Rapid Adoption of Telehealth Technologies Can Leave Patients and Data at Risk

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Introduction

Telemedicine is regarded as one of the powerful frameworks for integrated people-centered health services (Novillo-Ortiz, 2016). From the technological, cultural, and scientific perspectives, since the benefits of a linked-based assessment of health services accessibility transform the traditional medical system making healthcare more efficient, convenient, and personalized, it proposes five interdependent strategies that need to be adopted. The five interdependent strategies, according to the World Health Organization (2019), are: (1) empowering and engaging people and communities; (2) strengthening governance and accountability; (3) reorienting the model of care; (4) coordinating services within and across sectors; and (5) creating an enabling environment. We know we do not have all the answers from a broader perspective. As the strategies to adopt and integrate evidence-based health interventions are not fully established (Li et al., 2018), the need for rapid change and the attainment of solutions is increasingly recognized as a necessary element of efforts to improve personal and public health (Agency for Healthcare Research and Quality, 2012).

In this unprecedented reality, we are also witnessing the increasing speed of technological development (Sheng et al., 2020), a dramatic restructuring of the social and economic order (Wang et al., 2021), and the emergence of a new era that we view as the next normal (Sneader & Singhal, 2020). As the COVID-19 Pandemic inadvertently affects the financial markets and the global economy, policymakers and insurers have looked to telemedicine or telehealth to provide care to patients in their homes (Hodgkins et al., 2021). The course of the pandemic remains unclear and safeguarding both lives and livelihoods remains a critical or crucial time or state of affairs. This approach to care allows patients to maintain social

distancing, reduce exposure to disease organisms for staff and patients, preserve scarce supplies

and personal protective equipment (PPE), and potentially avoid overburdening emergency

departments and urgent care centers at this time. For its complete consolidation and expansion,

Novillo-Ortiz (2016) states there are significant barriers to standardizing telemedicine, including

data security, confidentiality, and protection, the permanent change in which projects are forced

to advance as the result of the speed of technological changes and the ever-improving health care

environment, attitudes are more resistant to change defines the human factor and the lack of

scientific evidence regarding clinical and economic benefits. Balestra (2018) worries that

telehealth may adversely affect the continuity of care. In the Summer of 2015, the Iowa

Supreme Court unanimously struck down a restriction that would have prevented physicians

from administering a medication abortion remotely through video teleconferencing, arguing that

online interactions are impersonal and dangerous (Yang et al., 2016).

Despite the federal government's efforts to broaden and facilitate telemedicine, mainly

through Medicare, private, for-profit, and nonprofit insurers and health care providers are

moving with unprecedented speed to shift many in-person visits to a telemedicine platform

(Marx & Padmanabhan, 2020). It remains unclear if the U.S. sustains this expanded use of

telemedicine after the state of emergency ends. The telemedicine landscape is complex;

however, it must be viewed in conjunction with the impact of telemedicine on the accessibility

and quality of medical care.

This brief presents some of the many policy changes that have taken place in the field of

telehealth by the federal government, private, for-profit, and nonprofit insurers and health care

providers and highlights key considerations in achieving widespread implementation of

telemedicine service, including data security, confidentiality, and protection, coverage and

reimbursement, accelerating the development and deployment of open, disaggregated, and

standards-based technology solutions that deliver the high-quality connectivity, and the

eligibility of practitioners providing telehealth modalities.

Review of Literature

The Population To Whom The Service Is Being Delivered

According to McLeod et al. (2019), there is growing support for developing clinical

guidelines, clear protocols for care, and a checklist to ensure that the care process is consistent.

Measuring the quality of care as the world faces an assortment of health challenges, telehealth

approaches to health care delivery can encourage quality improvement processes, reduce

mortality, morbidity, and resource utilization, and complement traditional ambulatory and

hospital-based practices, which tend to be provider-centric. However, given the significant

disruptions to providers, the body of evidence supporting their use has been slow to evolve.

Operating under power granted to the federal Parliament by Section 51 of the Australian

Constitution, enacted by the 1946 Australian referendum (Office of Parliamentary Counsel,

Canberra, 2013), it was found the lack of good internet, consumers not being aware of, or

knowing how to access telehealth, lack of access to clinicians providing telehealth services, the

lack of resourcing at the patient end were barriers to telehealth uptake at the national level

(Kaambwa et al., 2017). Allowing researchers to uncover how individuals value selected

program attributes by asking them to state their choice over different hypothetical alternatives,

an international discrete choice experiment (DCE) assessing patients' preferences for disease-

modifying therapy must be considered in the telehealth approach services (Tobin et al., 2021).

Drawn from the general Australian population, an online panel of older people aged 65

years and above, the DCE, in addition to the six salient features of telehealth, was used to

measure preferences for hard-to-observe choice attributes to inform health policy decisions

(Kaambwa et al., 2017). The six salient features are 1) what aspects of telemedicine define

opportunities where technology can be leveraged to improve patient care, 2) availability

measured by the mean distance to the nearest hospital or clinic, 3) knowledge and understanding

of the concept, skills acquired, attitude towards telehealth, 4) matching patients with appropriate

technologies and experience, 5) patient satisfaction with telemedicine vs. face-to-face, and 6)

cost-effectiveness using telehealth technologies (Perle, 2021).

With a mean age of 69 years (Kaambwa et al., 2017), the study participants describe the

landscape of telehealth as positive. Preferences included leveraging health system telehealth to

create a continuum of services, a less expensive alternative to in-office visits, minimizing

transportation issues related to traveling, improving communication with the provider,

eliminating the time, and saving money. Additionally, respondents did not feel telehealth led to a

breach of protected health information (PHI) and identity theft.

Recognizing that there may be a generation gap, the survey indicated the convenience of

telehealth but preferred an in-office visit. Responding to the growing utilization of telemedicine,

respondents prefer service-delivery methods to enhance health care and extend the capacity and

access to health care. As the limits of telehealth are unknown, the findings may be incorporated

into innovative telehealth solutions that can lead to scalable and sustainable telehealth programs

for geriatric medicine.

Service That Is Being Offered, Including Coverage And Reimbursement

Rapid growth and inconsistency exist in the telehealth policy environment, making it

difficult to quantitatively evaluate the impact of telehealth reimbursement and other policies

without a legal mapping database. For providers to more widely adopt and utilize these

technologies, services delivered via telehealth need to be reimbursable. Unfortunately, as states

continue to refine and expand their telehealth reimbursement policies, they are not treated across

the board in the same manner as delivered in-person service. It is unclear which approaches are

most promising in helping telehealth achieve its potential benefits for patients and providers. To

fully understand state-level policies related to telehealth reimbursement of healthcare services,

trends and characteristics of these policies are presented (Trout et al., 2017).

The Center for Connected Health Policy (CCHP) examined state law, state administrative

codes, and Medicaid provider manuals as the report's primary resources. Other potential sources

such as releases from a state's executive office, Medicaid notices, transmittals, or Agency

newsletters were also examined for relevant information. In some cases, CCHP directly

contacted state Medicaid personnel to clarify policy issues. Information on managed care plans

has also been included from the utilized sources. All 50 states and the District of Columbia have

Medicaid reimbursement for telehealth in their public program. However, reimbursement for

telehealth-delivered modalities, including live video, Store-and-Forward, Remote Patient

Monitoring (RPM), and email/phone/fax, is less evident in some states than others.

In the United States, half of these telehealth-related state statutes were implemented

within the last five years, and over 200 telehealth-related bills were introduced in 2015 (Center

for Connected Health Policy, 2015). California and Connecticut reimburse for eConsult (CA

Department of Health Care Services, 2020; Connecticut BHP, 2021). According to the Center

for Connected Health Policy (2015), twenty-two state Medicaid programs provide

reimbursement for RPM. As is the case for store-and-forward (Alina TeleHealth, 2020; NJ

Division of Medical Assistance and Health Services. (2018), two Medicaid programs (HI and

NJ) have laws requiring Medicaid to reimburse RPM. A law in D.C. requiring Medicaid to

provide reimbursement for store-and-forward and remote patient monitoring was made

contingent on being funded under an approved budget and financial plan (Office of the Secretary

of the District of Columbia, 2019). As of September 2019, neither has been supported.

According to the *2019 Kentucky - Medicaid Provider Manual* (2019), Kentucky Medicaid is also

required to create an RPM pilot, but CCHP has not seen any evidence that the pilot has been

established. Fifty states and Washington DC (Center for Connected Health Policy, 2019)

provide reimbursement for some form of live video in Medicaid fee-for-service. Eight state

Medicaid programs (Alaska, Arizona, Maryland, Minnesota, New York, Texas, Virginia, and

Washington) reimburse all three, although certain limitations apply (Center for Connected

Health Policy,2019).

There are no widely accepted telehealth reimbursement policies across states. Policies

regarding telehealth reimbursement contain diverse restrictions and requirements that present

complexities in policy evaluation and determining policy effectiveness across states. If

necessary, research is needed to examine this and identify policy solutions to remedy this

disparity.

The Provider Or Practitioner Providing The Service

Although telemedicine has been used for decades (Grabowski et al., 2014; Hui et al.,

2001), it has rarely been the gold standard. Instead, care provision has commonly been a

combination of telephonic and in-person visits (Gillespie et al., 2019). It is limited partly by

Medicare restrictions on payment for telemedicine in nursing homes. Although telemedicine in

nursing homes is feasible for older patients, COVID-19 has prompted providers to reconsider

telehealth as an option to enhance clinical care. When the community is facing challenges due to

limited resources and coordination among Federal, State, and local health agencies are strained,

often due to competition, streamlining the telemedicine technology and applications is one tool

that skilled nursing facilities (SNF) and post-acute care facilities can use to identify early

exacerbation in vulnerable populations (Gillespie et al., 2019).

Related to efforts to telemedicine laws or regulations that define the establishment of a

patient-physician relationship for treatment telemedicine, members of the telemedicine

workgroup, the American Medical Directors Association (AMDA), Society for Post-Acute Long-Term Medicine developed this guideline through telephonic and face-to-face meetings. Grounded in theory and research to assess reflective perceptions of what specific opportunities and experiences initiated and supported their development, the workgroup's members included a summary of a recently completed systematic mixed studies literature review in determining which technology interventions reduce emergency department visits or hospitalizations of nursing home residents (Cetin et al., 2018).

The feasibility and acceptability of evaluating the efficacy of telehealth on clinical and patient-reported outcomes support condition assessment as a performance evaluation tool toward sustainable asset management to reduce unnecessary emergency department visits and hospitalization. Telemedicine-delivered care should be integrated into the resident's primary care and delivered by providers with competency in post-acute long-term care. The development and sustainability of telemedicine programs are heavily dependent on financial implications. Quality measures such as lean systems should be defined for telegeriatrics in SNFs.

Telemedicine programs in SNFS can contribute to the framework and action plan for a systems approach to healthcare delivery based on a partnership between engineers and healthcare professionals. Federal agencies should support developing and promulgating technological advancements that could enhance an individual's capacity to provide care for older adults. Reimbursement for telemedicine-driven care drives legislators and insurance executives toward more progressive policies. The COVID-19 Pandemic demonstrated its worth and proved necessary to avert larger meltdowns in hospital systems and among medical professionals. More studies are needed to understand which telemedicine tools and processes are most effective in improving outcomes for nursing home residents.

The Technology Used to Deliver the Service

Attendance at a specialist multidisciplinary motor neurone disease (MND) clinic is associated with coordinated care intervention. It may improve health-related quality of life and reduce hospital admissions (Hobson et al., 2018). A cost-consequence analysis comparing patient travel, perception of illness and medication, quality of care, clinic distance, and rapport with staff emerged as barriers that may not be addressed promptly. To improve access to specialist MND care, we need to reduce patient burden and make the service interactive and feasible while meeting the patients' expectations.

From design inception to completion, we adopted a user-centered methodology to develop electronic health interventions for those providing and receiving MND care. Including patients, designers, researchers, family caregivers, and healthcare professionals, we address the unmet support and information needs of those living with MND and how they might be met through digital technologies and the interplay between content knowledge and pedagogy.

As a part of the evaluation, the telehealth system (TiM) using an Android app found that sharing responsibilities with accountability between providers, patients, and caregivers dramatically benefits. For example, patients and family caregivers were instructed to answer a series of questions about their condition weekly. Communicating with each other and merging their observations, the questions capture all the physical, emotional, and social difficulties of MND. Once the information is uploaded, it undergoes qualitative data analysis. The analysis process answers these essential questions. Do any of the patterns suggest that additional data needs to be collected? Are there any deviations from these patterns? Do the patterns that emerge support the findings of other corresponding qualitative analyses that have been conducted?

Where communities are addressing issues of importance with new technologies, the insights gained from the collaborative work of the patients with MND, family caregivers, and providers ensure that service innovation must be considered in this new approach to research and practice. Future trials must evolve structured education and lifestyle behavior to evaluate whether the TiM system within a clinical environment is feasibly acceptable.

Identified Solution

Beyond the organization's need to understand its resilience strengths and weaknesses and to evaluate the effectiveness of the tools your organization has put into place, it's critical to address and implement into your company's processes and infrastructure for culture the three sustainability decision-making challenges: interpretation, information-structuring, and influence. (Waas et al., 2014). Embarking on an inappropriate course of action is a reflective account of unsuccessful attempts to apply intervention methods and redirect the team to perceive with greater clarity the importance and magnitude of the challenges now looming in the health field. As successful e-health implementation in organizations has proven difficult, finance is often the first area of concern (Rodrigues et al., 2012). For providers to adopt these technologies more widely, telehealth services must be reimbursable. Staff and equipment costs for these expanded functions may be considered overhead part of the expense of providing care. With the digital revolution, telehealth services can also help you generate income, from clinics to homes.

As you conduct a telehealth needs assessment, look for ways to balance costs and benefits at specific phases of innovation. Crowdsourcing and peer-to-peer, seed accelerators, angel investors, venture capitalists, and grants initial startup. Most telehealth services provided today are paid for through traditional Medicare or fee-for-service (FFS) reimbursement. According to Baker et al. (2016), private FFS bid eight percent more than traditional FFS to provide the same benefits. While this is not the complete story, the telehealth organization

model, in many ways, is the antithesis of a traditional health care organization. As telehealth takes on a predominant role as a tool for quick access to clinical data (Rheuban & Krupinski, 2017), the changes considered at state and national levels are likely to be positive for both patients and providers.

When it comes to securing company-wide adoption of a solution; supporting end-users, securing information assets, and controlling costs through standardization, critical steps in the implementation process are:

- Advocate a leadership-based model on stewardship

- Communicate intention on action

- Design the solution to achieve alignment and adaptability at a business-unit level simultaneously

- Codify rules, guidelines, and recommendations in a formal document

- Training colleagues and employees from day 1

- Measure success by whether or not it's solving the problem you intended to solve and delivering the results you intended to achieve

Step 1: Needs Analysis & Environment Analysis

Organizations that evaluate technology readiness can identify potential problems and strengthen the collaborative advantage.

- Align investors, customers, employees, and society with the mission, vision, and values

- Buying equipment is not the first step

- Decide whether the project moves forward and who is in charge

- Analyze your organization's strengths, weaknesses, opportunities, and threats (SWOT)

- Bring the major department heads into the process early to achieve all project goals within the given constraints

A needs analysis will provide a clear understanding of the nature and scope of the unmet need, provide a sound foundation for planning, establish shared expectations, identify and organize resources, and provide the structure for evaluation initiatives.

- Determine the performance standards

- Ensure the needs analysis is data-driven

- Recognize that the needs analysis is inseparable from the telehealth model and the costs critical to the creation of the business case

Step 2: Define Services, Program Model, and Technology Models

Before program model development, research should be done about the sources of capabilities, integration, and technology commercialization.

- Reach strategic goals through phased, prioritized investments

- Be mindful of the variation in health system size and geographic scope

- Anticipate the actions required to complete a managed process, such as creating, reviewing, and approving change orders

- Familiarize yourself with the different types of telehealth and select the right kind(s) for your particular practice

- High-quality evidence exists to support the effectiveness of telehealth for specific uses with some types of patients

Many consider clinical and administrative champions to lead and sustain the development of your telehealth program vision as the most critical factor for success. According to Battilana & Casciaro (2013), champions must be genuine agents of change within your organization and in positions to garner top-level organization attention to obtain financial, technical, personnel, and other resources. They must be inspirational figures crucial in creating a professional and nurturing environment (McGoldrick et al., 2001) where other champions will be encouraged and developed.

- Enable champions to motivate others and move beyond their standard roles (Hendy & Barlow, 2012)

- Explore the likelihood of clinicians' willingness to use this modality

- Champions are identified as a critical success factor in telemedicine projects. Your program and its success depend upon the full support and dedication of the entire team and the more comprehensive organization (McClellan et al., 2020; Telehealth Resource Center, n.d.)

It is essential to understand the challenges and benefits of the locations you will be working with remotely. The route of action to further validate its use for future implementation can be quite different in different regions, as can the definition of health care value, to pay health plans based on their performance in providing appropriate preventive care and economic incentives and systems of accountability to achieve public health goals.

- Avoid clinical errors through effective communication

- Judicial consideration for providing services over a variety of network infrastructures. This is especially true for a qualified out-of-state physician to provide medical

services warrants the emergency adoption of this rule to provide for the issuance of

an emergency license (Tuerk et al., 2015)

- Know the political geography of any region you wish to provide services. For

    example, abortion access is undergoing significant technological change, leading to a

    spatial re-arrangement of abortion geographies (Calkin, 2019).

Step 3: Business Model Development

The business case for initial and ongoing resource investment needs to be developed,

reviewed, and approved. Market analysis to determine the demand for proposed services will

assist in assuring sustainability.

- View grants as only short-term seed funding. Can you survive the loss of their initial

    budget and continue to operate?

- Look for ways to balance costs and benefits at specific phases of innovation:

    crowdsourcing and peer-to-peer, seed accelerators, angel investors, venture

    capitalists, and grants

- According to Batsis et al. (2017), reimbursement is one of the most challenging areas

    in implementing sustainable telehealth programs. Look for opportunities to contract

    with payers, insurance companies, and others to offer cost-effective services

- A sustainable program may require multiple revenue streams and a patient payer mix

    of less than 30 percent (Definitive Healthcare, 2019)

- Learn from other telehealth practitioners about their reimbursement strategies and

    challenges; base your program design on existing ones

Step 4: Development of Detailed Implementation Plan

Because the long-term solution will be a complex program addressing differing resource areas, it is evident that differing program elements may require different types of assurances. The most successful telehealth programs come from prioritizing the demand for health services, balancing against the known limitations of supply, and deploying well-considered, integrated, and streamlined technologies that reflect and meet the community's needs (Ballachanda, 2017).

- Make sure your plan includes detailed information on timelines, deliverables, and milestones, and detailed information on technical requirements and potential challenges

- Submit your plan for review by senior leadership and key stakeholders, and invite feedback, comments, and open discussion

- Recognize that unforeseen circumstances and factors may influence your initial or ongoing planning. Be flexible in your approach and able to make quick and effective adjustments to operational schedules and programmatic elements as necessary

A wide range of legal and regulatory reimbursement, ethical issues, and requirements must be comprehended and complied with when developing a telehealth program (Tuerk et al., 2015). As regulations and laws change frequently, ensure your organization's legal counsel is fully informed and engaged in your plans to allow consensus and standardized procedures.

- Identify the current policies and regulations to include licensure, credentialing, HIPAA, and medication prescription

- Realize that telehealth law is a rapidly changing area of law. Be sure your legal

  counsel stays closely in touch with your program expansion and development

  activities and plans (Telehealth Resource Center, n.d.)

Step 5: Development of Performance Monitoring Plan

To rise to the challenge of meeting this public health crisis and innovating new ways to

provide care, best practices based on telehealth protocols should be adapted.

- Instill far greater comfort and confidence in your caregivers who will not feel they are

  doing something strange and unusual and way out of line with their traditional

  practices

- Although the systems have varying degrees of overlap and distinguishing features,

  they share the goal of reducing physician burnout

The planning stage determines assessment thresholds, benchmarking models that

incorporate goal information through incentive payments, builds a plan to establish a routine to

monitor performance, and an evidence-based strategy for problem-solving. From the outset, the

long-term success of a telehealth network should be carried out on an ongoing basis and should

demonstrate the factors that measure the governing board's performance, including a market

assessment, alternative objectives, and reflections on the program's vision and mission statement

for integrated research and monitoring.

- Consider the need for the formal assessment of cost and economic evaluation of

  quality improvement

- Plan on collecting data compared to repurposing existing secondary data from the

  very beginning of your program implementation

- Determine and communicate your measures of success

- Be realistic in your set of goals

Before you begin your implementation, determine precisely what initiatives contribute to the observed impact and in what ways. Consider linking all performance improvement initiatives to strategic objectives and distributed reactive systems, and account for any interactions among the various industries you should watch, how frequently, and by what methods.

- The monitoring and evaluation team must identify critical stakeholders that will be intricately involved in the effort

- Fortify arguments used to support conclusions that result from your evaluation studies, such as service usage, patient and provider comfort level with particular technologies, devices, and applications, and cost savings analysis

- Track and communicate about patterns, trends, logical interpretations, and alternative courses of action given the relevant objective

Step 6: Program Implementation

Providing ongoing practical training and personnel development within leaders' shared beliefs and values ensures your team stays well-informed on industry trends and best practices. Teams with a suitable composition and sufficient trust among champions can be highly effective under these circumstances (Great Plains Telehealth Resource & Assistance Center, n.d.).

- Identify a coordinator to oversee all daily operational activities of the program scheduling, billing, and technical operations (Ballachanda & The Hearing Review, 2017)

- Create seamless coordination of care transitions and an open communication environment in which staff at both sites can work well together to create an orderly, evidence-based, and transparent clinical atmosphere for the patients

- Share existent resources, hire additional dedicated personnel, or perform a cost-benefit analysis to determine if outsourcing makes more sense than hiring an in-house employee

- Develop and implement a formal, comprehensive, and standardized training regimen for all staff

- Include lack of stakeholder participation as a risk, and build in contingencies for the likely occurrence of the risk

Step 7: Monitor and Improve

Simplify tools and processes for scheduling, billing, program measurement, and documentation.

- Employ requirements traceability

- As subprojects and phases of longer projects finish, formally close them out, conduct lessons learned sessions, and celebrate. This helps maintain momentum and reinforces the results and benefits achieved

- Keep administrative systems and methods simple

- Ensure administrative staff is well trained and conversant in telehealth methods and practices

- Carefully document all administrative processes and protocols

After assessing the initial performance of your program, considering service utilization, provider and patient satisfaction, and other vital factors, you should begin to implement the QI process you developed during the planning process

- Perform a SWOT analysis to explore possibilities for new efforts or solutions to problems

- Implement new ideas, adjustments, and solutions in an organized fashion

- Develop capabilities to detect, contain, and bounce back from the event that does occur

In the ever-expanding and increasingly mainstream field of telehealth, there is tremendous interest in program experiences and lessons learned from around the country. Present your outcomes and program developments in a public forum at least once per year

- Involve members of your telehealth team in these positive communication activities. This will help secure buy-in from your staff and increase passion for the program

- Phase in collaborative practices and create an awareness of the need for joint working

Failure Mode Effect Analysis

Telemedicine Platforms for Remote Clinical Care

Platform	Cost	Video	Patient Usability and Ease of Access (1-10)	Max People	Break-Out Rooms	HIPAA Compliant	Key Conclusions for Telemedicine Software
Doxy.me	$30 per provider + $300 setup fee	Yes	2 (Easy): Accessed through the link. *Challenges if poor internet connection.*	5	Yes	Yes	(+) Free tier and trial, run in the browser, self-hosted option, can integrate with Electronic Health Records or Practice Management Software (-) Lack of mobile apps, multi-provider plans get expensive

EPIC	Free (if Epic EMR)	Yes	9 (Difficult): Must use MyHealthConnection application and navigate through multiple steps to check-in. Only available in English.	3	No	Yes	(+) Integrated into EMR (-) Difficult to navigate for population, only Google Chrome, no mobile call-in option for patients/phone interpreters, too few people
Skype	Starting from $2.99	Yes	10 (Difficult): You must download the Skype application and access "Skype Simple Visit."	50	No	Only with "Skype Simple Visit" function	(+) Pricing (-) The appointment scheduling process is not conducive to a real-time clinic; a "Simple visit" increases the difficulty of navigating Skype
Teladoc	$49 per provider	Yes	1 (Easy): Most people download the app or get started online. You can also call 1-800-Teladoc	>3600	Yes	Yes	(+) 24/7 phone support, nationwide network, only a phone signal required, can access from a desktop or mobile app (-) Physicians do not order any tests, opaque pricing model, and patient relationships are not intended to be long-term
Whats App	Free	Yes	2 (Easy): Must use a mobile application. Common app among Spanish-speaking patients.	4	No	No	(+) Common with some patients (-) HIPAA, modification of members of call, unable to add phone interpreter, limited # of people
Zoom	$200 or Free through the institution	Yes	3 (Fairly Easy): Links sent by email or text message.	>50	Yes	Yes	(+) Relatively easy to use, versatile use of rooms, call-in option for patients/interpreters (-) Patients can have trouble with app download, and navigation for a host can get complicated

Telemedicine Visit Workflow: ICHOR Health and Wellness Center
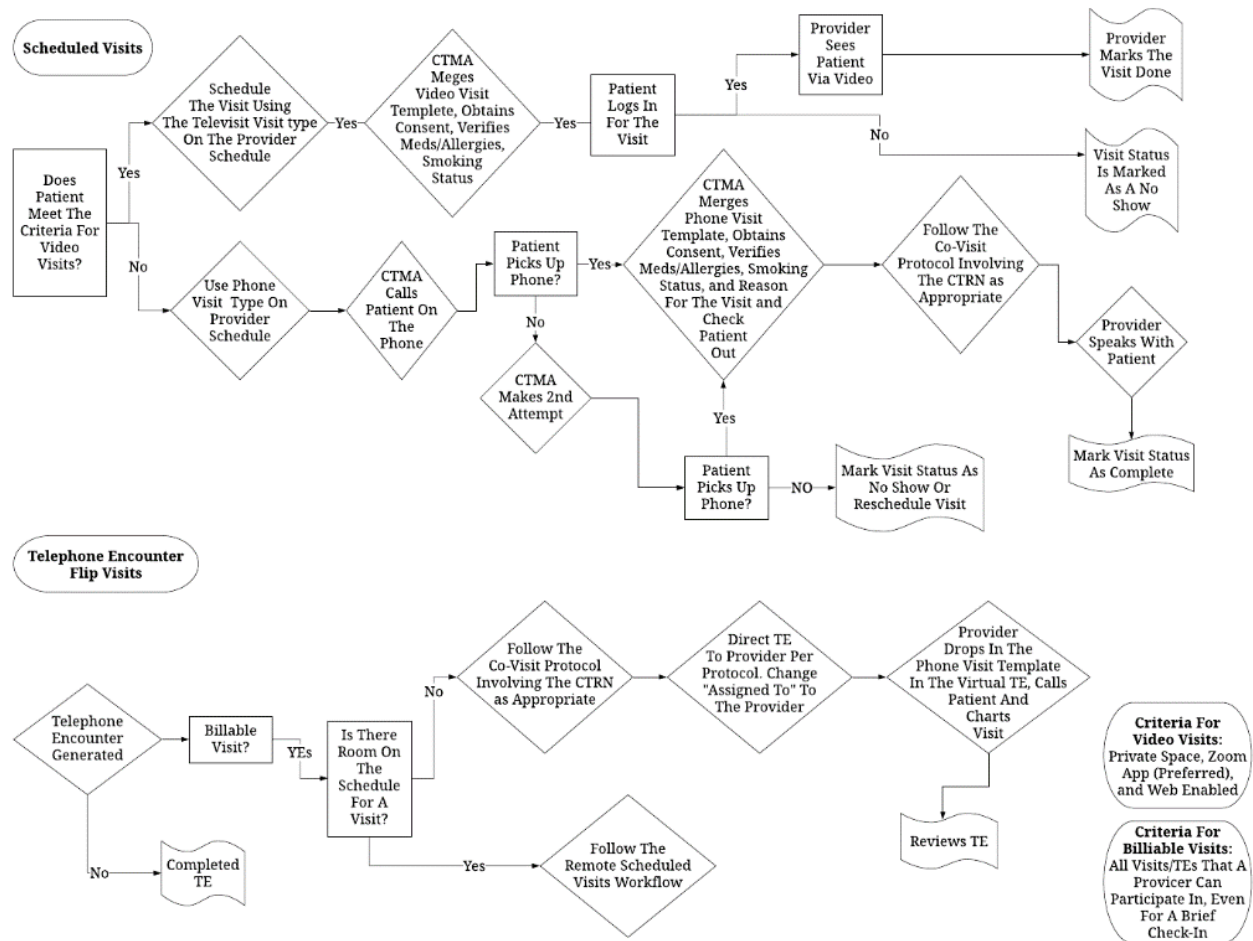
Potential Failure Mode #1: Detect and Prevent Security Violations and Privacy Breaches

Related to ePHI

Consider	Potential Failure	Action
Determine whether the practice reviews the information system as a part of its continuous, day-to-day operations	Workforce member or service provider(s) with excessive access privileges can compromise the privacy, confidentiality, integrity, or availability of ePHI	Periodically review and analyze your information system's audit records for indications of inappropriate or unusual activity

Provide an audit reduction and report generation capability that supports on-demand audit review, analysis, and reporting while not altering the original content or time ordering of audit records |

		Unauthorized disclosure of ePHI due to theft or loss can lead to identity theft Accurate ePHI might not be available, which can adversely impact a practitioner's ability to diagnose and treat the patient	Monitor information systems to detect attacks, indicators of potential attacks, and unauthorized local, network, and remote connections
Likelihood of a Negative Event	**Low (1-3)** **2**	**Medium (4-6)**	**High (7-10)**	**Severity Risk** **2**
Impact of a Negative Event	**Low (1-3)**	**Medium (4-6)**	**High (7-10)** **8**	**Severity Risk** **8**
				Overall Severity Risk (1-10) **5**
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions				**Control**

Potential Failure Mode #2: Workforce Members, Roles Assignments, and Corresponding Access That Each Role Enables

Consider	Potential Failure	Action
Define roles and responsibilities in sufficient detail to demonstrate whether access to ePHI is necessary	Workforce member or service provider(s) with excessive access privileges can compromise the	Enforce role-based access control (RBAC) policies that define workforce or service providers and control their access based on how your practice defines user roles

| Determine whether remote access is necessary from physical environments that are not under your practice's control | privacy, confidentiality, integrity, or availability of ePHI

Unauthorized disclosure of ePHI due to theft or loss can lead to identity theft

Accurate ePHI might not be available, which can adversely impact a practitioner's ability to diagnose and treat the patient | Employ the principles of least privilege/minimum necessary access, so your practice only enables access to ePHI for users when it is required to accomplish the tasks assigned to them based on their roles

Separate duties of workforce members and service providers with access to ePHI and define access authorizations to support those separated duties |
|---|---|---|
| **Likelihood of a Negative Event** | **Low (1-3)** | **Medium (4-6)**
 4 | **High (7-10)** | **Severity Risk**
 4 |
| **Impact of a Negative Event** | **Low (1-3)** | **Medium (4-6)** | **High (7-10)**
 10 | **Severity Risk**
 10 |

	Overall Severity Risk (1-10) **7**
Determine If You Want To…

Eliminate: Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen
Control: This is not a static model and requires monitoring and updating
Accept: Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions | **Eliminate** |

Potential Failure Mode #3: Unique Identifiers of Authorized Users

Consider	**Potential Failure**	**Action**

Provide essential information for privacy and security awareness and role-based training Strive to establish strategic, efficient, and timely information management to reduce the risk of ePHI	An authorized user might have privileges to access more ePHI than is necessary to complete the responsibilities associated with the role filled System accesses and activities are undertaken cannot be attributed to a specific authorized user; therefore, your practice cannot enforce user accountability Workforce personnel purposely accesses and shares data with the intent of causing harm to an individual or company. The malicious insider may have legitimate authorization to use the data, but the objective is to use the information in nefarious ways	Assign a unique name and number for identifying and tracking user identity Facilitate the implementation of the identification and authentication policy and associated identification and authentication controls Address management commitment, coordination among organizational entities, and compliance

Likelihood of a Negative Event	Low (1-3) 2	Medium (4-6)	High (7-10)	Severity Risk 2
Impact of a Negative Event	Low (1-3) 3	Medium (4-6)	High (7-10)	Severity Risk 3

	Overall Severity Risk (1-10) 2.5
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions	**Accept**

Potential Failure Mode #4: Obtaining Access to ePHI

Consider	Potential Failure	Action
Associates authorized user privileges with each unique user identifier Requiring users to enter a unique identifier when accessing your practice's information systems and electronic devices and deny access to users if the information they entered incorrectly Using a unique user identifier in conjunction with an authentication mechanism as part of your access control strategy	Workforce members or service providers with excessive access privileges can compromise the privacy, confidentiality, integrity, or availability of ePHI Unauthorized disclosure (including disclosure through theft or loss) of ePHI can lead to identity theft Accurate ePHI might not be available, which can adversely impact a practitioner's ability to diagnose and treat the patient	Implement a registration process that requires supervisory authorization to establish an individual or group identifier

Likelihood of a Negative Event	Low (1-3) 3	Medium (4-6)	High (7-10)	Severity Risk 3
Impact of a Negative Event	Low (1-3) 3	Medium (4-6)	High (7-10) 7	Severity Risk 3
				Overall Severity Risk (1-10) 3
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions				**Accept**

Potential Failure Mode #5: Identify the Various Types of Emergencies Likely to Occur

Consider	Potential Failure	Action
Clearly define what constitutes an emergency consistent with Contingency Plan Standard and the circumstances under which emergency access is enabled Identify the person capable of activating the emergency access method	Your practice might not be able to protect, secure, and control access to ePHI if it cannot access ePHI during an emergency or when standard access procedures are disabled or unavailable. A potential impact might be that accurate ePHI is not available, which can adversely impact a practitioner's ability to diagnose and treat the patient While EHR systems are designed to be secure, disruptions to workflows that contribute to temporary losses in	Implement a contingency plan that identifies essential activities and associated requirements, such as roles, responsibilities, and processes for termination of emergency access, reinstitution of normal access controls Update contingency plans regularly to remain current with system enhancements and organizational changes Validate the contingency plan with testing and exercises

	productivity, improper execution, and inadequate training could lead to new security and privacy concerns not relevant to using paper records		
Likelihood of a Negative Event	**Low (1-3)**	**Medium (4-6)** **5**	**High (7-10)**	**Severity Risk** **5**
Impact of a Negative Event	**Low (1-3)**	**Medium (4-6)**	**High (7-10)** **7**	**Severity Risk** **7**

	Overall Severity Risk (1-10) **6**
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions	**Control**

Potential Failure Mode #6: Sanction Policies and Procedures, Security Awareness and Training Program

Consider	Potential Failure	Action
The steps that your practice takes to notify your workforce about your policy and procedure to sanction workforce members who fail to comply with your practice's ePHI safeguards	Inequitable application of sanctions can affect the outcome of personnel actions at arbitration and grievance proceedings. Unequal penalties for similar offenses undermine the organization's ability to prevail in dispute resolutions	Apply appropriate sanctions against workforce members who fail to comply with the security policies and procedures of the covered entity or business associate Document processes for administrative sanctions that reflect applicable federal laws, Executive Orders, directives, regulations, policies, standards, and guidance. These processes should be described within access agreements, general personnel

	Your practice may not be able to fully communicate the consequences of violating security policies to workforce members if its security and training program does not include sanction policies and procedures The research validity may be questioned when privacy or security violations are not handled consistently and expeditiously. Patients are less likely to participate in research studies with an organization that has an inconsistent sanction policy for privacy and security breaches	policies and procedures, and security awareness and training programs for all workforce members	
Likelihood of a Negative Event	**Low (1-3)**	**Medium (4-6)** **6**	**High (7-10)**	**Severity Risk** **6**
Impact of a Negative Event	**Low (1-3)**	**Medium (4-6)**	**High (7-10)** **7**	**Severity Risk** **7**
				Overall Severity Risk (1-10) **6.5**

Determine If You Want To…	Control
Eliminate: Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions	**Control**

Potential Failure Mode #7: Security Point of Contact (POC)

Consider	Potential Failure	Action
Consider whether your practice's awareness materials include the name and contact information for its security point of contact, such as posters, email reminders, and policy manuals	If your practice's workforce members do not know the name and contact information of the security point of contact, they may not be able to execute immediate and appropriate mitigating actions when there are security problems This could impact your practice's ability to respond to security incidents when they occur if your workforce members do not know who to contact Being compliant has the potential to increase non-compliance penalties. If you're a covered entity, you are required by Federal law to comply with the HIPAA Security Rule, or you could face strict fines and penalties. Civil penalties range from $25,000 to $1.5 million per year. Criminal penalties can also be enforced for unlawfully accessing, selling, or	Identify the security official who is responsible for the development and implementation of the policies and procedures required by this subpart for the covered entity or business associate Provide incident response training to workforce members consistent with assigned roles and responsibilities Require workforce members to report suspected security incidents and problems to your practice's assigned security point of contact

	using ePHI. Criminal penalties include heavy fines and imprisonment of up to $250,000 and ten years in prison		
Likelihood of a Negative Event	**Low (1-3)** 1	**Medium (4-6)**	**High (8-10)**	**Severity Risk** 1
Impact of a Negative Event	**Low (1-3)**	**Medium (4-6)**	**High (8-10)** 10	**Severity Risk** 10
			Overall Severity Risk (1-10) 5.5
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions			**Control**

Potential Failure Mode #8: Policies and Procedures That Implement Risk Analysis and Informed Risk-Based Decision Making

Consider	Potential Failure	Action
Limiting the business associate's use or disclosure of ePHI to as described in the agreement or as required by law Employing appropriate safeguards to prevent the use or disclosure of ePHI other than provided for in the agreement Uses or disclosures of ePHI inconsistent with those provided for in the agreement must be reported	Unauthorized or inappropriate access to ePHI can compromise the confidentiality, integrity, and availability of your practice's ePHI Unauthorized disclosure, loss, or theft of ePHI can lead to medical identity theft Accurate ePHI may not be available when needed, which can adversely impact your healthcare professionals'	Implement reasonable and appropriate policies and procedures to comply with the standards, implementation specifications, or other requirements of the HIPAA Security Rule *This standard is not construed to permit or excuse an action that violates any different standard, implementation specification, or other conditions *A covered entity or business associate may change its policies and procedures at any time, provided that the changes are

to the covered entity, as must any security incident of which it becomes aware	ability to diagnose and treat their patients	documented and implemented following HIPAA Security Rule Document, review, and disseminate risk assessment results to members of the workforce who are responsible for mitigating the threats and vulnerabilities to ePHI identified as a result of a risk assessment Develop, document, and disseminate to workforce members a risk assessment policy that addresses its purpose, scope, roles, responsibilities, management commitment, the expected coordination among organizational entities, and compliance requirements

Likelihood of a Negative Event	Low (1-3) 1	Medium (4-6)	High (7-10)	Severity Risk 1
Impact of a Negative Event	Low (1-3) 1	Medium (4-6)	High (7-10)	Severity Risk 1
				Overall Severity Risk (1-10) 1

Determine If You Want To…	
Eliminate: Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions	**Accept**

Potential Failure Mode #9: Contingency Operations Implementation Specification

Consider	Potential Failure	Action
The steps that your practice has taken to document how your	Natural threats, such as hurricanes,	Establish policies and procedures to protect the facility and its

| facilities can withstand foreseeable threat events, such as locks on doors and windows, earthquake and hurricane preparedness, surge protectors, and backup heating, cooling, and air filtration systems | tornadoes, floods, ice, and earthquakes, can cause damage or loss of ePHI

Environmental threats, such as power surges and outages of heating, air conditioning, and air filtration systems, can enable humidity and dust to compromise the functional integrity and performance of your practice's information systems

Human threats, such as unauthorized users, can vandalize or compromise the integrity of ePHI. Unauthorized disclosure, loss, or theft of ePHI can lead to identity theft | equipment from unauthorized physical access, tampering, and theft

As part of contingency planning, develop and document a facility security plan that includes:

* Policies and procedures for physical and environmental protection

* A system-level security plan | |

Likelihood of a Negative Event	Low (1-3)	Medium (4-6) 5	High (7-10)	Overall Severity Risk 5
Impact of a Negative Event	Low (1-3)	Medium (4-6)	High (7-10) 10	Overall Severity Risk 10
				Overall Severity Risk (1-10) 7.5
Determine If You Want To…				**Eliminate**

Eliminate: Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions	

Potential Failure Mode #10: Barriers to Adopting Electronic Health Records (EHRs)

Consider	Potential Failure	Action
Define roles and responsibilities in sufficient detail to demonstrate whether access to ePHI is necessary Determine whether remote access is necessary from physical environments that are not under your practice's control	Security audits seem to be directed at gathering information and providing examples for the industry on where problems with data security arise and where safety was addressed effectively, as opposed to being oriented toward the imposition of penalties and sanctions Some potential costs and liabilities would stem from any significant failure or infiltration of a health care provider's electronic records systems For providers that may have made limited use of electronic record systems or otherwise never fully considered the Security Rules previously, the Security Rules call for periodic re-assessment of the security compliance program and to assume whether security policies, procedures, and measures are adequate considering new technology	Implement physical safeguards for all workstations that access ePHI to restrict access to authorized users Develop policies and procedures to manage how (and where) ePHI is accessed via mobile devices (such as laptops, tablets, and mobile phones) and develop acceptable use and storage guidelines for your practice

Likelihood of a Negative Event	Low (1-3)	Medium (4-6)	High (7-10) 8	Severity Risk 8
Impact of a Negative Event	Low (1-3)	Medium (4-6)	High (7-10) 10	Severity Risk 10
				Overall Severity Risk (1-10) 9
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions				**Eliminate**

Potential Failure Mode #11: Ransomware

Consider	Potential Failure	Action
The steps that your practice has taken to make sure workstations that are routinely used outside of its facilities are used in a manner that reduces the risk of incidental viewing or unauthorized access to information systems and ePHI	Use of smartphones, tablets, and laptops from inappropriate locations may result in incidental disclosure or unauthorized access to ePHI if your practice does not set policies, procedures, and standards for acceptable workstation use outside of its facilities Workstation screens containing ePHI may be viewable at a distance or from different angles to users who are not authorized to view, especially in public areas Human threats include an unauthorized user who can vandalize or compromise	Implement physical safeguards for all workstations that access ePHI to restrict access to authorized users Develop policies and procedures for acceptable use and storage of electronic devices that are remotely accessing ePHI Compare network traffic logs to signatures that detect known malicious activity Train workforce members on what to look for in an email before accessing or downloading an attachment

	the confidentiality, integrity, or availability of ePHI. Unauthorized disclosure, loss, or theft of ePHI can lead to identity theft			
Likelihood of a Negative Event	**Low (1-3)**	**Medium (4-6)**	**High (8-10) 10**	**Severity Risk 10**
Impact of a Negative Event	**Low (1-3)**	**Medium (4-6)**	**High (8-10) 10**	**Severity Risk 10**
				Overall Severity Risk (1-10) 10
Determine If You Want To… **Eliminate:** Issues beyond team members' knowledge aren't likely to be detected or resolved, which constitutes a failure waiting to happen **Control:** This is not a static model and requires monitoring and updating. **Accept:** Prioritizing failure modes according to their risk will not eliminate failure modes and may require other actions				**Eliminate**

FMEA is an essential, cost-effective, analytical risk assessment tool vital to Front-End Engineering and Design (FEED) (Oveis et al., 2020). As healthcare faces increasing safety demands from diverse stakeholders (Albahri et al., 2021), we must balance between environmentally friendly and harmful behaviors and morally account for the average of these components rather than the sum. From product development, evaluation, and safety to environmental conditions, quality, time, and historical reference, the recognition that all well-managed companies are interested in preventing risk, minimizing cost, monitoring, and improving the quality operations is the concept of risk management analysis (Kc et al., 2020). The requirements for performing such analysis may be extensive, demanding, and costly. The elimination, control, and acceptance of risk is a total commitment by the entire organization. There is no all-in-one fix for failures intended to result in preventative actions.

Quality Measurement Development Plan Per Medicare Reimbursement

Despite the reimbursement policies and pay-for-performance (P4P) programs to reward

providers for producing better outcomes, there is little evidence of positive changes in physician

behavior or patient outcomes. Tied to financial incentives that often crowd out the intrinsic

motivation of physicians instead (Mehrotra et al., 2010), most P4P systems have led to

significant administrative burdens and a broad array of nonspecific effects on the patient-

physician relationship, including compassionate care and the modulation of expectations,

anxiety, and self-awareness. The Centers for Medicare & Medicaid Services (CMS), America's

Health Insurance Plans (AHIP), and the American Academy of Family Physicians (AAFP) are

part of a multi-stakeholder group working to achieve meaningful alignment with the flexibility to

innovate (Rockwell et al., 2017). Reducing overlaps and gaps in frameworks to define detailed

compositions and aggregations of metrics useful in practice is essential to easing the costs and

burdens associated with quality measurement. While it is vital to reduce the number of measures

and improve structural, organizational, provider, patient, and innovation, the standards should

provide better information on the patterns of performance measurement usage and use this

information to assess the emerging complexity and differentiation within relationships relevant

to the value-added processing of the factors presumed to affect utilization. Classified as either

structure, process, or outcome, each quality measure focuses on a different aspect of healthcare

delivery. Together, quality measures and quality measurement should be balanced to meet the

need of end-users to judge quality and cost performance and the need of providers to improve the

quality continuously, outcomes, and costs of their services; and adjusted fit measures, effects,

and costs with appropriate metrics that are selected based on end-user needs. According to

Corrigan et al. (2001), the criteria that can be used to assess the appropriateness of health care

quality measures include:

- Patient preference to guide treatment decisions

- Net Benefit

- Implementation of the measure leads to benefits that outweigh the harms

- Benefits that justify the resource expenditure

- The best approach to a given clinical situation. Once informed, patients may choose to pursue or defer screening

- Gaming or manipulation is not encouraged

- The measure applied must be clearly and adequately specified with appropriate exclusion criteria and assessment methods

- The desired outcome must be clearly described with criteria and a timeline for action, all supported by evidence

- Physicians' authority, influence, or capacity to affect performance on the measure should not be penalized for factors beyond their control

- Systems for risk adjustment and risk stratification should be robust enough to capture the variance in health caused by social determinants accurately

Case Study: Background Information

The following is a breakdown of our employee workforce for ICHOR Health and Wellness Center:

- Dr. Martin, clinic owner and medical director (*key stakeholder)

- Dr. Dixon-Martin, physician and clinic partner (*key stakeholder)

- Mrs. Perrin D. Royea, physician's assistant (will function as a project team member)

- Mrs. Prabjot Sandhu, MSN, NP, nurse practitioner [project team member; has previous EHR install experience)

- Dr. Anupama Velpuri, clinic director, privacy and security officer (*key stakeholder)

- Ms. Kathy Schwartz, front office clerk (project team member)

- Ms. Michelle Mallabey, MA, back office medical assistant (project team member)

- Mr. Norman Bates, clinic accounts and billing (project team member w/IT experience)

ICHOR Health and Wellness Center (ICHOR HAWC) is a small, state-of-the-art family practice serving the Bay Area of San Francisco. Located in San Lorenzo, CA, ICHOR HAWC provides Hyperbaric Oxygen Therapy (HBO or HBOT), a Medicare/Insurance therapy for Osteomyelitis, Diabetic Foot Wounds, Trauma & Crush Injuries/Burns/Acute Peripheral ischemia, Necrotizing Infections, including Gas Gangrene, Therapeutic Radiation Injury or Wounding/Osteoradionecrosis, Bends or Diving Decompression Illness, Carbon Monoxide Poisoning, Air or Gas Embolism, Compromised Surgical Sites/Flaps/Grafts, Central Retinal Artery Occlusion & Sudden Neurosensory Hearing Loss, and Dental Indications: Chronic Osteomyelitis, Osteoradionecrosis, Dental Implants in Irradiated bone. ICHOR's Zoom for healthcare supports practice management functions, email, and web browsing integrates seamlessly with Epic, allows simultaneous use of EHR and high-quality video consultations, enables non-real-time image downloads, remote monitoring, and makes possible use of HD video consultations via Internet access over CISCO wireless networking solution. Cisco also addresses cybersecurity regulation requirements and helps research and development teams connect to manufacturing more easily to speed up time to market.

Offering a clean, flexible, and distraction-free environment for productive remote work, all eight rooms consist of HP Spectre x360 with an 11th Gen Intel Core i7-1165G7 processor. Although its base clock speed is 1.8GHz, Turbo Boost reaches 4.7 GHz. Also, 16GB of RAM is plenty for multitasking, while 1TB of SSD storage significantly increases boost times. The

backlight of the 17-inch display is a Gorilla Glass Privacy, OLED Ultra HD Touch Screen with a

resolution of 3k2K that allows you to use the device in severe settings with confidence. The

device also features a USB 3.1 Gen 1 port, two data connections, and Thunderbolt 3 power. The

device includes a gyroscope and accelerometer and 14hrs of battery life on a single charge. The

clinic director, front office clerk, back office medical assistant, and clinic accounts have similar

workstations configured to meet established standards and other criteria for structured data that

EHRs must meet to qualify for use in the Promoting Interoperability Programs. Furthermore,

each room includes the front/back office and lab has an FM Global fire rating shred bins as

required by the Centers for Medicare & Medicaid Services (CMS), in addition to an HP

PageWide A3 multifunction printer coupled with HP's Jet Advantage Link Ecosystem for

Healthcare that can easily integrate with EMRs and other hospital systems to generate accurate,

up-to-date records related to risks and readmissions, helping to ensure your organization remains

compliant.

Partnering With Patients in the Measure Development Process

Strategic Approach – CMS evaluates best practices related to patient/caregiver involvement to

measure the usability and effectiveness of video and audio content for managing

and disseminating information on various platforms. Current best practices identified for

partnering with patients and caregivers include:

- Adopting principles from the Patient-Centered Outcomes Research Institute (PCORI)

    person-family engagement framework

- Conducting outreach through patient organizations and other entities that focus on

    engaging patients to promote guidance-based care

- Screening candidates for background relevant to the salient issues associated with

    developing a series of sustainable development indicators

- Including patients/caregivers and comparing ethnic identity and its correlates across groups

- Preparing patients/caregivers by orienting them to the product development process in collaborative innovation communities

- Establishing a patient/caregiver mentor on the measure development team

- Educating meeting facilitators/moderators with a scalable approach to engaging patients and caregivers in developing guidelines

- Engaging patients and caregivers early in the conceptual model of meaningful involvement

- Prioritizing measure concepts through focus groups or key informant interviews

Partnering With Frontline Clinicians and Professional Societies

<u>Strategic Approach</u> – CMS will forge new partnerships and strive for transparency to achieve Medicare Access and CHIP Reauthorization Act (MACRA) goals and objectives (Short, 2021). Specifically, to leverage the invaluable expertise of clinicians and their professional associations, CMS anticipates implementing the following approaches:

- Collaborating with the National Quality Forum (NQF) to ensure that clinicians and specialties most affected by the conditions under which pay-for-outcomes is feasible in principle have sufficient representation in the multifamily accelerated processing (MAP) to guide the selection of the most appropriate, applicable, and meaningful measures (U.S. Department of Housing and Urban Development, 2021)

- Creating a dedicated Web page to improve clinician and professional society awareness of opportunities to participate in measure identification, selection, and development

- Exploring ways of pairing professional societies with experts in measure

  development to share knowledge about their respective processes

- Encouraging measure developers to engage frontline clinicians in technical expert

  panel (TEP) workgroups and measure testing as a source of feedback on feasibility

  and cost of measurement and policy changes oriented toward quality improvement

  (Pardasaney et al., 201)

Alignment of Measures

Strategic Approach – CMS will evaluate the conceptual alignment of federal programs

during the 2018 Impact Assessment of CMS Quality and Efficiency Measures. The assessment

mandated by Congress (Finkelman, 2020) identifies performance gains that translate into

essential patient impacts and potential health care costs avoided. CMS will continue to work

with private payers, and other stakeholders in the Core Quality Measures Collaborative to

develop consensus on core sets of measures that all payers could use.

Reducing Clinician Burden of Data Collection for Measure Reporting

Strategic Approach – CMS strives to minimize clinician burden by collecting data part

of the clinical workflow while pursuing meaningful measures for consumers and patients. CMS

also prioritizes the development of calculations based on data from EHRs, which can decrease

the data collection burden while maintaining measure validity. To address the limitations of

reporting measures, CMS will collaborate with health IT developers, frontline clinicians, and

stakeholders to maximize clinical workflows, support structured data capture, and

facilitate quality measurement on the initial design for the Merit-Based Incentive Payment

System (MIPS) (Baker et al., 2017).

Shortening the Time Frame for Measure Development

<u>Strategic Approach</u> – CMS has already reduced the measure development time frame by incorporating Lean principles into the measure development workflow. CMS also requires measure developers to have a multi-level, external review process to improve the accuracy, consistency, and efficiency of the HL7 Health Quality Measure Format (HQMF) measure logic and the associated value sets (Osheroff et al., 2012). To further reduce the timeline for measure development, CMS will facilitate cross-developer transparency and knowledge sharing through established forums and expanded use of the CMS measure developer library.

Streamlining Data Acquisition for Measure Testing

<u>Strategic Approach</u> – CMS will leverage broader data sources for measure development to support the continued evolution of the NTC and the NQF Incubator. A key objective of the NQF Incubator is to make clinical data available to measure developers to refine evolving concepts, build new measures, and accelerate testing for existing standards for which data are not yet widely available in the field. By mediating data sharing as the degree to which its resources are sharable and reusable, these initiatives present a framework for early identification, specification, and measurement. In turn, the gain in either improved performance or reduced costs for developers to acquire data would surely expand the number of stakeholders participating in measure development and testing.

Identifying and Developing Meaningful Outcome Measures

<u>Strategic Approach</u> – Defining measures with meaningful outcomes starts with considering and integrating the patient/caregiver perspective. CMS is accomplishing this by providing patients and caregivers with more prominent roles in measure development. CMS will strive to include persons with diverse racial and ethnic backgrounds, limited English proficiency,

mobility impairment or other disabilities, and lower levels of health literacy, among other

challenges that may lead to disparities in health and health care among vulnerable populations.

Developing PROMs and Appropriate Use Measures

<u>Strategic Approach</u> – To initiate developing Patient-Reported Outcome Measures

(PROMs), CMS introduced several building block measures as part of the Medicare EHR

Incentive Program (Davies et al., 2021). These process measures provide the foundational

framework to measure the effectiveness of institutional research e-infrastructures. CMS will

require analysts to identify the factors that impact these measures to facilitate the transition from

building-block process measures to enhancing patient outcomes.

Developing Measures That Promote Shared Accountability Across Settings and Providers

<u>Strategic Approach</u> – Agencies across HHS are working to increase the adoption and

use of health information exchange through longstanding relationships with the National

Committee on Vital and Health Statistics (NCVHS) and industry partners such as the Workgroup

for Electronic Data Interchange and the Council for Affordable Quality Healthcare (NCVHS,

2021). To encourage adoption more broadly across settings, CMS proposes to:

- Enable health information exchange, where possible, in support of state-led delivery and payment reform through federal and state partnerships

- Evaluate the potential for organizations that facilitate health information exchange to report quality measurements on behalf of providers

- Encourage interoperability across states' electronic health information infrastructures, including Medicaid and state survey agencies

- Continue stakeholder collaboration to facilitate the adoption and use of health IT standards and interoperability requirements

Conclusion

Across the globe, countries are looking for critical considerations in accelerating and developing an accessible information ecosystem in healthcare. Due to rising exposure to health care costs and widening incapacities in healthcare both by expansion and retrenchment, telehealth is promising to be a sustainable healthcare delivery model capable of leveraging healthcare's triple aim in the recovery era: improving the experience of care, improving the health of populations, and reducing per capita costs of health (Ryan et al., 2016). However, many adoption barriers, including but not limited to licensing complexity on investment and financing of technology development, eligibility of practitioners providing telehealth modalities, coverage and reimbursement policies, and patient preference to guide treatment decisions, present challenges for implementing and sustaining the primary care capacity to deliver telehealth in a post-COVID-19 environment. Covering in a detailed manner some of these barriers to a broader acceptance and implementation on larger scales and in the end, assessing the quantitative and qualitative methods combined in a mixed-method to generate data that have both breadth and depth, presenting recommended solutions that could enhance the adoption of telehealth across primary, secondary, and tertiary care value chains, enabling future systematic reviews and meta-analyses to help address research gaps and answer the specific question according to disciplines with emerging evidence, and capturing some of the champions guided and promoted by health-care and social-care professional that we foresee will play an essential part in the attitudes toward telehealth in these communities and a necessary first step toward effective adoption and use, the telehealth industry is at the cusp of economic, structural, cultural, and financial changes that will revolutionize how integrated care information systems in general and in particular, telehealth come within reach.

Lawmakers in the federal government, private, for-profit, and nonprofit insurers and health care providers have an opportunity to expand coverage, remove restrictions and standardize regulatory requirements so that the willingness of the public and professionals to make use of these technologies are incentivized to make the shift toward these beneficial services. Those inside the telehealth industry also need to help modify provider and consumer behavior to support long-distance clinical health care, patient and professional health-related education, and telehealth's public health and health administration benefits. Data management solutions and intelligence-based, predictive engagement tools, when married with evidence-based medicine, wrapped under a holistic model of user experience referring to the effective integration of technology, pedagogy, and content knowledge & secured by decentralized & transparent frameworks like Medicare Access and CHIP Reauthorization Act (MACRA), HL7 Health Quality Measure Format (HQMF), and Patient-Reported Outcome Measures (PROMs) are interpreted as the expression of Telehealth's post-modern idealistic impulse. Players applying the core mentioned above telehealth strategies can see massive adoption of their telehealth offerings & become the leaders in the healthcare value-chain with an unassailable sustainable competitive advantage.

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