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Many factors impact our health beyond genetics and aging. Collectively, these are called the [social determinants of health](#), and factors such as: education, housing, income, occupation, hunger, language, literacy, where we live, and access to affordable health care services. However, there is a gap in the current list of the social determinants of health, and that is the influence of "information" or an "information ecosystem" on patients' behavior, engagement, and health outcome.

Information, in this sense, only matters if a patient is motivated to seek information and takes action to improve their health. Thus, it is critical to consider "Information" as another social determinant of health since it can be used to drive positive patient health outcomes. Yet, how we deliver it, where we deliver it, and who delivers it is crucial to improving patient outcomes.

So, how do we harness this idea that Information can change health outcomes? To answer this question, we need to better understand the need to empower the patient and the clinician, and fine tune the delivery system, if the information ecosystem is to drive healthy outcomes.

This article offers a new approach for healthcare executives, providers, and delivery systems to organize as they are in an ideal position to provide access to accurate, timely and unbiased information. The movement from volume to value can offer new funding sources through shared savings to reinvest in improved communication tools, AI and chat resources and wearable devices targeted to changing individuals' behaviors.

So, let's look at the role of the individual. They may be the most underutilized resource in the industry today.

Role of Individual

As patients/individuals, we must understand and accept that we are accountable for our health. We might be born into adversity, yet we are accountable for how we choose to live our lives. However, it appears being healthy for health's sake is no longer enough. The population in the United States, struggles to make healthy choices, eat healthy, and exercise regularly. The trends are not improving.

According to the National Center for Chronic Disease Prevention and Health Promotion, 37.3 million (11.7%) Americans have Type 2 diabetes, and another 96 million adults have a condition called prediabetes, which puts them at risk for Type 2 diabetes.¹ Prediabetes is preventable with exercise and diet interventions. However, money in our healthcare system generally flows to the treatment of a condition not for preventing the condition. Such is the case with prediabetes. The doctor doesn't get paid for putting a patient on a diet or educating them about dangerous blood glucose levels rather is paid for the surgery or drugs to treat and control the diabetes.

There is simply not enough time in a 15–20-minute doctor's appointment to address anything beyond the acute problem and or an intervention for chronic conditions. Yet, as individuals we can improve our outcome, by being better prepared for the appointment by writing down our

symptoms, being curious and asking questions, taking notes, and following up on care plan activities. Research suggests that when a person keeps track of their own medical history, the information is more complete and accurate than clinical records, and it can be made even more accurate if they track their medical history with help from their primary care doctor.^{2,3}

For many of us, it seems we have an overabundance of health information. It comes from all sides. Coming from friends, family, medical professionals, advertisements, news media, and online searches, it can be contradictory, confusing, and difficult to navigate.

When a patient has symptom(s) and doesn't know what to do next other than go to an emergency room or urgent care facility, we have a system failure. Individuals need access to reliable help lines, and the internet where the information is accessible, dependable, credible, and actionable at their level of understanding. When information is unavailable or unreliable, poor health outcomes can result. In addition, there is a growing body of evidence that suggests significant amounts of online content are misleading. If the information is incomplete, recontextualized, or contains misapplied scientific findings, misinformation can be harmful to the public.

Furthermore, a survey of 2,000 Americans suggested that $\frac{3}{4}$ of people whose first step was to search their symptoms online ended up worrying more because of what they found.⁴ Forty-three percent of respondents said that, after their search, they were convinced that they had a serious disease when, in fact they did not. The sources of the information must be vetted by clinical professionals and providers.

Using trusted and reliable websites is imperative. For example, governmental sites ending in ".gov" and websites vetted by clinical professionals and recommended to their patients will provide more reliability and credibility than a generic Google search.

Role of the Clinician and Health System

As for the clinician and the delivery system, knowing how to direct a patient's search effort and to bridge the chasm between valuable, online health information and the person on the other end of the search is critical to ensure a patient's safety, engagement, and better outcomes.

A major step in this effort is for the health system and the provider to help their patients improve their online "user journey", by making the patient's search effort "user friendly" and rewarding. Clinicians undergo years of training, and most have learned to quickly locate and process the available information to discern the most appropriate decision or plan of care. However, the average person does not have that expertise, especially in health-related issues. It is necessary that providers and their care teams direct patients to the most reliable sources and show how to use them effectively.

Recently the US Department of Health & Human Services updated the definition of health literacy in Healthy People 2030. Health Literacy is the ability of people to find, understand, and use information and services to inform health-related decisions and actions for themselves or others. Today, we have limited health literacy in this country.^{5,6} Research shows that nearly half of US adults have difficulty understanding everyday health information and 9 out of 10 have difficulty accessing information online when stressed, sick or in pain.

Low health literacy contributes to health inequity because it disproportionately affects the poor, elderly, and sick. When people have trouble understanding and making health-related decisions, they are more likely to experience medication errors, poor self-care, and delays in care. ⁶

For example, patients' failure to follow their medical treatment regimen is a common and costly problem. Today, 20% to 30% of prescriptions for chronic health conditions are never filled, and about 50% of medications are not taken as prescribed, according to the CDC. ⁷

Depending on the situation, contributing factors may include the social determinants of health but we should also consider that it may include the volume and complexity of the treatment instructions and poor provider communication. Engaging patients, especially in their own care, is key. Yet, we are still falling short of what's needed, as adherence rates, like those above, haven't changed significantly in the past three decades. One solution is to adopt a practice that all patient education materials and clinical online engagement tools such as MyChart should be written at a 5th grade reading level and made available in different languages for the patient.⁸

One could also argue that health systems and providers need to do a better job of identifying the issues of patients' non-compliance with medication or treatment options and identify the barriers so they can be mitigated or removed.

Admittedly, there are many variables and layers of information and communication that a patient receives from his/her providers. The role of the provider, and especially the health system, is to monitor and identify behaviors of non-compliance as part of the treatment plan and follow-up care. For example, if a patient knows he/she has hypertension but chooses non-compliance with the care plan, how can the clinician and care team better understand what social and emotional elements are impacting the patient? If for example, not only does the patient have hypertension but is a single parent with two small children on a limited income with no time or the funds to follow through with follow-up care. There is a real opportunity for the health system and care team to identify and mitigate these elements. This effort, along with the knowledge of the patient's own condition, may be enough to create the desire and motivation for behavioral change.

The Prosci ADKAR model is one such powerful model for change management.⁹ When applied in healthcare, the clinician and care team can support an individual's transition from their current state to a desired future state. This approach can lead to successful outcomes. Health systems and providers and their teams need to create the right "why" and "reason" for change by investing in new ideas and resources.

The word "ADKAR" is an acronym for the five outcomes an individual needs to achieve for a change to be successful: Awareness, Desire, Knowledge, Ability and Reinforcement. Changing patient behaviors requires individual change. Yet when introduced, reinforced, and supported by a strong clinical care team, it can make changing behaviors easier, attractive, and satisfying. This model targets how information is utilized, presented, and heard by the patient.

Clinicians must rethink their approach to patient care by investing in data-driven tools such as AI and Chat tools that are culturally appropriate and inclusive of a health literacy concept.¹⁰

Clinicians must adapt themselves and train their staff to create a desire and engagement for this new concept through building health literacy in patients, so they are more responsible for their own care and health. Not only do the patients benefit, but clinicians and health systems benefit from higher patient satisfaction scores, payments from payers and government, and growth from new patients feeling a sense of hope in belonging to the care system.

The article introduces the concept that “information” is an important determinant of health. Empowering and activating patients to manage their own health and care will enable personalization, precision and create a more “human experience”.

Investing and engaging in change management tools and lifestyle changes takes a lot of effort on behalf the patient, clinician, and health system, but the impact of having information that is accessible, credible, scientifically based, culturally appropriate and motivates change, can have a profound impact on one’s health.

- 1) <https://www.cdc.gov/diabetes/health-equity/diabetes-by-the-numbers.html#:~:text=37.3%20million%20people%20have%20diabetes,not%20know%20they%20have%20it.>
- 2) Pincus T, Yazici Y, Swearingen C.J. Quality control of a medical history: improving accuracy with patient participation, supported by a four-page version of the multidimensional health assessment questionnaire (MDHQ) *Rheumatic Diseases Clinics of North American*. 2009;35 (4): 851-860. Doi 10.1016/j.rdc.2019.10.014.
- 3) Bell SK, Meijlla R, Anselino M. et al. When doctors share visit notes with patients: a study of patient and doctor perceptions of documentation errors, safety opportunities and the patient-doctor relationship. *BMLI Quality and Safety* 2017;26 (4):262-270. Doi10.1136/bmjqa-2015-004697.
- 4) Haaland M “Dr. Google” has wrongly convinced two in five Americans that they had a serious disease. *SWNS Digital*. November 8, 2009. Available at: <https://www.swnsdigital.com/2019/11/dr-google-has-wrongly-convinced-two-in-five-americans-tht-they-had-a-serious-disease/>. Accessed May 1, 2020
- 5) <https://www.cdc.gov/healthliteracy/shareinteract/TellOthers.html>
- 6) *JMIR 2021* www.cdc.gov/healthliteracy *UnitedHealth Group*. www.searchingforhealth.org.
- 7) <https://www.cdc.gov/mmwr/volumes/66/wr/mm6645a2.htm>
- 8) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3514986/#:~:text=The%20Joint%20Commission%20states,literacy%20is%20a%20critical%20issue.>
- 9) <https://www.prosci.com/methodology/adkar>
- 10) <https://chat.openai.com/auth/login>, <https://bard.google.com>