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# Improving Communication Between Patients and Providers Using Health Information Technology and Other Quality Improvement Strategies: Focus on Asian Americans

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## Abstract

Disparities in provider–patient communication have been shown to exist among Asian Americans, especially those who are low-income and have limited English proficiency. These disparities have resulted in unmet health care needs and poor quality care. To identify strategies for improving provider–patient communication in this population, we conducted a systematic review of the literature and in-depth interviews with key informants. Little published literature on interventions focused on Asian Americans was found. Most interventions were conducted among White populations and occurred in the waiting room before patients' visits with their providers. Interventions ranged from a leaflet encouraging patients to ask more questions, to more intensive face-to-face coaching before office visits. Health information technology (health IT) has not been widely used to improve communication, especially among patients with limited English proficiency. More research is needed using new health IT strategies to improve care for Asian Americans and other vulnerable populations.

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**Keywords**

health information technology, health IT, HIT, Asian Americans, communication, intervention, quality improvement (QI)

The U.S. census (Barnes & Bennett, 2002) has defined Asian Americans as “people having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.” In 2006, there were approximately 14.7 million Asians living in the United States, nearly 5% of the total population (Trinh-Shevrin, Islam, & Rey, 2009). By 2050, this diverse population is projected to grow to 37.6 million, exceeding 9% of the total U.S. population (Trinh-Shevrin et al., 2009). Chinese (24%), Filipino (20%), Asian Indian (18%), Vietnamese (11%), Korean (10%), and Japanese (8%) individuals make up the largest subgroups with smaller populations of Cambodians, Laotians, Pakistanis, Hmong, Thai, Indonesians, and Bangladeshis. Asian Americans represent a wide range of languages, cultures, and socioeconomic backgrounds. Within this diverse population, there are large socioeconomic differences by ethnic subgroups determined, in part, by the degree of language proficiency and acculturation. For example, Cambodians and Hmongs have far lower socioeconomic status compared with Japanese Americans, and proportionately more Asian Americans remain in poverty compared with White Americans (Trinh-Shevrin et al., 2009). Additionally, Vietnamese, Korean, and Chinese Americans are more likely to lack medical insurance compared with Whites (Trinh-Shevrin et al., 2009). Analysis of aggregate data hides the heterogeneity within the Asian American population. The myth of Asians being “the model American minority” (universally successful) masks the significant challenges encountered by many Asian American immigrants (Trinh-Shevrin et al., 2009).

Effective communication is a core component of the clinical encounter, and is the foundation on which the framework of an effective relationship is built—mutual trust, respect, and partnership. Effective communication includes question asking and information giving, along with other behaviors to help build rapport that include paying attention and validating patients’ health beliefs (Roter, Hall, & Aoki, 2002). Good communication helps establish the mutual trust and respect required for the therapeutic partnership and increases the likelihood that patients will take an active role in decision making and in the management of their illness. However, provider–patient communication problems are reported more frequently among Asian Americans.

Health information technology (health IT) has the potential to improve health communication and the quality of health care. However, many have raised concerns that certain disadvantaged populations may be “left behind” in the digital divide (U.S. Department of Commerce, 2000). Asian Americans, particularly those subgroups with lower socioeconomic status and limited English proficiency (LEP), may not receive the potential benefits of health IT unless specific, targeted strategies are used.

## *New Contribution*

In this article, we first identify the barriers to good provider–patient communication among Asian Americans. Then, through a systematic review of the literature and interviews with key experts, we identify interventions that may be effective in improving provider–patient communication in this population. We discuss how health IT and other strategies may be utilized to reduce barriers in communication. Finally, we recommend future directions in research and implementation.

## *Provider–Patient Communication in Asian American Adults*

The National Healthcare Disparities Reports have shown disparities in provider–patient communication for Asian Americans (Agency for Healthcare Research and Quality [AHRQ], 2008, 2009). Asian Americans were more likely than White respondents to report that their doctors did not understand their backgrounds and values, listen to them, spend as much time with them, or involve them in decisions about care as much as they wanted (Ngo-Metzger, Legedza, & Phillips, 2004). Asian Americans' cultural backgrounds affect the way they communicate their health concerns (Kreuter & McClure, 2004). Culturally, Asians are expected to show deference to authority. Thus, even highly educated Asian Americans may be less likely to question medical professionals when they disagree. Asians tend to be less emotionally expressive, which may lead providers to assume that they are satisfied and do not have questions or concerns. They are also more likely to use complementary or alternative medicine (CAM) and are more satisfied when their doctors discuss CAM use with them (Ahn et al., 2006).

Language barriers are also an important contributor to provider–patient miscommunication and may result in unmet health needs among Asian Americans with LEP (Ngo-Metzger et al., 2007). In population-based surveys, LEP Asian Americans are less likely to receive mental health care, cancer screening and treatment, and hospice care compared with Whites (De Alba, Ngo-Metzger, Sweningson, & Hubbell, 2005; Goel et al., 2005; Ngo-Metzger, Phillips, & McCarthy, 2008; Sorkin, Tan, Hays, Mangione, & Ngo-Metzger, 2008).

## **Method**

### *Literature Review*

We systematically reviewed the literature to identify studies of intervention shown to be effective in improving provider-patient communication among Asian Americans. We also sought to identify health IT and other quality improvement (QI) strategies that may enhance and aid communication. We searched PubMed® (1965-July 2009), CINAHL® (1982-July 2009), PsycINFO® (1965-July 2009), ACM Portal® (1947-July 2009), Lecture Notes in Computer Science® (1973-July 2009), and The Cochrane Library (second quarter 2009). We focused on literature published from January 1,

1994 to July 1, 2009. Details of the search methodology are available from the corresponding author.

### *Data Abstraction*

At least two authors reviewed and abstracted all articles independently. We evaluated the quality of the studies using the SQUIRE (Standard for Quality Improvement Reporting Excellence) guidelines (available at <http://www.squire-statement.org/>), which provide a structure for evaluating QI interventions in a systematic manner (Ogrinc et al., 2008). We used a consensus scoring system in which higher scores on the guidelines indicated more thorough description of the QI intervention and its results.

### *Key Informant Interviews*

We conducted in-depth interviews with five key informants who are experts in health care services for Asian Americans in underresourced settings. Underresourced settings were defined as settings where the majority of patients had incomes at 100% to 200% of the poverty level or lower and had either Medicaid insurance or were uninsured or underinsured. A list of key informants can be obtained from the corresponding author. Interview protocols were developed, and key topics for discussion were identified. Using the questionnaire, the first author conducted audio-taped telephone interviews with all key informants. Analysis was conducted by two reviewers (QNM and CFG) and consisted of listening to each interview, reviewing notes, and discussions between the reviewers. Salient topics and emerging themes were identified and reported.

### *Results of the Literature Search*

We found *no* papers that described interventions conducted among Asian Americans. We found two intervention studies that included very small numbers of Asian Americans in the sample (approximately 30 patients in each study) but did not report results stratified by race/ethnicity. One trial that examined the effectiveness of home blood pressure monitoring and web-based communication included 29 Asian American patients among a total of 778 patients (Green et al., 2008). This study found that home blood pressure monitoring with feedback from a pharmacist improved blood pressure control among hypertensive patients. Another study (Prochaska, Zabinski, Calfas, Sallis, & Patrick, 2000) using an interactive technology to target behavioral change (nutrition and physical activity) also included small numbers of Asian Americans ( $n = 33$ , 12% of study sample). This study found that the technology could be incorporated into the clinical setting and was acceptable to patients. The small number of Asian Americans in these studies and the lack of analyses stratified by race limit our ability to draw conclusions from their results. The lack of intervention studies conducted among Asian Americans highlights the need for more research in this area.

Until then, we have to make inferences on how to improve provider–patient communication based on research conducted in non–Asian American populations.

### *Interventions to Improve Provider–Patient Communication in Non–Asian American Populations*

A review of provider–patient communication interventions yielded six studies (seven articles) focusing on patient activation and empowerment to increase participation during office visits, though none of these studies included Asian Americans (Butow, Dunn, Tattersall, & Jones, 1994; Cegala, Marinelli, & Post, 2000; Cegala, McClure, Marinelli, & Post, 2000; Frederikson & Bull, 1995; Jacobson et al., 1999; McCann & Weinman, 1996; McGee, 1998). These interventions can be divided into two categories: low intensity or high intensity.

Low-intensity interventions usually involved a one-page leaflet that was given to patients immediately before the office visit (Butow et al., 1994; Frederikson & Bull, 1995; Jacobson et al., 1999; McCann & Weinman, 1996). The leaflets encouraged patients to write down specific questions and concerns to ask their providers during the subsequent visit. Most of the trials were small studies that involved approximately 100 to 150 patients recruited from one physician’s practice. The findings are summarized in Table 1. The largest, most effective study using this low-intensity method focused on increasing pneumococcal vaccination among older patients (Jacobson et al., 1999). This study included 433 patients and found that a one-page, low-literacy education leaflet significantly increased discussion about the vaccines and vaccination rates.

High-intensity interventions generally involved more intense patient coaching. These interventions included either a patient workbook to be completed prior to their visit or previsit face-to-face training with a health educator (Cegala, Marinelli, et al., 2000; Cegala, McClure, et al., 2000; McGee, 1998). These interventions significantly increased the number of questions that patients asked during the visit, patient compliance, and recall of information. However, the effects were seen only among non-Hispanic White patients, with no effects on African Americans. These findings illustrate that a strategy that works in one patient population may not work in another and that effective intervention strategies must be tailored to the target population’s needs and preferences (Post, Cegala, & Marinelli, 2001).

## **Results of Key Informant Interviews**

We interviewed key informants who provide care to low-income, LEP Asian Americans in safety net settings, such as federally qualified community health centers (FQHCs), small private practices, and public hospitals. We also interviewed the Executive Director of the Association of Asian Pacific Community Health Organizations (AAPCHO), a national network of 28 community health centers providing services to more than 360,000 primarily low-income Asian American patients throughout the United States. Currently, many community health centers that serve Asian American

**Table 1. Patient-Targeted Interventions to Improve Patient-Provider Communication in Non-Asian Populations**

Author(s) (Year)	Population and Medical Condition	Setting	Study Methodology and Improvement Strategy	Findings/Results	Challenges to Implementation in Underresourced Settings	Was This Intervention Strategy Effective for Reducing Disparities?	Health IT Used (Yes or No); If Not Used, How Could Health IT Enhance It?
Jacobson et al. (1999)	433 patients: 93% African American, 69% female, 65% <high school education, 25% uninsured Age older than 65 years or with chronic disease	Ambulatory care clinic of a 900-bed public teaching hospital serving a predominantly indigent, low literate, African American inner-city population	Randomized controlled trial Patients in the intervention group were given a one-page low literacy educational handout encouraging patients to ask questions about receiving pneumococcal vaccine. Patients in the control group were given information about nutrition	Discussion about the vaccine was four times as likely in the intervention group as in the control group Patients in the intervention group were more than five times as likely to receive the pneumococcal vaccine as patients in the control group	This intervention occurred in a public hospital	Yes	No. Use of automated provider reminders and patient reminders can enhance intervention Interactive computer kiosks in the waiting rooms can provide similar prompting about other prevention services (i.e., mammograms, colonoscopy, etc.). Health IT can also deliver education by streaming videos or voice- over for patients with low health literacy or LEP
Frederikson and Bull (1995)	80 patients No demographics given Surgery patients	One physician's office in the United Kingdom	Quasi-experimental design, random assignment of patients Physician blinded to patient's group status Intervention single-page leaflet, encourage patients to think about problem and what physicians can do, tell concerns, instructed to listen, and ask questions Control: no leaflet	Outcome was a single physician's rating of the communication of visits Experimental group's ratings by the physician was higher than the control group's ratings Limitation of study statistically significant using chi-square, no control variables	Challenge would be for front office staff will remember to give to patient. Does not guarantee that patient will actually follow advice of leaflet, patient is passive or rushed	Can be, not tested in minorities	Health IT could enhance this intervention by providing an interactive computer template for low-literacy patients or by providing a leaflet in the patient's native language
Butow et al. (1994)	142 first-time cancer consultation Excluded: non- English speaking	One oncologist at teaching hospital in Australia	Randomized trial, physician and patient blinded	Intervention patients did not ask more questions	Patients can fill out the question sheet in the	Not tested in a study but a promising strategy	No. Handout can be designed using interactive computer software that can be tailored to patient's specific concerns

(continued)

**Table 1. (continued)**

Author(s) (Year)	Population and Medical Condition	Setting	Study Methodology and Improvement Strategy	Findings/Results	Challenges to Implementation in Underresourced Settings	Was This Intervention Strategy Effective for Reducing Disparities?	Health IT Used (Yes or No); If Not Used, How Could Health IT Enhance It?
	Age < 16 years		Patients were given information 10 minutes prior to consultation Intervention patients were given a handout encouraging question asking before visit, examples of questions, and a suggestion that patients list and rank questions. Handout encouraged patients to ask specific questions about cancer diagnosis, treatment, and prognosis. Control handout informed patients of clinical services. Patient-doctor interaction was audio-taped	Only significant finding was that intervention patients asked more prognosis-related questions. The authors attributed this finding to the fact that oncologists and patients tend to avoid discussing cancer prognosis because of the emotion and uncertainty of cancer prognosis	waiting room while waiting for oncologist		Interactive software can be designed for low health literacy or LEP patients
McGee (1998)	10 physicians, 20 patients; 14 were White, and 6 were African American General medical condition	Family practice center of a large, Midwest university medical school Included 10 resident physicians from one clinic	Intervention group was given 30-minute face-to-face training with health educator before the visit focused on information seeking, providing, and verifying Control group was given a briefer discussion on physician patient communication	Trained patients demonstrated more information seeking in the form of direct and indirect questions than untrained patients Trained patients asked more information verifying questions than untrained patients	Very intensive training, may be hard to duplicate face-to-face training for 30 minutes	Not tested	No. Perhaps training could be by a computer interface, using a "virtual trainer" that can conduct training in multiple languages

(continued)



**Table 1. (continued)**

Author(s) (Year)	Population and Medical Condition	Setting	Study Methodology and Improvement Strategy	Findings/Results	Challenges to Implementation in Underresourced Settings	Was This Intervention Strategy Effective for Reducing Disparities?	Health IT Used (Yes or No); If Not Used, How Could Health IT Enhance It?
Cegala, Marinelli, et al. (2000); Cegala, McClure, et al. (2000)	25 physicians: 22 White and 3 African American 150 patients: 70% female, 67% White	9 Primary care university and private practices	Patients were interviewed face-to-face to test recall of information from the visit. Interviews were audio- taped and transcribed	Trained patients would obtain more information about treatment recommendations than untrained patients Trained patients had better recall of what was discussed Visit lengths were unaffected	Requires extra staff 14-page workbook may be resource- intensive	Intervention did not work in the subgroup of African American patients (n = 35)	No. Workbook could be interactive (web-based or CD-ROM) and designed for low literacy and LEP patients. A real or virtual medical assistant may be needed to guide patients through the interactive workbook
			RCT Three groups: a trained group received a training booklet (14 pages) 2-3 days prior to the visit, an informed group received a brief written summary of the major points in the waiting room, untrained group did not receive anything The 14-page training booklet was designed to enhance patients' communication skills in information exchange	Trained patients engaged in more information seeking about themes relevant to their medical condition than informed or untrained patients. Trained patients obtained significantly more information from their providers per question asked than the other two groups Trained patients would provide more information relevant to their own condition than those in other groups			

(continued)

**Table 1. (continued)**

Author(s) (Year)	Population and Medical Condition	Setting	Study Methodology and Improvement Strategy	Findings/Results	Challenges to Implementation in Underresourced Settings	Was This Intervention Strategy Effective for Reducing Disparities?	Health IT Used (Yes or No); If Not Used, How Could Health IT Enhance It?
McCann et al. (1996)	120 patients, majority middle class General medical condition	Primary care, one physician in the United Kingdom	Randomized, controlled trial Leaflet given during waiting time in office. Intervention patients encouraged by leaflet to write down ideas, questions, concerns. Control leaflet had information on nutrition	Trained patients had greater compliance in behavioral change and follow-up compared with others Limitation: intervention did not work among African Americans Increased visit lengths in intervention group (however, study conducted in the United Kingdom, where average visit length is 8 minutes). Intervention had nonsignificant trend ( $p = .07$ ) to ask more questions compared with control. Intervention may work better for those who are younger and those with higher SES Patient satisfaction surveys revealed no differences on patient satisfaction Limitation of study: Outcomes obtained from audiotapes analyzed two different times from one observer	Front desk may not have time to give out leaflet. Literacy level of leaflet may be too high and may not work as well in lower-SES patients	Not measured	No. Interactive software may transmit patient-questions and concerns directly to doctors' computers. Interactive software can provide information on leaflet in different languages for LEP patient. Videos, streaming, animation, or voice-over technology can modify intervention for use in lower health literacy patients

Note: Health IT = health information technology; LEP = limited English proficiency; RCT = randomized controlled trial; SES = socioeconomic status.

populations have implemented electronic medical records (EMRs) with support and funding from the Health Resources and Services Administration's (HRSA) Office of Health Information Technology (OHIT). Many community health centers are small independent operations, and they have limited capacity to support quality initiatives. To address this issue, a group of community health centers and health plans have received funding from the HRSA High Impact HIT Program to form the Pacific Innovative Collaborative Health Information Technology (PIC HIT) Network (AAPCHO, 2009c). This collaborative has established a central data repository housing aggregate health information from the nine participating health centers. This data network allowed providers to access, in real time, quality indicator reports on their individual patients, enabling them to more effectively monitor and analyze health outcomes.

The PIC HIT Network also received funding from the Robert Wood Johnson Foundation to evaluate whether a pay-for-performance (P4P) approach would improve health outcomes (AAPCHO, 2009b). This ongoing project will determine whether P4P incentives (including incentives for health IT utilization) will be effective in improving glucose levels and decreasing hospitalization rates for patients with diabetes. The study will compare the outcomes of patients seen at FQHCs participating in the P4P strategy with those of a control group of patients seen at non PIC HIT centers.

Health IT has also enabled AAPCHO and its member community health centers to collect data on "enabling services." Enabling services (interpretation, health education, case management, transportation, etc.) are critical to improving access for medically underserved populations but are not usually adequately funded by payers. Prior to implementing health IT, AAPCHO-affiliated centers had difficulty tracking and measuring the impact of these services. The Enabling Services Accountability Project has allowed four clinics, predominantly serving Asian Americans and Pacific Islanders, to use health IT to measure the impact of enabling services on their health outcomes. The study showed that enabling services utilization was associated with better diabetes outcomes among adults and higher immunization rates among children (AAPCHO, 2009a).

A few clinics have used other technologies to improve patient care. For example, one center had automated appointment reminder phone calls delivered in the patients' preferred language. This center also sent text messages to adolescents reminding them of missed appointments and referrals.

At another site, automated telephone self-management support was offered in English, Spanish, and Cantonese to low-income and LEP patients with poorly controlled diabetes (Schillinger, Handley, Wang, & Hammer, 2009). Although there was not a significant improvement in hemoglobin A1C, this initiative was successful in improving patients' self-management behaviors.

## **Conclusions and Future Directions**

In summary, we found minimal published data on interventions to improve provider-patient communication among Asian Americans. Data from non-Hispanic White

populations showed that tools that allow for structured, standardized information exchange between patients and providers have the potential to improve communication (Green et al., 2008). Even a simple leaflet given in the waiting room before the visit that prompts patients to list specific questions and may help patients who feel intimidated or rushed during the visit (Butow et al., 1994; Jacobson et al., 1999; McCann & Weinman, 1996). Questionnaires regarding patients' functional status, quality of life, or other health symptoms can also improve communication. Although none of these interventions were conducted among Asian Americans, the methods could be adapted easily for use among Asians. These "low-tech" communication aids must be designed so that they can be used by low literacy patients or be translated into patients' native languages for those with LEP.

High-intensity interventions involving "coaching" or booklets mailed to patients before the visit (Cegala, Marinelli, et al., 2000; Cegala, McClure, et al., 2000; McGee, 1998), could also be adapted for Asian Americans. These interventions are more resource intensive, but they may be more effective when the booklets are translated into patient's native languages, particularly if the "coach" shares the patients' language and culture. We are currently conducting a study using these methods to improve diabetes care for Vietnamese American patients seen at seven clinics in Southern California (University of California, Irvine, 2009). Trained lay communication "coaches" from the patients' own communities meet with individual patients during the 20 minutes immediately prior to their regularly scheduled physician visits. Coaches use patient-centered, diabetes-related algorithms to train low literacy patients to identify their health concerns and ask more questions in the upcoming visit. To our knowledge, this 2-year study is the first intervention to improve patient-provider communication in an Asian ethnic group.

### *Using Health IT to Enhance Interventions to Improve Provider-Patient Communication*

Health IT can be used to further enhance communication. For example, waiting room computer kiosks can be used for interactive health education and provider communication. Interactive health IT tools that engage, educate, and collect patient-reported data during previsit waiting time can facilitate communication during the visit. Additionally, patients can enter data, such as home glucose monitoring results, into the computer kiosks that can then be transmitted to their providers allowing both the physician and patient to review the data graphically during the visit. Interactive health IT that directly engages patients during the waiting time may lead to more efficient communication and information exchange during the subsequent face-to-face time with their providers. Health IT also has great potential to reach low health literacy or LEP patients through the use of touch screens and other modalities, such as video animation and voice-over technology delivered in different languages. Furthermore, a "virtual" language congruent communication coach could be used to deliver communication training. Health IT strategies that target patients while in the waiting areas alleviate the

need for Internet access from patients' homes, as low-income or LEP Asian immigrants may not have this technological access from home.

The growing use of EMRs throughout the United States presents a number of opportunities and challenges. EMRs have the potential to receive data from a variety of interfaced devices. Patient-generated health questionnaires, symptom scores, and home monitoring data could be made available within the EMR for review at each visit. Availability of patient-specific information such as this has great potential to improve information exchange and communication between patients and providers.

Increasingly, commercial EMR systems have the capability of provider real-time clinical decision support (CDS) for physicians and other members of the health care team. These systems are able to generate automated alerts and reminders aimed at improving the safety and quality of health care. To improve prescribing safety, clinicians can be alerted to potential drug allergies, drug–drug interactions, and dosing errors. CDS also can improve the delivery of preventive services such as immunizations, cancer screening, and lifestyle counseling. Use of EMRs with CDS capabilities in settings that provide care for Asians and other underserved populations has great potential for improving the safety and quality of care they receive.

Some physicians and patients have expressed concerns, however, that the EMR interferes with provider–patient communication. The presence of the computer in the exam room could be intimidating to some patients, and for some clinicians, interacting with the computer becomes the focal point of the visit rather than the patient. There are no studies that have specifically focused on the impact of EMR use on physician communication with Asian patients. However, studies of EMR use in settings with a predominance of White adult patients point to both positive and negative impacts on communication. A recent literature review on the impact of EMRs on provider–patient communication summarizes current findings (Shachak & Reis, 2009). For example, EMR use has been shown to have a positive effect on information exchange, particularly regarding medication use. Conversely, EMR use has been shown to have a negative impact on the degree to which the visit is patient centered. Physicians using EMRs tend to focus more of the encounter time around data gathering and data entry and spend less time on communication and development of rapport with the patient. Some physicians do not appear to use the EMR effectively as a tool for patient education or behavioral counseling. Although the improved information-sharing capabilities of the EMR could positively affect the care of Asian American patients, the negative impact on communication is a concern. We need to better understand the impact of introducing EMRs into the exam room with different patient populations and develop strategies to help minimize the potential negative impacts. Furthermore, providers will need to be trained how best to incorporate the EMR into their daily practice to ensure provider–patient communication is not compromised.

Unfortunately, the potential benefits of the EMR for underserved populations are not yet at hand. There are a number of barriers to the widespread adoption of EMRs, particularly for smaller practices, community clinics, and in rural areas. EMR

installations are costly, require a significant time commitment from physicians and office staff to adapt them to the individual practice, and the return-on-investment for many practices remains elusive. An even greater effort will be required to fully implement robust CDS tools aimed at improving safety and quality. A national strategy for EMR adoption targeted at practices that provide care for Asian Americans and other underserved patient groups is clearly needed. Policy changes must be made to support these activities; and Medicare, Medicaid, and private insurers must implement a reimbursement structure that supports technological innovation, implementation, and maintenance of health IT. Concerted efforts between federal, state, and local governments, working with private industry, academic institutions, and foundations, are needed for success. Additionally, these strategies need to be tailored to the target population and to be evaluated for effectiveness. However, given the potential benefits, especially for populations with significant disparities in health outcomes, it may be cost-effective in the long run to invest in these solutions.

### Authors' Note

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