?" or "What can we do to improve your experience with working with learners in the future?" A more structured feedback format could use a post-visit survey that can be sent to the patient after conclusion of the visit. Similarly, learners should be afforded the same opportunities to share their impressions of the telehealth encounter and thus become incorporated into a collaborative process of ongoing improvement.

With respect to the interaction with the patient, treat that similarly to an in-person clinical encounter by obtaining the history, review of systems, and other typical elements. Decide in advance that you may need to complete an appropriate physical exam and communicate this to the learners. It is very helpful to point out components of the physical exam that can be obtained by observation or by providing the patient with instructions to perform specific maneuvers by themselves or with the assistance of a trusted friend or relative while being observed. In facility-to-facility or device-to-facility encounters where the patient is in a clinic environment, extender devices such as electronic stethoscopes, otoscopes, ophthalmoscopes, and others can be added to the physical exam. Certain encounters may require specific physical exam components; for example, an exam may warrant a visual foot inspection for a patient with diabetes, which can be easily done with a handheld camera and proper lighting. Some patients may have some of these extender devices in their homes, depending on their diagnosis and condition. In other cases, these devices may need to be provided ahead of time and/or managed by a team member or family member who is present with the patient.

Expectations of the telehealth encounter also include the logistics and flow of the visit. These depend on whether the telehealth encounter is purely asynchronous, synchronous, or a hybrid model. For example, in models in which image assessment is integral to the care delivery (e.g., photographs, spirometry readout, audiology report), there should be clear articulation of the expectation of when and how the learner should view the images. It may be that the preceptor expects the learner to view all the images of a certain number of cases independently and derive a tentative assessment and plan before meeting with the preceptor, for example.

For models involving a synchronous interaction with the patient, an expectation of how the learner and the preceptor would communicate should also be articulated ahead of time. One possibility would be that preceptors would first introduce themselves to the patient in the virtual room, indicating that while they are involved and responsible for the assessment and plan, they want the learner to interact with the patient first. Preceptors could then block their video so that the patient would not see them, but they could still observe the interaction between the patient and learner. After the gathering of history and physical information, the preceptor and student could excuse themselves from the patient and go to a virtual breakout room to discuss the plan. Both would return to the patient's virtual room where, again, the preceptor would observe the learner's ability to communicate the plan to the patient. Another model might be that the preceptor is not present for the entirety of the virtual visit and relies on the learner to take the history and virtual physical first. The learner could then contact the preceptor by a previously agreed upon modality (phone call, paging, secure chats, etc.) to discuss their findings, after which both the learner and preceptor would join the patient in the virtual room. The teacher would then do a more streamlined assessment with the patient to confirm or amend the plan. This latter model more closely simulates traditional in-person education models.

Escalation and patient safety
Telehealth encounters may not be appropriate for some patients.

Patients may present with unexpected symptoms or concerns that can't easily be assessed or managed in a telehealth encounter. Plans for triaging or escalating the encounter to a more appropriate health care setting (e.g., acute abdominal pain should be referred to an accessible in-person clinician or emergency department) should be well understood by all members of the care team. This may be decided in advance if it is apparent that an in-person encounter is more appropriate. Be prepared with a plan for evaluating and solving technical challenges so that the encounter may be completed.

A clinic telehealth encounter may be an appropriate initial step in an urgent situation, but escalation to appropriate services should parallel those practices performed for in-person encounters.[16,17] All team members should be prepared for these possible scenarios.[10]

For patients seen in a remote site that is not a medical facility (e.g., their home), opening evaluation should include assessment of current status. Additional complaints such as a stable foot ulcer, rash, other skin lesions, minor respiratory symptoms, or easily manageable abnormal laboratory values may not require immediate urgent escalation to an in-person clinician but may need to be seen in person for short-term follow-up. Chest pain, shortness of breath, abdominal pain, other pain, trauma, high fever, more urgent respiratory symptoms, or more acutely abnormal laboratory values are examples of patient complaints that require immediate consideration for escalation to an in-person encounter in a clinic or emergency department and possible emergency transport. Hospital and emergency telehealth services may be performed in specific and appropriate settings. Roles, responsibilities, and communication methods regarding these tasks should be discussed in advance of the encounter.

For patients seen in a health care facility, escalation processes are similar to in-person encounters. Usual notification of support staff (nurse, medical assistant, etc.) of appropriate escalation is the first step.

As with any clinical encounter, review the encounter content and treatment plan and establish appropriate patient-centered follow-up. Follow-up plans should be communicated at this time. Other telehealth components may be included such as electronic communications within the medical record messaging system, phone follow-up, or other processes. Interprofessional team members should have a clear understanding of treatment goals and follow-up.

Learners:

- ❑ Interpret patient factors to be considered in executing virtual clinical encounters
- ❑ Build professionalism and consistency in virtual clinical encounters
- ❑ Execute appropriate virtual visit behaviors and actions to create a quality virtual clinical experience
- ❑ Employ the tools available for an exam in a virtual encounter (e.g., electronic stethoscope, electronic otoscope). Need volunteer to provide resource to learn techniques for assisted remote physical exam. Competency with technology employed at hub and spoke site may be learned at the site or simulation setting
- ❑ Describe triage concepts to escalate an urgent or emergent virtual encounter to an in-person encounter or to solve technical challenges
- ❑ Know the laws, regulations, licensing, and organizational requirements in your particular location. Example: restrictions on telehealth visits based on location of the patient and the state(s) in which the preceptor holds a medical license(s)
- ❑ Identify all components and appropriateness of virtual follow-up for the patient

STEP 6—FACULTY DEVELOPMENT TIP

Designing the experience affords educators and learners prior to and at the start of the encounter the opportunity to:

- ❑ Discuss expectations, including roles and responsibilities for yourself, the learner, and care team members as they relate to the patient encounter: "This is how we will work together." Sequence of events, expected timeline, or "time to complete" each step (e.g., For the first 10 minutes you/I/we will accomplish [A], then I will do [B] for a couple of minutes, after which I expect you to do [C] which typically take about [X] minutes, and then I will...).
- ❑ THEN discuss the educational aspects within the context of the patient encounter. Make it clear what is required at the outset: "I will do this. You will do that. They will do this…" Share how the teaching and learning experience will be the same and how it will be different within a telehealth environment.

Tip for outpatient telehealth encounter: With patient, learner, and attending in the virtual room, after introducing themselves and the learner, the attending can turn off the video so that the patient can interact directly with the learner. The attending watches and then gives post-encounter feedback regarding communication style, good phrases, etc.

Step 7: Evaluating success

Evaluating the success of a telehealth clinical and education encounter can be conducted informally or formally by (1) debriefing the clinical encounter, (2) debriefing the education encounter, (3) reviewing quality metrics, and/or (4) analyzing patient outcomes from a systems perspective. The "Return on Health" framework has been developed by the American Medical Association, in collaboration with Manatt Health, to articulate the value of digitally enabled care that accounts for ways in which a wide range of virtual care (telehealth) programs can increase the overall health and generate positive impact for patients, clinicians, payers, and society. https://www.ama-assn.org/system/files/2021-05/ama-return-on-health-report-may-2021.pdf.

As a just-in-time or more immediate evaluation, it is appropriate to start with the debrief. The debrief can be a short discussion following clinical encounters or a health care setting shift. Whether you begin with the clinical or education experience debrief depends on the nature of the encounter (e.g., whether there are urgent clinical aspects that must be addressed quickly). When time allows, we recommend debriefing both the clinical and education experience while the memories are fresh for all of those involved. Where circumstances make this impractical, you can conduct a debrief at another agreed upon, specified time in person or virtually, synchronously or asynchronously. Hybrid approaches, in which the immediate debrief is supplemented with asynchronous (e.g., "research alternative treatment plans for comorbidities X and Y as seen in this patient and send back to me") and synchronous (e.g., group debriefs at the end of the week in which all students present their takeaways and questions from the week's cases) are highly effective when resources allow. Even in the most time-constrained

circumstances, it is important to do something for the debrief rather than skipping it entirely, even if all that is possible is for preceptor and student to exchange a brief email about the encounter and spend 30 seconds at the start of the next day together revisiting that asynchronous discussion.

In regard to the clinical encounter debrief, elements to consider discussing include the care plan and reviewing roles and assignments for follow-up. At this time, it is also important to identify how other care team members need to be included in communications.

In regard to the education encounter debrief, the pre-work (pre-game) provides the necessary framework through which to make explicit what, how, when, and for what purpose knowledge, skills, and attitudes are being observed and assessed. The debrief can include discussion of topics such as technology, digital presence, and skill development (outlined in Steps 1 and 3) in order to identify individual and system-level adjustments needed for quality improvement, especially in light of the defined success parameters established earlier.

In the clinical encounter, quality is a success metric measured by patient satisfaction and outcomes, efficient and accurate workflows, and cooperative and interprofessional teamwork, each of which may be customized to telehealth encounters. Organizations should have specific, attainable goals for physicians, other health care professionals, and staff in order to gain confidence and satisfaction in developing telehealth services. In the educational encounter, quality is a success metric measured by preceptor and learner satisfaction with regard to the goals established for success and the adjustment to future educational workflows identified during the debrief.

A final metric of success for telehealth encounters is the extent to which the encounter supports or adheres to the Quadruple Aim of Health Care: improving the health of populations, enhancing the experience of care for individuals, reducing the per capita cost of health care, and improving the well-being of physicians and other health care professionals. Bring this metric into your evaluation of the encounter to engage learners in describing the role of and reviewing patient data related to telehealth in delivering the Quadruple Aim as a measure to evaluate the success of the education and the clinical encounter.

Learners:

- ❑ Which aims were directly addressed by the encounter?
- ❑ What could have been addressed better?
- ❑ How could/should the health care system change to address the challenges?
- ❑ What were the specific actions or aspects of the encounter that were most closely related to the aims?
- ❑ What would you do for future patients to improve these aspects?

Part 4: **Post-game/ resources**

This book provides a framework for thinking about telehealth clinical education encounters, from pre-planning to implementation to evaluation. We discuss how this framework requires us to expand our mental models to include the distinction between the clinical and the educational aspects of the patient encounter and the need to think through the adaptations required of us by the technology, pedagogy, and unique characteristics of our teams and organizations. It is important to recognize that becoming fully adept in telehealth clinical education takes time and practice. Remember that if you start with the 4 Quadrants to identify the areas you want to focus on, each step in the process will be similarly focused on those areas and may not be comprehensive. Sometimes we do not have time to do everything, but conversely, we always have time to do something. And, while each setting, clinician, patient, and learner is unique, the principles we have provided here are universal enough to be applicable to all.

Thank you for taking the time to read this book. We wish you and your students well on our shared journey to building telehealth clinical education fluency.

References

1. American Medical Association. Telehealth Implementation Playbook. https://www.ama-assn.org/system/files/2020-04/ama-telehealth-playbook.pdf. 2020. Accessed October 15, 2021.
2. Improving environments for learning in the health professions. Macy Foundation Conference (2018): https://macyfoundation.org/assets/reports/publications/june2018_summary_webfile_7.20.18.pdf. Accessed October 15, 2021.
3. What is telehealth? How is telehealth different from telemedicine? Office of the National Coordinator for Health Information Technology. Published October 17, 2019. https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine. Accessed October 15, 2021.
4. Telehealth. Centers for Medicare & Medicaid Services. Page modified February 24, 2021. https://www.cms.gov/Medicare/Medicare-General-Information/Telehealth. Accessed October 15, 2021.
5. Telehealth for direct-to-consumer care. Health Resources and Services Administration. Page modified February 25, 2021. https://telehealth.hhs.gov/providers/direct-to-consumer/synchronous-direct-to-consumer-telehealth/. Accessed October 15, 2021.
6. Larson RS. A Path to Better-Quality mHealth Apps. JMIR Mhealth Uhealth. 2018 Jul; 6(7): e10414. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6090170/. Accessed October 15, 2021.
7. COVID-19 Telehealth Impact Study. COVID-19 Healthcare Coalition. Updated May 7, 2021. https://c19hcc.org/telehealth/impact-home/. Accessed October 15, 2021.
8. Irby DM. Improving environments for learning in the health professions. In Proceedings of a conference sponsored by Josiah Macy Jr. Foundation in April. 2018. https://macyfoundation.org/assets/reports/publications/june2018_summary_webfile_7.20.18.pdf. Accessed October 15, 2021.
9. Fink, LD. Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses. Hoboken, NJ: Jossey-Bass, January 1, 2013.
10. Association of American Medical Colleges. *Telehealth Competencies Across the Learning Continuum*. AAMC New and Emerging Areas in Medicine Series. Washington, DC: AAMC; 2021.
11. Cutrer WB, Miller B, Pusic MV, et al. Fostering the Development of Master Adaptive Learners: A Conceptual Model to Guide Skill Acquisition in Medical Education. *Acad Med*. 2017;92(1):70-75. doi:10.1097/ACM.0000000000001323.
12. Wiggins GP, McTighe J. Understanding by design (2nd ed.). Pearson. 2005.
13. Frank JR, Snell LS, Cate OT, Holmboe ES., Carraccio C, Swing SR, Harris KA. (2010). Competency-based medical education: theory to practice. Med Teach. 2010; 32(8), 638-645.
14. Billings H, Genkins J, Johnson E, Li B, Smith S. Engaging learners in telemedicine visits: Workflows to support teaching, feedback and billing. In. AMA: Accelerating Change in Medical Education. [Webinar]. June 2020. https://community-files.ama-assn.org/image/authenticated/s--oc8mhapl--/Webinar-June-2020_Telemedicine_ALL-2.pdf. Accessed October 15, 2021.
15. Cutrer WB, Atkinson HG, Friedman E, et al. Exploring the characteristics and context that allow Master Adaptive Learners to thrive. *Med Teach*. 2018;40(8):791-796. doi:10.1080/0142159X.2018.1484560.
16. Galpin K, Sikka N, King SL, et al. Association of American Medical Colleges Telehealth Advisory Committee. Expert Consensus: Telehealth Skills for Health Care Professionals. July 8, 2021. https://doi.org/10.1089/tmj.2020.0420. Accessed October 15, 2021.
17. Sikka N, Willis J, Fitall E, Hall KK, Gale B. Telehealth and Patient Safety During the COVID-19 Response. PSNet Collection. May 14, 2020. https://psnet.ahrq.gov/perspective/telehealth-and-patient-safety-during-covid-19-response. Accessed October 15, 2021.

Additional readings and references

Agency for Healthcare Research and Quality (AHRQ). Telediagnosis for Acute Care: Implications for the Quality and Safety of Diagnosis. https://www.ahrq.gov/patient-safety/reports/issue-briefs/teledx-5.html. August 2020. Accessed October 15, 2021.

Alvarez P, Sianis A, Brown J, Ali A, Briasoulis A. Chronic disease management in heart failure: focus on telemedicine and remote monitoring. *Rev Cardiovasc Med*. 2021 Jun 30;22(2):403-413. doi: 10.31083/j.rcm2202046.

American Academy of Family Physicians. Telehealth and Telemedicine. https://www.aafp.org/about/policies/all/telehealth-telemedicine.html. Accessed October 15, 2021.

American Hospital Association. Telehealth Fact Sheet. https://www.aha.org/factsheet/telehealth. Accessed October 15, 2021.

American Medical Association. Ethical Practice in Telemedicine. https://www.ama-assn.org/delivering-care/ethics/ethical-practice-telemedicine Accessed October 15, 2021.

American Neurologic Association. Neurologists Call for Permanent Telehealth Expansion Following COVID-19. Pandemic. https://www.aan.com/PressRoom/Home/PressRelease/4894, May 13, 2021. Accessed October 15, 2021.

Centers for Disease Control and Prevention. Trends in the Use of Telehealth During the Emergence of the COVID-19 Pandemic—United States, January–March 2020. *Morbidity and Mortality Weekly Report (MMWR)*. October 30, 2020 / 69(43);1595–1599. Accessed October 15, 2021.

Centers for Medicare and Medicaid Services. https://www.cms.gov/newsroom/press-releases/trump-administration-issues-second-round-sweeping-changes-support-us-healthcare-system-during-covid Accessed October 15, 2021.

Chunara R, Zhao Y, Chen J, Lawrence K, Testa PA, Nov O, Mann DM. Telemedicine and healthcare disparities: a cohort study in a large healthcare system in New York City during COVID-19. *J Am Med Inform Assoc*. 2021 Jan 15;28(1):33-41. doi: 10.1093/jamia/ocaa217.

Dorsey ER, Topol EJ. State of Telehealth. N Engl J Med 2016; 375:154-161 DOI: 10.1056/NEJMra1601705

Hirko KA, Kerver JM, Ford S, Szafranski C, Beckett J, Kitchen C, Wendling AL. Telehealth in response to the COVID-19 pandemic: Implications for rural health disparities. *J Am Med Inform Assoc*. 2020 Nov 1;27(11):1816-1818. doi: 10.1093/jamia/ocaa156.

Ho C, Argáez C. Telehealth-Delivered Opioid Agonist Therapy for the Treatment of Adults with Opioid Use Disorder: Review of Clinical Effectiveness, Cost-Effectiveness, and Guidelines [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2018 Oct 5. PMID: 30817107.

Jeminiwa R, Hohmann L, Qian J, Garza K, Hansen R, Fox BI. Impact of eHealth on medication adherence among patients with asthma: A systematic review and meta-analysis. *Respir Med*. 2019 Feb 15. pii: S0954-6111(19)30047-2. doi: 10.1016/j.rmed.2019.02.011.

Kaiser Permanente. Expanding access to hospital care at home. https://about.kaiserpermanente.org/our-story/news/announcements/expanding-access-to-hospital-care-at-home. May 13, 2021. Accessed October 15, 2021.

Liu C, Lim RL, McCabe KL, Taylor S, Calvo RA. A Web-Based Telehealth Training Platform Incorporating Automated Nonverbal Behavior Feedback for Teaching Communication Skills to Medical Students: A Randomized Crossover Study. *J Med Internet Res*. 2016 Sep 12;18(9):e246. doi: 10.2196/jmir.6299.

Lu J, Bollinger L. Navigating Telehealth in Limited English Proficiency Populations. Ethnomed. August 3, 2020. https://ethnomed.org/resource/navigating-telehealth-in-limited-english-proficiency-populations/. Accessed October 15, 2021.

Motola I, Hernandez S, Brotons A, Withum K, Marttos A, Issenberg B, Schulman C. Teletraining for Civilian Interprofessional Healthcare Teams in a Deployed Setting. *Society for Simulation in Healthcare*. 2013; 8(6), 473.

The National Partnership for Women & Families. Delivering on the promise of telehealth how to advance health care access and equity for women. March 2021. https://www.nationalpartnership.org/our-work/resources/health-care/delivering-promise-telehealth.pdf. Accessed October 15, 2021.

Nyenwe EA, Ashby S, Tidwell J, Nouer SS, Kitabchi AE. Improving diabetes care via telemedicine: lessons from the Addressing Diabetes in Tennessee (ADT) project. Diabetes Care. 2011 Mar;34(3):e34. doi: 10.2337/dc10-2260. Erratum in: *Diabetes Care*. 2013 Oct;36(10):3374. Tidewell, Jamie [corrected to Tidwell, Jamie].

Ramsetty A, Adams C. Impact of the digital divide in the age of COVID-19. *J Am Med Inform Assoc*. 2020 Jul 1;27(7):1147-1148. doi: 10.1093/jamia/ocaa078. PMID: 32343813; PMCID: PMC7197532.

Rienits H, Teuss G, Bonney A. Teaching telehealth consultation skills. *Clin Teach. 2016* Apr;13(2):119-23. doi: 10.1111/tct.12378.

Shaw J, Brewer LC, Veinot T. Recommendations for Health Equity and Virtual Care Arising From the COVID-19 Pandemic: Narrative Review. *JMIR Form Res*. 2021 Apr 5;5(4):e23233. doi: 10.2196/23233.

Sykes Corporation. Americans' Perceptions of Telehealth in the Era of COVID-19. https://www.sykes.com/reports/2020-telehealth-survey/ Accessed October 15, 2021.

Tewksbury C, Deleener ME, Dumon KR, Williams NN. Practical considerations of developing and conducting a successful telehealth practice in response to COVID-19. *Nutr Clin Pract*. 2021 Jun 22. doi: 10.1002/ncp.10742. Epub ahead of print.

Tuckson RV, Edmunds M, Hodgkins ML. Telehealth. *N Engl J Med*. 2017 Oct 19;377(16):1585-1592. doi: 10.1056/NEJMsr1503323.

Van Eck R, Allen J, Johnson EL Interprofessional Telemedicine Simulations Using Remotely Operated Biomedical Telepresence Systems (ROBOTS). American Association of Medical Colleges Central Group Education Association, Rochester, MN March 22, 2018.

Yin Z, Lesser J, Paiva KA, Zapata J Jr, Moreno-Vasquez A, Grigsby TJ, Ryan-Pettes SR, Parra-Medina D, Estrada V, Li S, Wang J. Using Mobile Health Tools to Engage Rural Underserved Individuals in a Diabetes Education Program in South Texas: Feasibility Study. *JMIR Mhealth Uhealth*. 2020 Mar 24;8(3):e16683. doi: 10.2196/16683.

Zhu D, Paige SR, Slone H, Gutierrez A, Lutzky C, Hedriana H, Barrera JF, Ong T, Bunnell BE. Exploring telemental health practice before, during, and after the COVID-19 pandemic. *J Telemed Telecare*. 2021 Jul 9:1357633X211025943. doi: 10.1177/1357633X211025943. Epub ahead of print. PMID: 34241545.

Zulfiqar AA, Hajjam A, Gény B, Talha S, Hajjam M, Hajjam J, Ervé S, Andrès E. Telemedicine and Cardiology in the Elderly in France: Inventory of Experiments. *Adv Prev Med*. 2019 Jan 21;2019:2102156. doi: 10.1155/2019/2102156. eCollection 2019.

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