WHITE PAPER

ANSWERING THE CALL FOR

MORE EFFECTIVE PATIENT EDUCATION

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ABOUT

ABOUT THE AUTHOR

Dr. Alidad Ghiassi was educated at the University of California in San Diego and attended medical school at the University of Southern California Keck School of Medicine where he received numerous honors for his role in orthopedic education. He has held clinical faculty positions both at UCLA and USC in the Department of Orthopedic Surgery As a national speaker Dr. Ghiassi has honored his commitment to improving health education for patients and providers via numerous invited lectures, poster presentations, abstracts, and peer-reviewed articles and studies, including more than half a dozen studies in progress. Dr. Ghiassi sees patients at the Brentwood California located at 11645 Wilshire Blvd. Suite 702, in Los Angeles and performs surgical procedures in the Beverly Hills Doctors Surgery Center and a USC-LAC Trauma Center.

EXECUTIVE SUMMARY

I hope that this paper will serve as a resource for clinicians to better understand the importance of effective patient education, and their responsibility to optimize accessibility to accurate, actionable information via technology. With a clear foundation set for what effective patient education is and its influence on the health of our patients and outcomes, clinicians will be compelled to deepen their understanding of the potential of new technology to affect change in the learning process and how it might be applied to their practice.

LEARNING OBJECTIVES

- **Discover the history and shortcomings of the traditional patient education model**
- **Gain insights necessary to optimize your current education methods**
- **Evaluate the effectiveness of emerging technologies on patient outcomes**
- **Identify your responsibility in the process of local patient education reform**

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TRADITIONAL EDUCATION MODELS

In order to understand how we may need to change our attitudes toward patient education, we must first seek to understand what patient education has traditionally been.

WHAT PATIENT EDUCATION IS

Patient education is any material, tool, or modality used to increase a patient's understanding of a particular healthcare topic. This includes direct health coaching by a trained clinician or educator, and in-person forums such as lectures and health fairs. As well as pamphlets, flyers, brochures, websites, videos, learning management systems, and other print and media formats. Whether it is a one-on-one conversation held between provider and patient / patient representative, or the result of a self-guided internet search, if the source seeks to educate, it is a form of patient education. The broad availability of information, correct and incorrect, leads most clinicians, durable medical equipment providers, and pharmaceutical and medical device manufacturers to designate certain sources as "approved". Trusted sources may include organizations like the Centers for Disease Control (CDC), the World Health Organization (WHO), The National Health Organization, or Mayo Clinic, as well as associations like MedlinePlus, or the American Heart Association. What makes these sources credible is the involvement of peer-reviewed clinical research and active physician authority.

125.2 BILLION

MARKET WORTH

Healthcare Education Solutions Market Worth $125.2 Billion by 2025

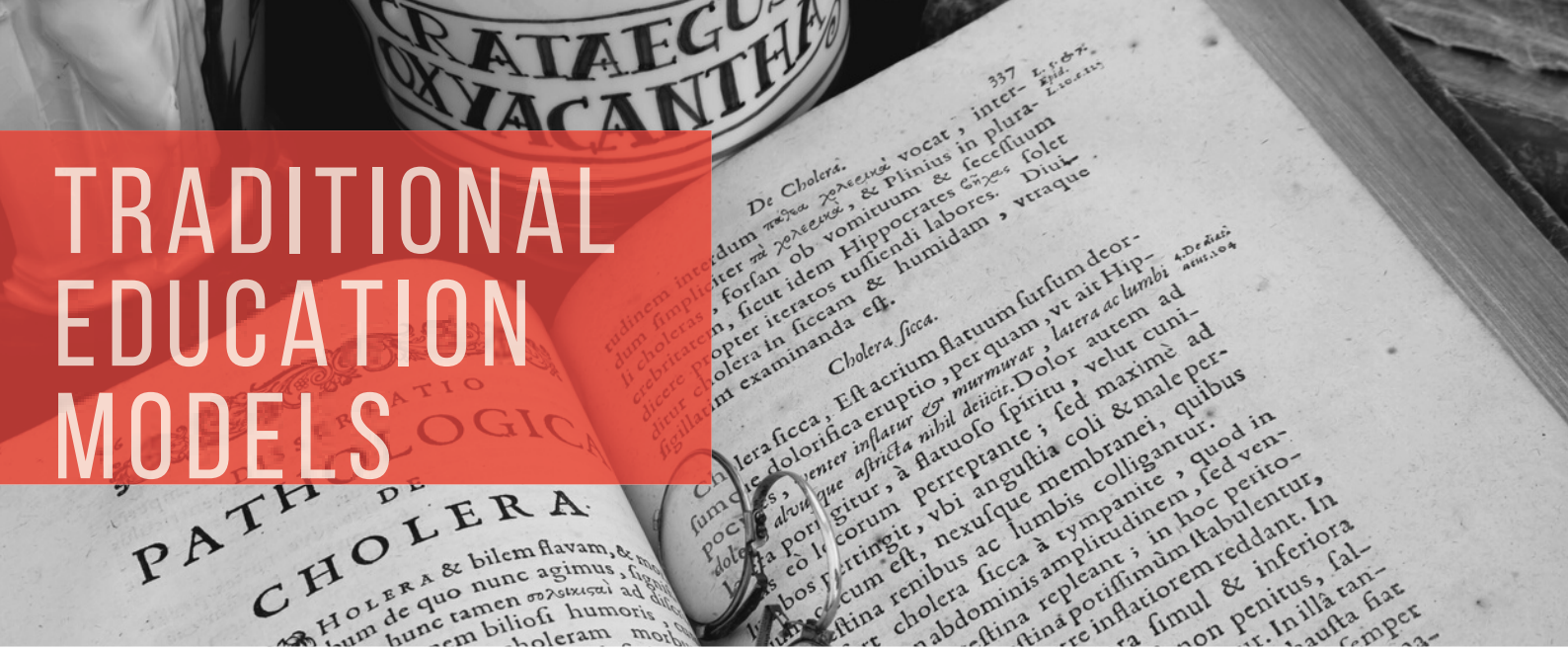
MarketsAndMarkets Report

WHAT PATIENT EDUCATION ISN'T

That said, patient education, while easily identifiable, is not necessarily useful. Something does not become useful by its mere existence. To be useful, education must be accessible, accurate, accountable, and actionable. This tetrad ensures that the information can be synthesized and used for decision support. Without accessibility it goes nowhere. Without accuracy it is more dangerous than it is helpful. Without accountability it is as valuable as the paper it was printed on. And only when the patient is capable of taking actions based on the education, which requires both understanding and inspiration, can it affect any change.

In order to achieve this quadruple aim, our attitudes toward the importance of patient education must change. In its traditional state, most patient education is considered boring, unrewarding, too complex, and too passive. Even when we consider the in-person model, the core message can suffer great variability depending on the source. To change this, and create quality education experiences that improve outcomes and reinforce evidence-based practice, we must place greater emphasis on the role of patient education in modern healthcare.

TRADITIONAL EDUCATION MODELS



TRADITIONAL EDUCATION MODELS

THE HISTORY OF PATIENT EDUCATION

Patient education is the core building block of healthcare. Even the word *doctor* means *teacher* in Latin. The term "patient education" was first documented in the 1950's, but the act of educating patients (in the US) dates back to colonial America and the family traditions believed to cure ailments like smallpox and yellow fever. Passing along medical advice from one person to another was an early form of patient education, and it suffered the same limitations of our modern one-on-one approach: inability to scale and variability. In the late 19th century physicians managed diseases like plague, cholera, and typhoid that were often related to sanitation, bad food handling practices, and other conditions. As a broader approach to healthcare education evolved public health programs like waste management and hygiene leagues were established. With improved ability to communicate consistently across the population, patient education became highly effective at curbing disease spread and reducing morbidity and mortality.

From the Jones & Bartlett course "Basic Concepts of Patient Education" chapter 2, Historical Outlook of Patient Education in American Healthcare, we learn it wasn't until the 1970's, under President Nixon, that a committee was appointed to evaluate the feasibility of a public and private healthcare education foundation. They eventually mandated through the Department of Health, Education, and Welfare that hospitals offer patient education, and would go on to insist that the American Hospital Association (AHA) had an obligation to provide patient education to all patients in healthcare institutions and include all healthcare professionals in educational activities to further improve quality care. Still, it wasn't recognized as a right until the AHA published the Patient Bill of Rights in 1973. It decreed that all patients had the right to receive information in understandable terms that would enable them to make informed decisions about recommended treatments or procedures.

Between the 1970s and our modern era - many tools and products have cropped up to serve patient education needs, with varying results. While we have certainly evolved since the times when tradesmen like barbers were using the same razor to shave a patient and perform surgery, an assessment of some of the current patient education models available shows there is still considerable work to be done.

RECOGNIZING EFFECTIVE PATIENT EDUCATION

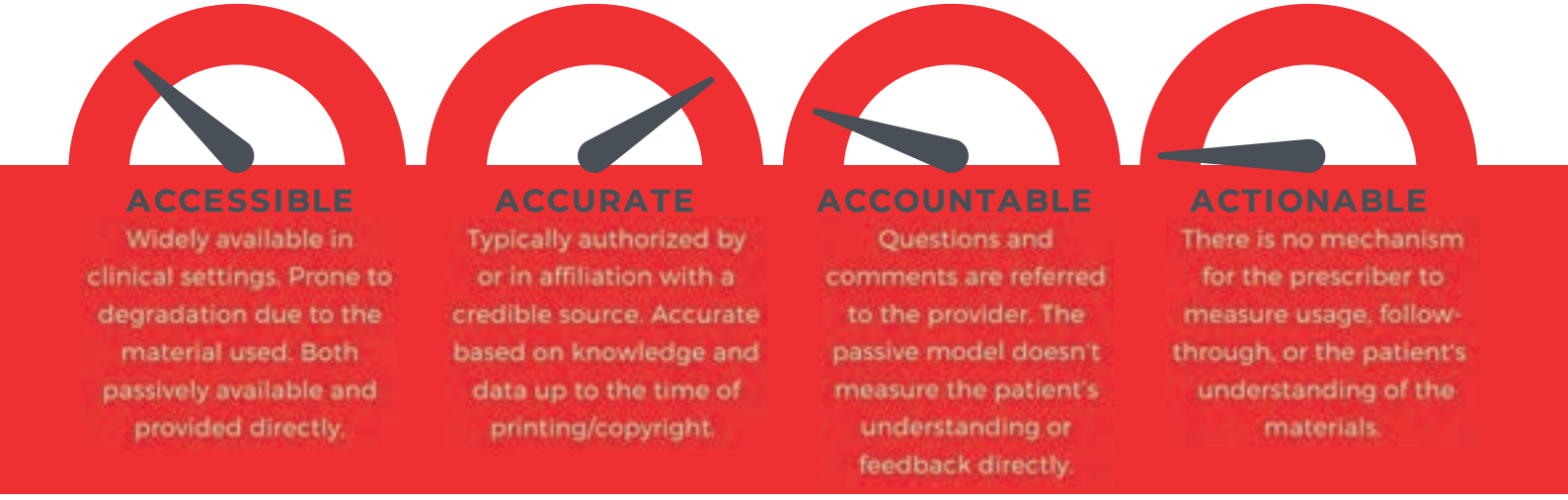
With our history lesson concluded we can begin to unravel how education success can be measured. A common medical concept, efficacy, can be used here as we evaluate what is or is not effective about these traditional models.

DEFINING "EFFECTIVE"

As previously stated, education must be accessible, accurate, accountable, and actionable to measure the degree of its effectiveness. If we consider how different formats meet these criteria - we can begin to see a picture of their effectiveness.

CASE EXAMPLE

TRADITIONAL BROCHURES



We can conclude that while highly accurate (when maintained), brochures are not always accessible compared to other mediums, and our ability to gauge the effectiveness of the material is limited in absence of an assessment mechanism. For this reason, the traditional pamphlet-on-the-wall of your physicians' office may be of little effect.

Evaluations have also been done to demonstrate the effectiveness print material has on physicians. The conclusion of one study, What is the effectiveness of printed educational materials on primary care physician knowledge, behavior, and patient outcomes: a systematic review and meta-analysis, was that "Printed Education Materials were not effective at improving patient outcomes, knowledge, or behavior of PCPs."

> "PRINTED EDUCATION MATERIALS WERE NOT EFFECTIVE AT IMPROVING PATIENT OUTCOMES, KNOWLEDGE, OR BEHAVIOR OF PCPS."

RECOGNIZING EFFECTIVE PATIENT EDUCATION

REQUIRED ATTRIBUTES

Understanding what must be achieved, we can evaluate what attributes contribute to a content source that is accessible, accurate, accountable, and actionable.

Accessibility - The quality of being easily obtained or used. 30 years ago, before the boom of online information and widespread increase in broadband access, accessibility may have been limited to in-person and print media. A lot has changed since then.

To be accessible in today's digital age, our tools must do two things. One, respect the patient's preferred communication method. This increases the likelihood of use and reduces adoption barriers. And two, eliminate the requirement that the material is obtained or consumed in one specific location. As remote medicine continues to boom following the global health crisis of 2020, telemedicine and virtual care options show no sign of slowing down. Reaching your audience where they are, and how they want to be reached, are non-negotiable keys to accessibility. The access to health education should not stop at the end of the office visit.

396.7 BILLION

REMOTE MEDICINE MARKET BY 2027

Following a 91.7% growth in 2020

Fortune Business Insights Report

RECOGNIZING EFFECTIVE PATIENT EDUCATION

REQUIRED ATTRIBUTES [CONT.]

Accuracy - The state of being correct or precise. If accessibility alone were the only quality required for patient education to be effective, any internet search result would achieve the goal. The world wide web is, by nature, widely accessible to all patients. However, accessibility without accuracy breeds misinformation and deepens the mistrust of sound medical science. In my practice, 70% of the time I spend on in-office education is focused on combating the misinformation my patients have picked up from other sources.

CASE EXAMPLE

VACCINE HESITANCY

Even before a global COVID-19 pandemic, vaccine hesitancy was listed on the World Health Organization's Top 10 Threats to Global Health list, in 2019. "Vaccine hesitancy – the reluctance or refusal to vaccinate despite the availability of vaccines – threatens to reverse progress made in tackling vaccine-preventable diseases. Vaccination is one of the most cost-effective ways of avoiding disease – it currently prevents 2-3 million deaths a year, and a further 1.5 million could be avoided if global coverage of vaccinations improved." According to the WHO, the reasons why people choose not to vaccinate are complex but, "lack of confidence" is a key reason for underlying hesitancy and, "health workers, especially those in communities, remain the most trusted advisor and influencer of vaccination decisions, and they must be supported to provide trusted, credible information on vaccines."

With misinformation rampant, patients consistently look to their trusted healthcare provider for accurate information. This puts a particular responsibility on the local caregiver to provide access to the most accurate information possible.

70%

"...OF THE TIME I SPEND ON IN-OFFICE EDUCATION IS FOCUSED ON COMBATING THE MISINFORMATION MY PATIENTS HAVE PICKED UP FROM OTHER SOURCES."

RECOGNIZING EFFECTIVE PATIENT EDUCATION

REQUIRED ATTRIBUTES [CONT.]

Accountable- Capable of being explained or explainable. Providers assume that patients understand the material given to them or explained to them. Currently, there is very little accountability in patient education. We simply do not know if patients understand the material or what we tell them in person. We frequently have to repeat the information in the hopes that it will eventually stick.

Ironically, providers frequently document that "patient understands" the goal and expected outcomes of their treatment, without evidence to substantiate the claim. This gap in accountability looms even larger in our minds when things do not go as expected with our patients. In the complex world of healthcare, making patients' education accountable is critical in setting the stage for their anticipated outcomes to care and treatment.

Actionable- Giving sufficient reason to be acted upon or have practical value. I noted earlier that for something to be applied, one must understand it and be inspired by it. You can not act on information you do not understand and you will not act on information that you aren't persuaded by. Likewise, it cannot achieve the goal of patient education described in the Patient's Bill of Rights (that would enable them to make informed decisions about recommended treatments or procedures) ie. be an effective decision support aid, if it results in no movement towards a decision, or action.

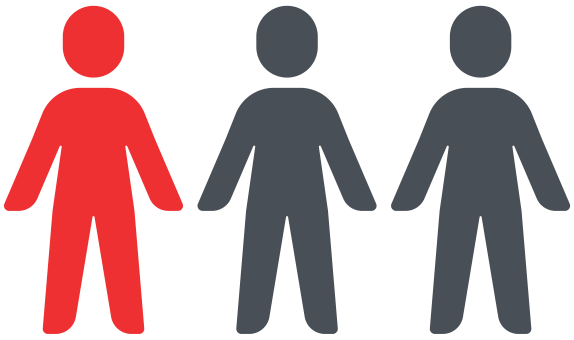
Consider the patient with a new diagnosis of diabetes mellitus. You've given them access to two-dozen peer-reviewed studies on the relationship between diet and exercise as it correlates to the progression of their disease. They have the papers printed and collated, and you've even highlighted portions of particular interest. Despite achieving access to accurate information, your patient remains non-compliant with their care plan. Why? In this case, emphasis was given to access and accuracy with no consideration for how understandable or inspiring the content was, therefore no application of the information happened. The patient didn't understand the medical terminology used or the construct of the papers, and they were left uninspired to make any necessary diet and lifestyle changes. To change it up, what if you had provided the information in layman's terms, with a strong focus on that particular patient's social determinants of health (SDOH), and included easy-to-follow graphics throughout? This would surely help, but, if the information still did not strongly engage the patient and inspire them with specific calls to action - they may be entertained and informed by it and still not apply what they have learned. Actionable information must be both understandable and inspirational from a trusted source

THE ROLE OF EDUCATION IN HEALTH LITERACY

Health literacy is the ability to obtain, read, understand, and use healthcare information to make appropriate health decisions and follow instructions for treatment.

IS IT REALLY A PROBLEM?

Effective patient education provides the knowledge necessary for patients to play an active role in their healthcare, and with increased knowledge comes improved health literacy - or the ability to translate education to knowledge to action. According to the National Center for Education Statistics, There are an estimated 77 million people with inadequate health literacy in the US today, the equivalent of 1 in 3 US adults. This is found most predominantly in adults over 65 - a segment of the population facing an increased need for healthcare.



1 IN 3 AMERICANS

OR 77 MILLION PEOPLE

HAVE INADEQUATE HEALTH LITERACY

THE ROLE OF EDUCATION IN HEALTH LITERACY

THE COST OF LOW HEALTH LITERACY

Low health literacy has been estimated to cost the US economy between $106 billion and $236 billion annually according to the business case report, Low Health Literacy: Implications for National Health Policy - published by the Milken Institute School of Public Health, an authority on public health, accredited by the Council on Education for Public Health. That same report found that the majority of those with low health literacy skills in the United States are white, native-born Americans - as they represent the largest segment of the population. However, ethnic minority groups are disproportionately affected by low health literacy, and others who are especially vulnerable to low health literacy are older patients, recent immigrants, people with chronic diseases, and those with low socioeconomic status.

$106-236 Billion

dollar per year
cost to the US economy

A similar study, Health Literacy Impact on National Healthcare Utilization and Expenditure, found that for those patients who do have to seek care, having low health literacy, their care is estimated to be 4x as costly and results in longer lengths of stay. On average their hospital care is increased by $993.00 per admission and the institutional impact to hospitals is somewhere in the range of 12.6 Billion per year.

THE ROLE OF EDUCATION IN HEALTH LITERACY

SIGNS OF LOW HEALTH LITERACY

Low health literacy does not discriminate and can be present in all tiers of society and people of all backgrounds. By the virtual fact that a person has a higher degree does not mean they understand health care issues. Some common warning signs to watch out for include:

- **Incomplete or inaccurate registration forms and other paperwork**
- **Frequently missed appointments**
- **Nonadherence with medications or assigned treatment programs**
- **An inability to name their medications or explain why they are taken**
- **Lack of follow-through with laboratory tests or referrals**

THE ROLE OF EDUCATION IN HEALTH LITERACY

IMPACTS OF MISINFORMATION

Education, as the transfer of information, can be categorized into accurate (as described earlier) and inaccurate or, misinformation. As it relates to healthcare this is known as health misinformation. When we discuss the impacts of education on health literacy, a clear case example comes to mind. At the height of the COVID-19 pandemic, misinformation abounded, and in response, we began to see the aforementioned vaccine hesitancy, and general reluctance to follow medical advice. Reliance on internet searches and social media greatly influenced this. By design, most major search engines display search results based on popularity or your personal browsing history, it's how they target you with highly specific ads, and unfortunately why you may be more likely to see one version of "truth" over another. The result is bias and unchecked misinformation. In response to this, the US Surgeon General issued the following advisory:

> **I AM URGING ALL AMERICANS TO HELP SLOW THE SPREAD OF HEALTH MISINFORMATION DURING THE COVID-19 PANDEMIC AND BEYOND. HEALTH MISINFORMATION IS A SERIOUS THREAT TO PUBLIC HEALTH. IT CAN CAUSE CONFUSION, SOW MISTRUST, HARM PEOPLE'S HEALTH, AND UNDERMINE PUBLIC HEALTH EFFORTS. LIMITING THE SPREAD OF HEALTH MISINFORMATION IS A MORAL AND CIVIC IMPERATIVE THAT WILL REQUIRE A WHOLE-OF-SOCIETY EFFORT.**

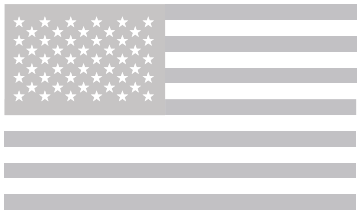
Not a light commentary on the destructive potential misinformation has on health literacy.

THE ROLE OF EDUCATION IN HEALTH LITERACY

IMPACTS OF MISINFORMATION [CONT.]

A second example is found in the late 1990s, where a poorly designed study found the link between the MMR vaccine and autism which led to lower immunization rates for the next two decades, even after the study was retracted. This is well documented in the article, The MMR vaccine, and autism: Sensation, Refutation, Retraction, and Fraud, and the results of the misinformation were far-reaching,

"Appallingly, parents across the world did not vaccinate their children out of fear of the risk of autism, thereby exposing their children to the risks of disease and the well-documented complications related thereto. Measles outbreaks in the UK in 2008 and 2009 as well as pockets of measles in the USA and Canada were attributed to the non-vaccination of children. The Wakefield fraud is likely to go down as one of the most serious frauds in medical history."



EDUCATION AS A FOUNDATION FOR ENGAGEMENT

The ability to educate patients, and how that education impacts their health literacy is a fairly understandable concept. One that may become less clear when well-meaning healthcare professionals misuse terminology. The terms education, engagement, and activation - while interconnected, are not interchangeable.

BEHIND THE BUZZWORDS: EDUCATION VS. ENGAGEMENT VS. ACTIVATION

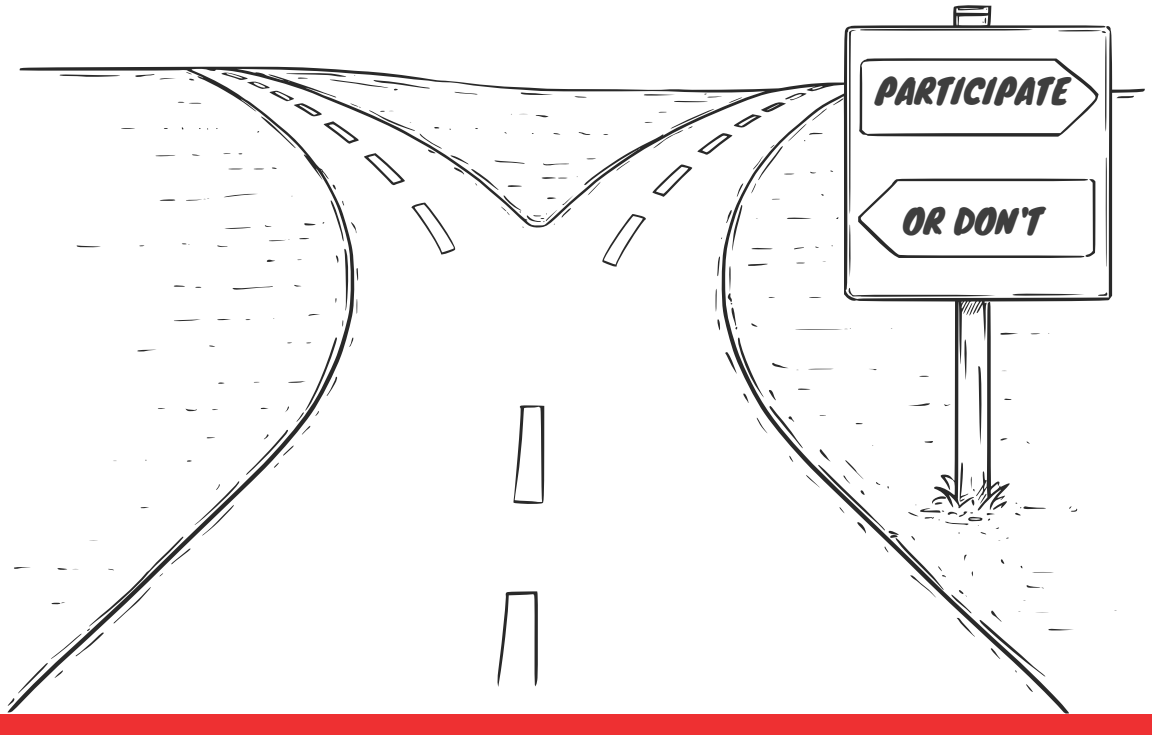
Education: Your ability to be seen as a reliable resource to your patients is bedrock to patient engagement. Naturally so. Do you want to engage more deeply with people who have nothing to contribute to the conversation? Do you seek out ways to get closer to people for whom you have little respect or trust? No. Like you, patients have little use for engaging with someone who does not add meaningful value. Sure, they may get a prescription, you may get a co-pay, but this transactional medicine does not foster long-lasting health. Your value as a physician is in your ability to establish trust and communication that leads to improved health outcomes. Patients who trust their physicians will seek out their knowledge, or at the very least be receptive to it. If your patient doesn't trust you, they won't believe much of what you have to say - and if they doubt you, they won't engage you - they'll fact-check you and reject your attempts to get more involved.

> **TRANSACTIONAL MEDICINE DOES NOT FOSTER LONG-LASTING HEALTH.**

EDUCATION AS A FOUNDATION FOR ENGAGEMENT

BEHIND THE BUZZWORDS: EDUCATION VS. ENGAGEMENT VS. ACTIVATION [CONT.]

Engagement: Patient engagement has been credited with improved outcomes and satisfaction, yet the term has been used broadly without a common definition. In their paper, Unraveling the meaning of patient engagement: A concept analysis , Higgins et. al concluded that patient engagement could be defined as, "the desire and capability to actively choose to participate in care in a way uniquely appropriate to the individual, in cooperation with a healthcare provider or institution, to maximize outcomes or improve experiences of care." In other words, it's the conscious decision of a patient to participate in their care, how they can, with the support of their caregivers, improve their experience and results. It is both a process and behavior and is shaped by the relationship a patient has with their provider. Engagement is optional since it's a matter of choice for the patient. But for it to become a viable option to the patient they must first trust. Effective education breeds trust and relationships which breeds the opportunity for more meaningful engagement, ultimately leading to patient activation.



EDUCATION AS A FOUNDATION FOR ENGAGEMENT

BEHIND THE BUZZWORDS: EDUCATION VS. ENGAGEMENT VS. ACTIVATION [CONT.]

Activation: "Activated patients—are patients who have the motivation, knowledge, skills, and confidence to make effective decisions to manage their health" According to Jessica Greene Ph.D. and Judith H. Hibbard, Dr, PH in their published article, Why Does Patient Activation Matter? An Examination of the Relationships Between Patient Activation and Health-Related Outcomes.

They systematically evaluated the level of activation across more than 24,000 patients to identify the correlation between activation and outcomes, and to do so they used the Patient Activation Measure or PAM. The PAM tool assesses one's knowledge, skills, beliefs, and confidence for managing health and health care. At the low end of the PAM scale, people are typically passive recipients of care and do not believe in the need for an active patient role. At the high end of the activation scale, people are proactive about their health and engage in many recommended health behaviors. They determined that activation related to 12 of 13 outcomes in the expected direction. Patients with a lower activation score were less likely to seek preventative screenings, had an increased incidence of cancer(s), and were more likely to smoke, be obese, or require emergency care. Conversely, patients with a higher activation score were more likely to have received preventive care, less likely to smoke or have a high BMI, and had better clinical indicators (such as labs and vital signs). They were also less likely to have been hospitalized or have used the ED.

HEALTH OUTCOMES AND PATIENT ACTIVATION

LOW ACTIVATION

- Less likely to seek preventative screenings
- Increased cancers
- More likely to smoke
- More often obese
- Higher ED utilization

HIGH ACTIVATION

- Received more preventative care
- Less likely to smoke
- Less likely to be obese
- Improved vital signs
- Lower hospital and ED utilization

Results like these are not new, but they should be exciting - they underscore the importance of patients participating in their care, a choice they feel empowered to make with proper engagement as the result of trust established via education. Can you see the threads beginning to come together? Education, engagement, and activation are interwoven concepts that contribute to a broader understanding of our healthcare system.

BUILDING BETTER PATIENTS

How does a physician build a better patient? We've already seen that patients receiving effective education are more likely to engage and become active participants in their care - and we've learned that more active patients are more likely to have better overall health and outcomes. But there are two additional ways that a more informed patient becomes a better patient.

INCREASING OWNERSHIP

Improving a patient's understanding of a concept shifts responsibility back to the only person capable of change, the patient. A better-informed patient regardless of their activation level is at the very least capable of making positive decisions for themselves. Since knowledge and confidence are prerequisites to active participation, we know that education must come before decision-making. Patients may ultimately choose to disengage, but they lack the opportunity to make that choice without effective education. If we properly educate, we give our patients the power of choice. They then become more responsible for those choices. When given responsibility patients become capable of learning from themselves and realizing the influence their actions have. They become active stakeholders in their healthcare and are no longer "told" what to do. Rather they are guided to better health.

6 OUT OF 10 PEOPLE

WITH CHRONIC CONDITIONS

DO NOT HAVE CONFIDENCE IN THEIR HEALTHCARE OR CHOICES

BUILDING BETTER PATIENTS

ANXIETY, AN AVOIDABLE DANGER

Another byproduct of improving patient education is the effect knowledge may have on anxiety. Many people experience anxiety when it comes to undergoing a treatment or procedure. Sometimes referred to as surgical anxiety, it is a feeling of worry, nervousness, or unease about an imminent event with an uncertain outcome in healthcare. Essentially, a fear of the unknown. Surgical anxiety may present as rapid heart rate, elevated blood pressure, chest tightness, nausea, or other symptoms of a panic attack. Increased surgical anxiety may result in increased utilization of anti-anxiety medications, sedatives, and pain medications and disengagement from the healthcare system. We have all had patients who did not come in to see us in time because they were simply too fearful.

CASE EXAMPLE

ANXIOUS PATIENT

In my practice, I often have to operate on patients with degenerative conditions more than once as a disease progresses. I have observed that patients provided enhanced education tools before their procedure are less likely to require sedation for procedures that are typically done with local or regional anesthesia only. One patient explained it to me this way, "The app you gave me made me so much more comfortable with the procedure and I now believe I'm taking the right step, and can do so with confidence." She subsequently did not experience the anxiety she had with previous procedures and was able to undergo her operation with local anesthesia only, reducing risks posed by added sedation.

ANXIETY, AN AVOIDABLE DANGER [CONT.]

But the power to reduce anxiety may be further reaching. Whitecoat hypertension is characterized by a patient's variability in blood pressure between their home environment and in a clinical setting, and it may even lead to the misdiagnosis of patients as having true hypertension as opposed to a stimulant response as is the case with white coat hypertension. A classical conditioning model noted in the paper The Misdiagnosis of Hypertension, suggests that white coat hypertension is the result of unpleasant experiences (such as a bad diagnosis or painful procedure) becoming associated with visual cues like the white coat itself or the appearance of an examination room which elicits the anxiety and elevated BP.

In their study White coat hypertension: improving the patient–health care practitioner relationship, the authors concluded "White coat hypertension may be addressed through the development of a therapeutic relationship between physician and patient. Effective communication and relationship building can reduce the patient's anxiety about their illness and their interaction with a physician."

Because patients can develop conditional responses to stimuli by directly observing the reactions of others, parents can pass these anxieties on to their children by demonstrating them in their presence. The Mayo Clinic encourages parents to seek help with their phobias because "repeatedly seeing someone else's phobic reaction can trigger a specific phobia in children." Addressing anxiety by improving the patient-provider relationship, establishing trust, and supplying patients with effective education to empower their decision-making can, then:

Reduce reliance on high-risk medications and have lasting, generational, impacts.

MAKING DOLLARS AND SENSE

As we've shown, our older and more marginalized communities are at increased risk of negative impacts to their healthcare from low health literacy. We've also traced some of the root causes for low health literacy, to the patient's inability to be activated - which, among other factors, stems from a lack of access to accurate, actionable, education. Because older populations have an increasing reliance on healthcare as they age, and the likelihood of more expensive interventions increases - there is a greater savings opportunity for improving their health literacy, an exponential opportunity for the elderly in certain minority groups. According to the study, Racial/ethnic disparities in the use of preventive services among the elderly,

"Despite near-universal coverage by Medicare, racial/ethnic disparities in the use of some preventive services among the elderly persist." As a result, these patients are at an increased risk for numerous, preventable, costly, diseases."

EDUCATION'S ROLE IN BUNDLED PAYMENTS

Traditionally, Medicare makes separate payments to providers for each of the individual services they furnish to beneficiaries for a single illness or course of treatment. According to the Centers for Medicare and Medicaid Services, "This approach can result in fragmented care with minimal coordination across providers and health care settings. Payment rewards the quantity of services offered by providers rather than the quality of care furnished." Bundled payments aim to align and incentivize care providers across the healthcare settings to work together toward the goal of increasing quality and care coordination at a lower overall cost to Medicare.

MAKING DOLLARS AND SENSE

EDUCATION'S ROLE IN BUNDLED PAYMENTS [CONT.]

There are several types of bundled payments, applicable to various care settings, and sometimes variable by Diagnostic Related Conditions (DRG) - for our purposes we will be discussing the overarching Bundled Payments For Care Improvement (BCPI) initiative. Established in 2013, it was one of the first CMS Innovation Center episode-based payment model tests. To aid awardees (or participating providers) in the successful adoption of bundled payment strategies, CMS released a public toolkit, which outlines numerous tools and tactics providers can use. Among the suggested primary drivers:

- Strategic partnerships to promote care coordination and data sharing
- Efficient and appropriate staffing models
- Patient identification and risk stratification
- Effective clinical and financial management
- **Patient and family engagement throughout the care continuum**
- Data-driven program management
- Continuous quality improvement

To implement "patient and family engagement throughout the care continuum", it is recommended that providers:

- ☑ Communicate and engage with providers, patients, and family throughout the episode by providing ongoing care and support
- ☑ Create touchpoints throughout the care continuum to engage the patient and prevent avoidable readmissions
- ☑ Engage patient and family through education and shared decision-making in discharge planning and placement decisions to support patient rights and preferences

Among the tactics to support this effort, CMS recommends that providers educate and engage patients in self-care while respecting patient choice and offer pre-education courses to discuss procedures, plans of care, and pre-anesthesia assessments (PAC).

The emphasis on effective education and communication among patients and their care team(s) is echoed throughout every bundled payment model, underscoring its ability to influence the quality of care, outcomes, and eventual provider reimbursement.

MAKING DOLLARS AND SENSE

REDUCING WORKFLOW INTERRUPTION

My colleagues will agree, these tactics and initiatives are all well-meaning, and have certainly demonstrated an effect on improving care quality and cost. But many will argue that there simply isn't enough time per visit to personalize a patient's education experience to the degree that it enhances their health literacy. After all, many of us have undertaken decades of education and practice to gain the knowledge we have, something impossible to pass on with mere minutes per patient. I found this to be true in my practice. Not only is there not enough time, but also attempts to spend more 1:1 time with a particular patient impedes workflow, and after all - patients forget up to 80% of what they've learned by the time they've left the building, and almost 50% the information they say they do remember, they remember incorrectly according to the study Patients' Memory for Medical Information.

80%

OF EDUCATION IS IMMEDIATELY FORGOTTEN

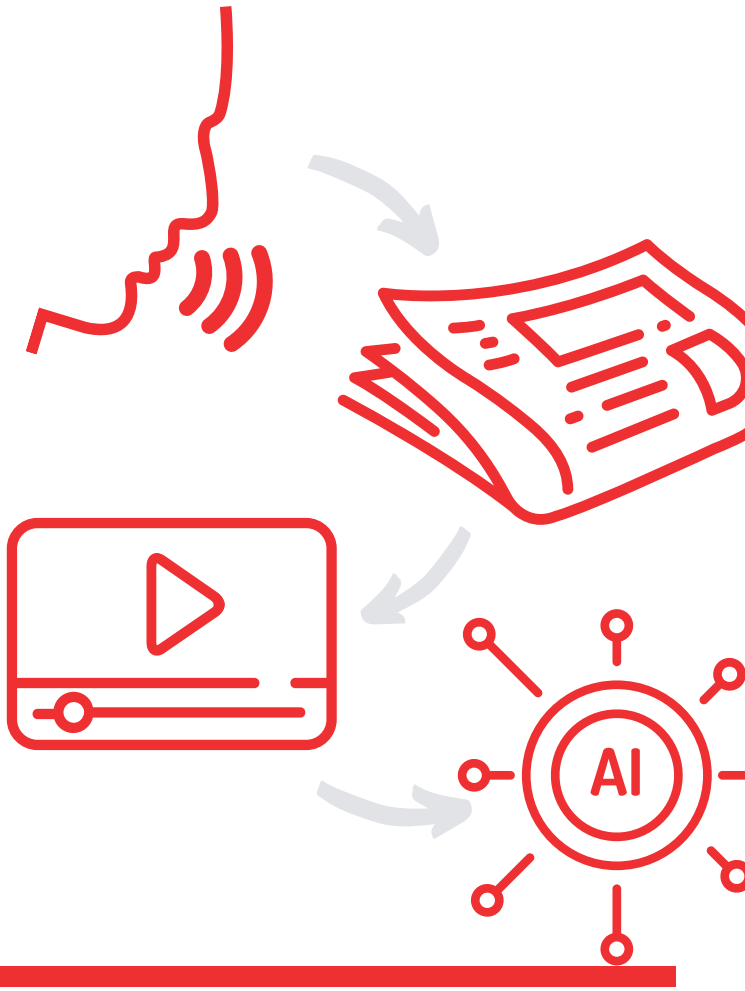
And while the burden of education on one practitioner may be alleviated by the use of health coaches, mid-levels, and care navigators, or by the segmentation of patients into more focused disease-specific clinics, these resources are not available to all and require training, management, and oversight to ensure the proper education is being dispensed. What is available is more efficient, highly scalable technology designed to address the gaps in patient education.

VIRTUAL LEARNING ENVIRONMENTS

Virtual learning tools and environments aim to address the barriers to the effective distribution and measurement of patient education. Their ability to provide access to accurate, accountable, actionable, education regardless of the patient's location and on a massive scale, makes them a logical solution to address health literacy and improve outcomes.

HOW THEY HAVE EVOLVED

From word of mouth to print, to media, tools for disseminating patient education have always evolved alongside technology. Leaps forward in interactive media and artificial intelligence have been no exception. Along with these advancements we have seen new players enter the arena, bringing with them systems capable of delivering highly precise education and follow-up as both standalone solutions and solutions capable of integrating with a patient's electronic medical record.

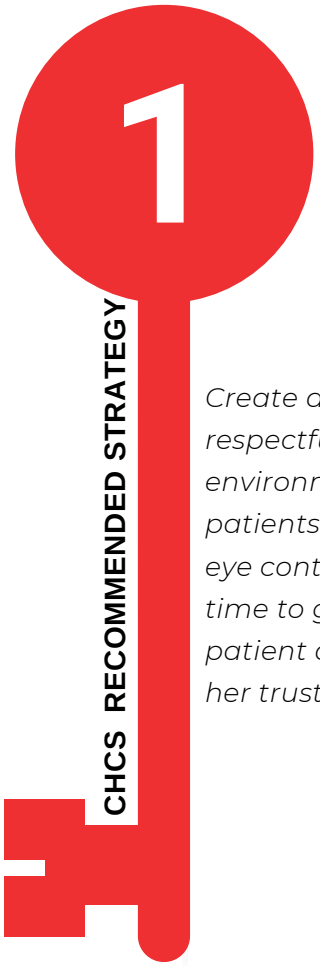


VIRTUAL LEARNING ENVIRONMENTS

USING PROVEN TECHNIQUES IN TECHNOLOGY

When a technology seeks to create an alternative or adjunct to the in-person model, it must still strive to duplicate the human connection and all that comes with it, while doing an even better job in automating the routine, repetitive tasks. Doing the latter – achieving better consistency, precision, thoroughness in the delivery of the educational material, and tracking of the whole process – is the easier part that can be taken care of with good upfront prep work. The difficult part for technology to achieve is the former: Duplicating a human connection, and not an average connection, but a good one.

The Center For Healthcare Strategies Improving Oral Communication to Promote Health Literacy Fact Sheet identifies **4 key ways health information can be delivered more effectively**. For reference, the chart below contains the recommended strategy, and as an example - how a virtual learning tool, in this case HIA TOPICS™, can incorporate the advice.



Create a safe and respectful environment. Greet patients warmly. Make eye contact. Take the time to get to know the patient and earn his or her trust.

TECHNOLOGY RESPONSE | HIA TOPICS™

In the case of HIA TOPICS, this starts with a familiar human form (a digital human) which is introduced to the patient right at the beginning as a representative of the patient's provider. The patient is assured that the digital agent on the screen speaks the words his/her provider wrote (or explicitly approved). On the visual side, this is accompanied by sympathetic, reassuring facial expressions and context-aware gestures which are designed to put a more natural and friendly face to the interchange. Because patients are aware the digital agent is not a real person, they are comfortable asking questions they may not have otherwise asked.

2

CHCS RECOMMENDED STRATEGY

Use speech that is easy to understand. Slow down your speaking pace. Limit content to a few key points. Be specific and concrete, not general. Use words that are simple and familiar. Avoid complex technical jargon or acronyms.

TECHNOLOGY RESPONSE | HIA TOPICS™

Strong communication organizes key points into a logical flow, is simple, direct, and well-paced. Our content takes all of this into account. Each concept builds upon the next and great attention is given to the structure to proactively address common concerns. Text-to-Speech delivery is calibrated to match in-person conversation, and pauses and pacing can be further tailored for emphasis.

3

CHCS RECOMMENDED STRATEGY

Keep the individual engaged in the conversation. Use pictures, physical models, videos, or interactive media to aid technically complex conversations. Get to know what the patient cares about most – family, friends, work, hobbies – and incorporate those into your health discussions.

TECHNOLOGY RESPONSE | HIA TOPICS™

The on-screen actions of digital agents, visual aids within the presentation, and the periodic insertion of video components - allow the HIA TOPICS™ tool to remain engaging throughout the learner's experience despite the average 8-second attention span. And, because the patient can interrupt with questions and get live answers from our voice-enabled, physician-authored AI, it becomes a two-way conversation where patients are free to ask what they want. As an output of the discussion, providers can review the conversation details and learn more about what matters to their patients - and then incorporate that learning in all aspects of their professional practice.

4

CHCS RECOMMENDED STRATEGY

Confirm patient understanding. Ask the individual to "teach-back" the information you have imparted. Remind the individual that many people have difficulty understanding the materials. Summarize key points.

TECHNOLOGY RESPONSE | HIA TOPICS™

The HIA TOPICS™ interactive quiz module design was formed by the proven teach-back model. By asking specific questions, the system can determine whether the materials were effective enough (ie. the patient answers correctly) or, if they weren't, it can then expand on that concept, summarize key points, and re-assess. The records of this interaction validate the patient's participation and understanding, and over time can help physicians and content creators refine their teaching to be more effective.

VIRTUAL LEARNING ENVIRONMENTS

ADDRESSING OBJECTIONS

Clinicians have always taken a measured approach to adopt new technologies. Common concerns and reactions I hear from physicians, related to implementing new technologies are:

"What happens if I miss something "the computer" says I should pay attention to?

If the system is wrong or has bad information, what's my liability?

How much time will it take me or my staff to maintain it?

What about the hidden costs like implementation fees or integration?

If it works, doesn't it mean it will replace my staff, should they be concerned?

My patients only want to hear from me.

You can't trust technology."

Each of these statements is completely valid and deserves a response from any potential technology partner you may be considering. If they cannot address these common objections - run! A quality solution provider will understand these fears well, and offer risk mitigations to address your aversions, transparency to ease resource guarding, and respect your inherent desire to maintain a position of authority and autonomy. The right partner will possess a solution designed to work for you, not increase the workload on you, and one capable of measurable success.

Just as misinformation threatens healthcare outcomes, unaddressed objections are loopholes to poor product development. In my role as Chief Medical Officer at HIA Technologies, Inc. I understand firsthand the responsibility vendors have to account for these perceptions and the value of a product that is designed to answer these concerns.

VIRTUAL LEARNING ENVIRONMENTS

AUGMENTING THE CLINICAL WORKFORCE

One of the resource-guarding responses we just mentioned, is the expressed fear that new technologies will replace staff, and it's not an unfounded fear. The Industrial Revolution showed us the capacity for advanced technology, particularly in manufacturing, to displace human workers or transform them into machine operators. Likewise, in modern medicine, systems continue to evolve to become more diagnostic and even outperform clinicians. In the article, International evaluation of an AI system for breast cancer screening, we learn that artificial intelligence outperformed radiologists in the early detection of breast cancer "by absolute reduction of 5.7% and 1.2% (USA and UK respectively) in false positives and 9.4% and 2.7% in false negatives." If we stop there it certainly sounds like an argument for the diagnostic superiority of technology. However, the report concludes that the AI system was most effective when used as part of a second-reader process, where it also demonstrated the ability to "reduce the workload of the second reader by 88%". This, and other studies, suggest that the greatest value of advanced technologies is seen when they're used to augment or complement the clinician, rather than replace them, and where AI can be applied to sort out complex data in very specific and narrowly defined applications.

88% REDUCTION

ON SECOND READER

When AI was used as part of a double-reading process in evaluation of mammograms

VIRTUAL LEARNING ENVIRONMENTS

TRADITIONAL VS. PHYSICIAN-CONTROLLED AI

An example of this augmentation, which I am intimately familiar with is the use of AI in doctor-patient communications. With all the hype about AI out there, it is tempting to think that traditional AI can be readily applied to doctor-patient communications, especially as related to the education of the patient, since there is an enormous amount of data online waiting to be put to use, along with huge resources (from Big Tech companies like IBM, Google, Microsoft, Amazon) to apply machine learning to improve it over time. As grand an idea as this may be, we have already learned some hard lessons from the failures of several mega projects (e.g. IBM Watson) in this area when clear boundaries are not built into this exercise.

CASE EXAMPLE

TRADITIONAL AI GONE BAD

Researchers at Nabla, a Paris-based firm specializing in healthcare technology, set out to determine how capable a form of AI (GPT-3) would be in providing clinical support. Among the tests performed was a conversation between the AI and a fake patient seeking mental health support. The result? The AI recommended suicide.

The problem here is that the traditional AI approach lacks not only direct medical expertise, but also situational awareness, empathy, and many other human characteristics - which is how real clinicians limit and constrain their conveyed responses to their patients in real life as well as personalize the information.

VIRTUAL LEARNING ENVIRONMENTS

TRADITIONAL VS. PHYSICIAN-CONTROLLED AI [CONT.]

What happens when you flip the script, and the clinician becomes the author behind the AI, as is the case with physician-controlled AI? Physician-controlled AI, by design, cannot respond to a patient query with anything other than a physician-authored response. This control, in effect, governs the system's ability to respond accurately. When the system cannot "think up" its own answers, risks are greatly reduced. This does, however, require physicians to invest upfront in the authoring process.

> **BY PARTICIPATING IN THE AUTHORING PROCESS OF THE UNDERLYING AI, I ENSURE MY PATIENTS GET THEIR ANSWERS FROM ME, NOT "DR. GOOGLE'', AND THEIR HEALTHCARE EDUCATION IS NOT LEFT TO CHANCE.**

In my practice, I use HIA TOPICS for virtual patient education, which leverages this physician-controlled AI to interact conversationally with patients as they're guided through the live presentation of evidence-based education materials I have personally deputized to represent my expertise and experience. By participating in the authoring process of the underlying AI, I ensure my patients get their answers from me, not "Dr. Google'', and their healthcare education is not left to chance.

A BETTER WAY FORWARD

Knowing what we do about the impacts of effective patient education, we are ethically responsible to respond to it. As clinicians we understand the evolutionary nature of medicine, how what we once knew to be "true" is changed as science and data deepen our understanding. Many physicians, myself included, have held to the belief that we do our best to provide patients with effective education already. But do we? Considering the leap forward that Virtual Learning Environments have made, can we honestly say that we are doing the right thing by keeping education confined to the methods of the past? Is there a better way forward?

RECOGNIZING POOR EDUCATION UPTAKE IN YOUR PRACTICE

There are ways you can know if patient education is effective in your practice and we covered several in **Signs of Low Health Literacy**, but other signals include:

- Slow decision making related to procedures
- Buyers-remorse, or patients saying they regret clinical decisions they've made
- Poor satisfaction scores, particularly around communication
- More time spent combating misinformation
- Decreased patient retention - they seek care elsewhere
- Your staff feels overworked or undervalued
- Avoidable readmissions
- Preventable complications
- Medication-related fallouts

If you're seeing any of these red flags in your practice, it is symptomatic of your patient's learning deficiency. So we must ask ourselves, have we done everything possible to increase the availability of effective education?

A BETTER WAY FORWARD

APPLYING WHAT YOU'VE LEARNED

Like with all things, the first step to change is identifying the need for improvement. Once we have, and we see that mechanisms for improvement exist - we must then determine what investment we are capable of making towards that improvement. For some, it will be adopting new technologies to augment their educational practices. For others, it may be contributing to the ongoing research and development of these virtual learning environments directly. Whatever your capacity for change, I implore you to react to what you have learned. Get involved in the solution. Evaluate the opportunities for improvement you have at a local level, apply what you have learned, adopt solutions designed to address these needs.

Change is still needed at a larger level, and it's brewing. Payors and programs are becoming increasingly aware of the role of effective patient education. I implore healthcare providers to be proactive and not wait for the mandates to come. We are leaders, and we are responsible for the results we can begin to have today. The longer we wait, the more our patients and their families will suffer. Here are some steps you can take today:

- **Evaluate the effectiveness of your current patient education**
- **Identify solutions that fill the gap in your current practice**
- **Leverage technologies that reinforce the relationship between patient and provider**
- **Partner with a vendor to memorialize your knowledge and expertise**
- **Continue to refine your approach through the application of best practices**
- **Never stop learning and advocating for learning**

THANK YOU

DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

Dr. Alidad Ghiassi is the Chief Medical Officer of HIA Technologies, Inc., and an investor at the time of this article. Opinions expressed are his own and do not necessarily reflect those of HIA Technologies Inc. or the medical institutions affiliated with Dr. Ghiassi. The remaining authors have no conflicts of interest to declare.

CITATIONS

Higgins T, Larson E, Schnall R. Unraveling the meaning of patient engagement: A concept analysis. Patient Educ Couns. 2017 Jan;100(1):30-36. doi: 10.1016/j.pec.2016.09.002. Epub 2016 Sep 3. PMID: 27665500.

Greene J, Hibbard JH. Why does patient activation matter? An examination of the relationships between patient activation and health-related outcomes. J Gen Intern Med. 2012;27(5):520-526. doi:10.1007/s11606-011-1931-2

Cobos B, Haskard-Zolnierek K, Howard K. White coat hypertension: improving the patient-health care practitioner relationship. Psychol Res Behav Manag. 2015;8:133-141. Published 2015 May 2. doi:10.2147/PRBM.S61192

Ogedegbe G, Pickering TG, Clemow L, et al. The misdiagnosis of hypertension: the role of patient anxiety. Arch Intern Med. 2008;168(22):2459-2465. doi:10.1001/archinte.168.22.2459

Chen JY, Diamant A, Pourat N, Kagawa-Singer M. Racial/ethnic disparities in the use of preventive services among the elderly. Am J Prev Med. 2005;29(5):388-395. doi:10.1016/j.amepre.2005.08.006

McKinney SM, Sieniek M, Godbole V, et al. International evaluation of an AI system for breast cancer screening. Nature. 2020;577(7788):89-94. doi:10.1038/s41586-019-1799-6
Rasu RS, Bawa WA, Suminski R, Snella K, Warady B. Health Literacy Impact on National Healthcare Utilization and Expenditure. Int J Health Policy Manag. 2015;4(11):747-755. Published 2015 Aug 17. doi:10.15171/ijhpm.2015.151

Rao TS, Andrade C. The MMR vaccine and autism: Sensation, refutation, retraction, and fraud. Indian J Psychiatry. 2011;53(2):95-96. doi:10.4103/0019-5545.82529

Grudniewicz, A., Kealy, R., Rodseth, R.N. et al. What is the effectiveness of printed educational materials on primary care physician knowledge, behaviour, and patient outcomes: a systematic review and meta-analyses. Implementation Sci 10, 164 (2015). https://doi.org/10.1186/s13012-015-0347-5

Wasson JH. Regular exercise is strongly associated with anticipated success for reducing health risks. J Ambul Care Manage. 2014;37(3):273–276.

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