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The Future of Primary Care: Acknowledging Cultural Diversity, Utilizing Artificial Intelligence, and Incorporating Dentistry

INTRODUCTION

The American Academy of Family Physicians (AAFP) defines primary care as the “provision of integrated, accessible health care services by physicians and their health care teams who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community.” In other words, primary care is the overarching umbrella of medical care designed not only to be a patient’s first point of contact within the healthcare system for various needs, but also the patient’s source of continuous care over time. The significance of primary care in medical practice necessitates a profound consideration of its future and how it can be improved. In the modern world, advancements in medical research, technology, and the like are seen increasingly from day to day; if this is true, there should be no reason why progress in the realm of patient care should not closely follow, if not match, these advancements in today’s society. One way to improve patient care, particularly in the field of primary care, is to expand upon the existing Medical Home model that has proven to be a valuable and effective execution of primary care, as exhibited by the life work of Dr. James L. Holly. The Patient-Centered Medical Home (PC-MH) model, pioneered by the Southeast Texas Medical Associates, LLP (SETMA) and its founders Dr. James L. Holly and Dr. Mark A. Wilson, focuses on the delivery of quality patient care from the convenience of a single functional organization and at the lowest possible cost. In the PC-MH model, convenience and coordination are key; the presence of multiple health care providers all within the same area allows for the most convenient and efficient visits available to a patient, and collaboration and coordination between the providers streamlines the care, ultimately improving its quality. Three specific ways in which I believe the realm of primary care can expand moving forward are 1) expanding the Medical Home Model by incorporating the field of dentistry, 2) utilizing artificial intelligence to enhance patient care, and 3) acknowledging different cultural perceptions of care to better understand the patient’s point of view.

CULTURAL COMPETENCY IN THE FRAMEWORK OF PRIMARY CARE

One important aspect of all patient care is cultural competency in the provider. This is especially true for primary care, as primary care and family medicine physicians are often the first providers encountered by patients seeking general care. In such an ethnically and culturally diverse country as the United States, many of those patients will

inevitably be immigrants or those of a different background. Although the idea of cultural competency has begun to be stressed more in recent years, I believe more can be done to emphasize its significance on health care outcomes and to implement it in the everyday lives of physicians and other providers. It is estimated that by 2050, 50% of the population in the US will consist of minority groups (Nair & Adetayo, 2019). It is only natural that healthcare organizations and providers should take a diverse approach to cater to a diverse population.

SETMA's COGNOS project demonstrates a successful example of aiming to eliminate ethnic disparity of care in the context of diabetes. In 2009, the project collected data about diabetes prevalence and treatment differences between African-American and Caucasian patients at SETMA. By analyzing this data across patient groups, they identified a discrepancy between the mean numbers of Caucasians and African Americans with uncontrolled diabetes. Using this knowledge, SETMA was able to develop a quality improvement program and targeted treatment for diabetes that eliminated the differences between the two groups. There is no reason that such an intervention should apply only for diabetes; such methods can be implemented globally and can target other diseases that exhibit similar ethnic disparities as well. According to Price et al., racial/ethnic minorities have a 1.5-2.0 times higher likelihood of having chronic diseases than Caucasians, particularly in youths. Some examples of those diseases are asthma, hypertension, dental disease, and ADHD. These are just a few of the abundance of diseases that unequally affect minority groups. Thus, data collection and analytics similar to the COGNOS project can be implemented in more and more clinics and hospitals to benefit the unique patient population in that area.

There are many aspects of medicine that may be perceived differently by different cultures, and it is important for physicians to be educated about these cultural discrepancies. One example is different cultural perceptions of brain death. The United States and most of the Western world have widely accepted the idea of neurological death as being essentially equivalent to cardiovascular death (Yang & Miller, 2014). In the U.S., clinical exams and medical judgment are used to meet neurological criteria for brain death. In such a case, a physician can declare a patient brain dead, which is effectively understood as the loss of life (Potter, 2017). However, this understanding is not universal; people in Eastern cultures have a less clear definition of neurological death and tend not to accept the concept as easily. Many Eastern cultures have a stronger belief in the intertwining of body and mind, and some are reluctant to attribute complete death to the loss of a single organ; in other words, if a person has a beating heart, how can they be dead by neurological status alone? Such differing ideas often lead to disputes about organ donation and afterlife treatment (Potter, 2017). While this specific example may not necessarily be encountered in a primary care or outpatient setting, it demonstrates just how differently various cultures can perceive medical diagnoses, treatments, etc. It is essential for the provider to understand the perspective

and cultural background of the patient in front of them in order to communicate and empathize with them in the best way possible. This effort on the part of the physician can be rewarded by a more trusting and collaborative relationship between provider and patient.

A few concrete measures can be taken to educate physicians about cultural competency in the setting of patient care. First, employee training programs can be more universally implemented for providers within a medical care organization. Regular and ongoing training reflecting various relevant topics in culture and medicine can be integrated into work meetings or through online training programs. Here again, data collection can be used to even determine the distribution of ethnicities specific to the patients in that area. Educational programs can then be tailored to the cultural scene of the immediate area in which a hospital or clinic is located. Secondly, I believe the use of the Electronic Medical Record (EMR) can greatly aid in this context. SETMA's use of the EMR proves how valuable it can be in the delivery of patient care, especially in the Medical Home model, in which providers of different specialties work together in close proximity. EMR makes it easy for every provider in the organization to keep up with patient updates and see what other providers have documented. We can use the advantages offered by this technology to improve care for patients of different cultural backgrounds. When providers encounter such a patient, they can make note of any differing perspectives offered by the patient that might affect their medical understanding or treatment options. Not only does this make sure that the provider acknowledges these differences, it allows other providers in the organization to have a better understanding of the patient's values before even meeting with them. This allows them to then approach the patient with an attitude of understanding and respect, which is bound to solidify their relationship with the patient. It is critical to realize that a more collaborative and understanding provider-patient relationship can directly affect quality of care and patient health outcomes; thus, this is a significant aspect of medicine that has much potential to be targeted for progress in the future.

ARTIFICIAL INTELLIGENCE AS A TOOL

As technology advances around us, it would be unwise for us to not to adapt to it. My plan for the future of primary care harnesses technology for the advantage of our healthcare system following in the footsteps of SETMA's innovative technological implementation. SETMA has always recognized the positive potential of technology, pioneering the recognition of electronic data systems and the ability to use these systems in combination with evidence-based practices. When the EMR system was developed, SETMA was quick to adopt it after a thorough period of research, seeing its potential in making patient visits, treatment, and overall care much more cohesive. I believe the "new EMR" is artificial intelligence. AI has a significant place in the future of primary care as user interfaces improve and it becomes more widely accessible.

Although it has not been long since AI has been disseminated so publically, many healthcare-based organizations have already begun to incorporate it into their operations. Artificial intelligence has been used in radiology to predict a 3-year lung cancer risk in a patient using radiologists' CT readings and existing clinical history (Price et al., 2021). Knowledge such as this can be used to inform future screening guidelines, as well as to develop precise, individualized patient plans. In 2020, the Center for Medicare and Medicaid Services reimbursed the use of two AI systems used for medical image diagnosis, representing a major foot forward in the integration of AI in the clinical setting (Johnson et al., 2021).

Perhaps more simply, but no less importantly, AI can also be used for administrative duties. Simpler tasks such as sending out patient reminders or making calls to set up appointments can be performed more efficiently with the help of artificial intelligence. SETMA emphasizes the importance of keeping in touch with patients even after they have left the premises of the clinic. As they say, the patient is responsible for 99% of their health, while the provider is responsible for 1%. Oftentimes, all physicians can do is provide the necessary information to the patient and then pass on the baton. Without effort and commitment on the part of the patient, physicians often cannot do much for their patients but advise, especially in the primary care setting. As part of the Lose weight, Exercise, Stop Smoking (LESS) initiative, which urges all patients to commit to simply daily practices, reminders about achieving health goals can be sent out to patients regularly through AI systems that personalize the timing to each individual. When these smaller responsibilities are handed over to technology, providers have time on their hands to attend to more complex matters. This can be done for any kind of reminder or notification such as appointments, labwork, or encouraging healthy practices.

AI can also be used for auditing and providing oversight of administrative functions. According to Johnson et al. (2021), up to 10% of global healthcare expenditure can be attributed to fraud and abuse in payer programs. Utilizing AI to identify medical coding errors and incorrect claims can alleviate the waste and abuse in payer programs and ultimately benefit patients, providers, and the government. Attempting to do this manually cannot match the accuracy and efficiency afforded by AI, which works optimally to save money, time, and effort. As Dr. Holly notes, it is important to remember that artificial intelligence or any technology otherwise should not serve to replace our humanity. The AI machine that identifies cancer risk depends on the images input by radiologists; behind the health goals sent out in reminders are the physicians that care about the health and wellbeing of their patients. Moreover, with concerns of ethical issues, hacking and improper access to data, and developmental problems, AI must be approached with a mindset of caution. However, when used prudently and in conjunction with existing medical practices, artificial intelligence can be an indispensable asset to the field of medicine in the very near future.

DENTAL INTEGRATION INTO PRIMARY CARE

In the twenty-first century, the intersection between the care of the oral cavity and primary care is gaining attention as patient-centered care solidifies itself as a cornerstone of modern medicine. Chronic diseases such as diabetes, hypertension, and respiratory conditions are linked to poor oral health. With the concept of dentistry still rooted in the barbershops of the Victorian era, dental care has long been siloed from primary care. My plan is to create a dental clinic adjacent to the primary care clinic with operational systems that have open communication. In the context of the PC-MH model, the existing medical home can expand its scope of care by incorporating dentistry into the organizational family. The successful integration of dentistry into primary care signifies a paradigm shift that would extend the boundaries of comprehensive care to better address the patient's overall health.

The Western outlook on healthcare too often focuses on being reactionary and fixing problems only once they emerge. As Dr. Holly structured SETMA in the spirit of the Japanese concept *kaizen*, the future of primary care as I envision it includes dental care and general dentists working with primary care physicians. Kaizen is built on the principle of making changes anywhere where improvement is possible and preventing foreseeable problems before they have a chance to occur. Since oral health is determined by factors that are common to many chronic diseases, it is most practical for dentistry and primary care to be collaborative in order to prevent such diseases from arising in the first place. Important factors at play include personal hygiene, diet, tobacco and substance use, and stress.

One of the main benefits of combining a patient's dental home with their medical home would be to improve the continuity of care and overall patient outcomes. In 2009, the seventh World Health Organization recommended integration of dental care with primary care services. A core tenant of primary care has been continuity of care since Gonnella and Herman's 1980 publication. It has been shown in Campbell's 2001 study to improve outcomes of care, reduce healthcare expenditures, and increase patient satisfaction. As health does not stop at the oral cavity, having continuity of care must be important for dental care as well. Managerial, operational, informational, geographic, and longitudinal continuity of care could all be accomplished by the addition of a dental clinic to the primary clinic.

Continuity of care is particularly important for people facing mental health issues such as dementia, depression, schizophrenia, and cognitive decline as Langelier et al. describe. For these patients, performing basic oral hygiene such as brushing or flossing may not be possible. Patients physically unable to brush or without the fine motor skills needed for proper brushing and flossing technique are also at risk for increased dental diseases. Many medications also have side effects such as nausea and xerostomia, conditions which may exacerbate dental concerns. By having the dentist readily

available, they will be able to better care for their increased dental needs as a result of chronic conditions. Carequest found in 2022 that thirty percent of primary care patients who do not see a dentist would be more likely to go to the dentist if they were located in the same place. The end goal is a fully integrated practice, where a patient feels as though the clinics are a “one stop shop” where both primary care and dental care are seamlessly delivered by one team of providers functioning effectively together. Through increased collaboration, the patient care is more responsive, thereby increasing patient engagement and compliance to both treatment plans.

Primary care clinics are intricate operational structures that include factors such as access to care, delivery of services, administrative duties, and the underlying logistical foundation that enables providers to focus on care. To incorporate dentistry would require an intentional and temporary upset of that balance as dentists and physicians find ways to work with each other in their separate domains. Pilot programs have been tested with dental hygienists working under a limited scope with physicians in rural locations. They demonstrated that the “models of care and delivery and payment systems have not substantially integrated oral health in overall health” and made collaboration difficult according to Joskow, 2016. In my plan, there will be an adjunct dental clinic to the primary care clinic, with separate operational systems that still enable open communication of patient data. Before operations can start, there will need to be highly effective infrastructure systems in place to share said data. This system must have interoperable electronic health records, the ability to send and add information to patient charts concurrently, and both the medical and dental billing and coding systems. By ensuring that all physicians, dentists, and staff have similar goals, understand the benefit to patients, are willing to be flexible for the sake of progress, and are open to building interpersonal relationships between teams, the chance for successful integration will increase. Everyone will receive training on how to use the system and formal guidelines on when to refer to their counterparts prior to changes being implemented.

Another aspect of SETMA where dentistry can be built in is in their Initiative for Comprehensive Advanced Healthcare Resources for the Elderly (I-CARE). Recognizing that “nursing home residents require the most care as they usually have the most ailments and unfortunately have the least resources available to them” (Holly, 2023), SETMA sends a team of providers to care for residents at nursing facilities every day. Notes and records are securely documented via their EMR system and available on the cloud to physicians located anywhere.

Data from Sifuentes’ 2016 report suggests that “Of those 1.4 million living in nursing homes, only 16% receive oral care with 15% being reported as having very good or better oral hygiene.” In 2000, the United States General Accounting Office reported that nursing home residents are at an increased risk for oral diseases and staff have limited capacity to provide adequate oral health services. Despite this and the

Surgeon General's 2000 report on oral health, no national data on the status of oral health in nursing homes has ever been published. With oral health greatly impacting the mental, physical, and social health of nursing home residents, it is crucial to address this health discrepancy and to create a sustainable treatment modality. Through the purchase and equipment of a mobile dental van, dentists can visit nursing homes to provide both preventative services such as cleanings and treatment such as amalgam fillings, silver diamine fluoride, and denture relines. Similar to how dental clinics will be integrated at primary care clinics, the dental team will have EPM software to mirror and communicate with the primary care team. Working alongside the I-CARE team, this multidisciplinary approach will synergistically enhance the well being of society's most vulnerable populations.

One final way that integrating preventative dentistry and primary care medicine will fulfill the Institute for Healthcare Improvement's Triple Aim is by reducing the number of patients who visit the emergency department (ED) for dental related problems. One study by the AHRQ in 2018 found that "the majority (62%) are for nontraumatic dental conditions...and are largely preventable" (Owens, 2021). When patients are seen in the ED for dental related problems, they are typically given antibiotic and pain medication prescriptions. In other words, the root of the problem is not addressed. Comprehensive care would be offered at the proposed dental clinic, and preventative care would be at the forefront. This includes treatment such as abscess drainage for emergent issues, local sedative, wound dressing, or extraction of the decayed tooth. Physicians would also be trained to instruct patients to see the dentist, providing an appropriate referral pathway.

Through regular dental visits, checkups, cleanings, and restorations when dental decay is initially identified, patients can treat small problems easily and cost effectively before the problems compound. Dental disease insidiously grows and the only eventual solution is extractions. Visiting the ED costs "three times as much as a visit to the dentist, averaging \$749 if the patient isn't hospitalized, amounting to \$1.6 billion annually", eighty percent of which are "abscesses and dental caries – both largely preventable conditions" according to the American Dental Association. With more patients likely to visit the dentist if the physician and the dentist are located together, an increased number of patients would be under the care of the dentist and thus receive less invasive care, which overall reduces healthcare spending.

Within our multifactorial and complex healthcare system, developing proposals to enhance primary care requires a wide net of information and a nuanced understanding of how each individual piece works together. As SETMA and Dr. Holly have demonstrated for decades, it is vital that one continuously evaluates progress, astutely incorporates new technology for the benefit of all, and seeks to continuously improve patient care.

CONCLUSION

The comprehensiveness and breadth of the Medical Home model allows it the flexibility to adapt to the ever-changing medical environment, demonstrating the potential for primary care to grow in the future. Understanding cultural disparities in healthcare is important not only for treatment, but the foundation upon which the provider and patient relationship is built. AI today builds upon the EMR system first institutionalized by SETMA. Finding that perfect balance between doing no harm to the patient and the allure of limitless technological innovation is immensely difficult, but will prove to be the key to proper alignment of AI with current EMR programs. Another emerging idea is marrying dental care with primary care to comprehensively care for the patient's health. Oral health and overall health are intrinsically linked. This connection has been acknowledged and will be strengthened moving forwards to create a community of different providers with the same goal. Drawing upon SETMA's governing principles and philosophy, the future of primary care lies in growth of cultural diversity, AI usage, and multidisciplinary interprofessional care teams. These are the new future of primary care that will enhance the quality of patient care, accessibility, and ease of holistic patient centered care.

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