# Best Practices of Information Gathering for At-Risk Patient Populations

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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## Introduction

The Universal Declaration of Human Rights states "Everyone has the right to a standard of living adequate for the health and well-being of himself and his family including … medical care". This fundamental human right is not being granted to everyone, as disparities in healthcare have persisted for decades and are still apparent across the country. For example, in 2010, African Americans were 30% more likely than whites to die prematurely from heart disease and twice as likely to die prematurely from stroke (Office of Minority Health). Although often used to describe differences in racial or ethnic groups, these disparities can also be attributed to gender, sexual orientation, age, socioeconomic status and many other patient characteristics. Although these social determinants have been documented in studies, they have yet to be included or addressed by providers in a clinical care setting. Groups of people cannot receive proper care or become misunderstood because many providers only gather essential symptomatic data and not other essential information that significantly impacts how patients can be treated. Several actions have been put into place to attempt to mediate healthcare inequities in racial or ethnic groups; however these methods often unwittingly cause harmful side effects and are solely focused on cost. The Affordable Care Act, for example, intervened but was unable to ensure competition or price ceilings in many areas, causing many insurance premiums to increase dramatically (Weinstein, Geller, Negussie, & Baciu, 2017). By solely focusing on cost, the healthcare needs of large patient groups were still not addressed. By not considering each individual's unique situation and other essential factors, providers are often ignoring large groups of at-risk patients.

It is evident that a better way to address the health disparities is needed, one that is tailored to the community and makes healthcare accessible to more residents. Electronic Medical Records (EMRs) are used in nearly every patient-center and thus provide a potential way to systematically prevent patients from falling through the cracks. Currently, EMR systems like Epic take in basic patient information but fail to account for social determinants of health. By considering EMRs as a system with agency itself that has influence on the social interactions between the healthcare network, we can better understand how adapting EMRs to include social and behavioral determinants can address at-risk groups. Some organizations have attempted to incorporate social factors and information in record systems; however, the best method to do so is still unclear. In this paper, I explored the development of potential avenues where EMRs and associated systems might be improved upon to capture essential social determinants of health and need.

## Literature Review

### Evolution and Benefits of Electronic Medical Records

In the American healthcare system, an electronic medical record is defined as computerized medical information systems that collect, store, and display patient information. They are used as a way to create legible and organized recordings that allow physicians to access clinical information about individual patients (Ajami & Bagheritadi, 2013). This format first became implemented in the 1960s, used primarily in inpatient/outpatient centers and focused on gathering patient's billing and scheduling information. Today, EMRs have become practically ubiquitous. They are used not only to track patient history but also for prescription orders, ordering procedures, and other clinical purposes.

Because even the simplest of EMR systems has been shown to provide patient benefits, the US government signed into action the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009, representing the largest US initiative to date designed to encourage a more uniform use of these records. Included in this piece of governance are three key functionalities common to all systems as part of the "meaningful use" criteria. The first is Clinical Decision Support (CDS) tools. These are meant to assist the provider in making decisions on patient care, such as providing them with the latest information about a drug, cross-referencing patient allergies with medications and giving alerts for potential patient issues with ordered prescriptions or procedures. This is important to note because this aspect of EMRs can be targeted to better understand how patients can get lost in the system as will be explored later on. The next functionality, Computerized Physician Order Entry (CPOE), allows providers to enter in orders for drugs, tests, therapy, and other treatments to keep accurate records for future use. Health Information Exchange (HIE) is the process of sharing patient-level electronic health information between different organizations to maintain the same set of records as patients see specialists or other providers. Since the widespread implementation of EMRs, studies have noted many benefits to the healthcare system including lower costs, general improved clinical outcomes, and an increase in patient data that can be used for research. All three functionalities used together have the potential to reduce medication error by as much as 83% and have been empirically linked to increased patient adherence to provider recommendations and effective care (Menachemi & Collum, 2011).

## Systematic Problems with EMR Implementation

Actor Network Theory suggests that inanimate entities can produce significant impacts on social processes. Actants are defined as "source of an action regardless of its status as a human or non-human", implying that inanimate objects can have agency themselves. These actants act in combination with other actants to form networks and shape social interactions (Cresswell, Worth, & Sheikh, 2010). The actants in this network include: physicians, hospital administrators, software engineers who design the EMR system, patients, EMR systems like Epic. Using this theory, EMRs can be considered as an actant. Data-driven healthcare has situated EMRs at the center, with the power of records now being a mandatory practice in most patient centers, but have been previously black-boxed or considered passive containers of information. ANT provides a framework to alter this assumption and consider EMRs as playing an active role determined by the position in relation to other actants. This provides the potential to alter EMRs to address the lack of consideration of social and behavioral determinants of health.

While EMRs have improved the healthcare process for many, it can systematically leave out many population groups. Social and behavioral determinants of health, such as poverty, homelessness, and limited social support, account for 40% of health burdens. Healthcare for high-need patients that does not consider these factors leads to poorer outcomes, less satisfaction, and the feeling that these patients are falling through the cracks. Patients commonly report that social needs are critical barriers to optimal health and health care. Approximately 80% of all physicians and 95% of physicians who work in low-income settings believe that addressing patients' social needs is as important as addressing their medical needs. Limited attention to social factors during the design of clinical interventions may help explain the failures of many health care quality improvement efforts (Trinacty et al., 2019). Research conducted to address the increasingly diverse patient populations identified multiple practices to facilitate patient-centered communication for vulnerable populations; important practices applicable to this study include “Be aware of cultural diversity”, “Involve patients in every step of the way”, “Collecting information to demonstrate needs” (Wynia & Matiasek, 2006).

Of the three functionalities common to all EMR systems, none actively take in patient information that can address social determinants of health. Clinical Decision Support (CDS) is the only functionality that gathers information specific to each patient. However, this information only goes as far as previous test results and symptom-based analyses. Using this limited set of information, the system outputs potential diagnoses and treatments that are not catered to each patient but rather to the general population. Patients who don’t have access to certain forms of treatment, whether that be due to physical lack of access or lack of healthcare, aren’t considered (Fahey, 2016).

## EMRs as a Source for Potential Information Gathering

EMRs provide a massive source of data that can be analyzed to improve patient care. Using EMR data, researchers can make predictive analyses on patient populations, demonstrating the capacity for EMR data to be used in preventative measures. Data pulled from EMRs were used to construct a predictive model using metrics ranging from specific lab results to whether the patient had Medicare/Medicaid in order to predict the likelihood of readmission to the hospital within a month (Amarasingham et al., 2015). By identifying those most at risk of readmission, healthcare providers can preemptively take steps to reduce that likelihood, helping both the patient and the hospital by providing cost savings (Puffenbarger, Marshall, & Rowe, 2017). Data was also used to help reduce the number of hospital-acquired infections that are extremely common complications within the US, affecting 1 in 25 patients each year. This information has been made readily available to physicians to allow them to better understand and track the progression of hospital infections. They are able to determine which specific procedures and patient conditions are the most likely to lead to infection and take extra precaution to prevent those at higher risk.

## Emergency Medical Workers Perspectives on Essential Information

To understand the relationship between these actants in sufficient detail, ethnographic work including interviews was done. An initial interview with a local emergency responder provided insight into his views on prevalent emergency medical issues in Charlottesville and the values he believes should be emphasized in implementing any healthcare project. The in-person interview lasted approximately 30 minutes at a local coffee shop and the interviewee was asked multiple questions about his experience, including the following relevant questions: “What are the most prevalent emergency medical issues that you have seen as an emergency responder that you feel aren’t properly being addressed?” and “What do you think are key factors to any successful healthcare system?”. The interviewee’s answers focused on emphasizing safety, openness, and communication in all aspects of healthcare. One issue that he highlighted was drug addiction, where patients were given medication and either abused their prescription or had little knowledge of how to take them effectively. He emphasized how better communication between physicians and patients could help alleviate some of this problem. His main critique was that physicians don’t have a proper understanding of their patient besides the bare necessities needed to make a diagnosis. This interview provides valuable insight into how a modified EMR system that allows for improved communication and understanding could be used to address persistent healthcare problems for patient populations that are most affected. First responders currently are a separate actant in the network, as they aren't able to contribute to EMR systems and don't have contact with patients after transportation to the hospital. Altering the EMR blackbox to allow first responders access would better facilitate their relationship with physicians and would streamline the transitional care process, allowing physicians to make critical medical decisions earlier (Monica, 2019).

## Current Initiatives Aimed to Address Needs of At-Risk Populations

Studies on patient-centered communication particularly for at-risk populations have been conducted and shed light on these practices. Some of the promising practices emphasized were collecting information to demonstrate needs, being aware of low health literacy, and being aware of cultural diversity. Hospitals that put this practice into effect are more successful when they assess the needs of both patients and staff, adopting an attitude of continuous learning of cultural background, and incorporating more interactive processes (Wynia & Matiasek, 2006). Incorporating these practices into an EMR would ensure physicians are more focused on the individual patient and their background, rather than just symptoms.

Further analysis of current initiatives that focus on improving physician-patient interaction and understanding is used to determine methods of best practice to gather a more encompassing picture of patients to address the needs of at-risk populations. Public outreach programs, such as the Hardy Drive Community Clinic in Charlottesville, offer medical care and support to at-need populations. This particular program offers health screenings, monitoring and support for chronic health conditions, guidance for housing and food resources, and even home visits for those who have difficulty with mobility. Stemming from a lack of basic health services for underserved communities, the clinic hopes to be able to address the needs of patients who don't have consistent access to hospitals and to reduce the number of patients who seek emergency medical attention as their only form of primary care. The methods used by this program come from a basic understanding of the population and don't simply focus on diagnosis and treatment, but also environmental factors like accessibility to proper housing and nutritional food. By doing so, it tailors medical intervention to the patient to make treatment more effective (Kueter, 2018).

Some healthcare organizations have taken steps to adapt EMRs to specifically address social determinants of health. Hawaii Pacific Health used a modified form of EMRs to study the relationship between social determinants of health and common acute care outcomes. One notable metric is the extent of a patient's social support and its effect on a patient's recovery of mobility. Physicians noted in the system how much support a patient had in their home in addition to metrics like level of physical activity while hospitalized and the frequency of these mobilizations. This information was used to determine whether a caregiver should be recommended for post-discharge care. Measurable health benefits, specifically for high needs, chronically ill patients, were seen from incorporating social and behavioral factors into EMRs. This initiative opens the blackbox that EMRs are traditionally considered as. Rather than simply being a passive container of information, the EMR was adapted with additional metrics that became one of the threads used to bind the information about patients to caregivers, allowing for an improved relationship between the two and leading to better overall care. Particularly in Hawaii, where the population is ranked as one of the most racially and ethnically diverse in the

United States, this shows that taking social determinants into account during the EMR process has the potential for significant improvement in addressing the needs of at-risk populations (Trinacty et al., 2019). A more wide-spread application of this could address issues besides mobility.

## Discussion

Current physicians have been open in their dissatisfaction with the EMR system. Beyond simple frustration with the interface, many voice their opinion that time spent filling out the EMRs affects their patient relationships and detracts from the overall experience. There is little time for doctors to actually interact with their patients and understand their background or culture. They view EMRs as beneficial as a storage tool but detract from clinical effectiveness. 57% of primary health providers want improved predictive analytics incorporated into EMRs to support population health management (The Harris Poll, 2018). Because of their ubiquitous use, EMRs will continue to be used but the widespread belief that doctors are less able to understand their patients and thus are less able to effectively treat them highlights the need for a modified EMR. Analysis of current initiatives and studies on patient-centered interaction suggest that best practices for creating a modified EMR that addresses these issues include incorporating social determinants of health and noting cultural differences that could impact treatment.

Despite the potential for positive results, there are challenges to gathering this information. Some populations may not want to answer questions about their social determinants and may even provide false information. Additionally, there is the risk that even with this information being recorded, physicians may choose to ignore it. Implementation of such a system nationwide is also a difficult task. Hospital systems use different EMR vendors that each have their own administrative and research priorities. Thus, having a standardized way to input determinants of health may be difficult to achieve.

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