MyPreventiveCare: An Interactive Preventative Health Record (IPHR)

Adapted Dissemination and Implementation Plan for Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) Community Health Centers in New York City

Gagarin Zhao

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Dr. Rachel Shelton

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Background and Significance

Preventive evidence-based interventions (EBIs) for early detection of cancer and other conditions offer many benefits. However, Americans only receive around half of the services that they are recommended to receive.[1] Just colorectal, prostate, breast, cervical cancers alone claim more than 100,000 lives every year.[2] Timely screening can reduce mortality, but up half of the eligible adults do not receive recommended tests.[3] Fewer than half of American adults are typically up-to-date with preventative services.[4] Patients may face many challenges in receiving the preventive care they need, such as lack of motivation or logistical obstacles.[5] Clinicians may also experience barriers such as lack of time, competing responsibilities, or oversight. Moreover, health systems are often decentralized, underfunded, and lack support to carry out endeavors to close the preventive care gap.[6]

The Health of LGBTQ Communities

Due to a lack of sexual orientation and gender identity questions in most state and national surveys, it is challenging to assess LGBTQ communities' needs to plan for better public health interventions. Sexual minorities experience significant health disparities due to discrimination, stigma, and denial of human and civil rights.[7] LGBTQ youth are more likely to face mental health issues, attempt suicide, and be homeless. Lesbians are less likely to receive preventive services for cancer.[8] Men who have sex with men (MSM), especially MSM of color, are at higher risk of STIs.[9] Lesbian and bisexual women are at higher risk for obesity. Transgender individuals have a high prevalence of HIV, STIs, and mental health issues.[10] LGBTQ populations also have the highest rates of substance use.[11]

Justification of Using Dissemination and Implementation Science

For a community that faces unique health disparities, it becomes crucial to develop feasible EBIs that facilitate patient action in pursuing preventative measures. LGBTQ individuals can find it challenging to prioritize preventive health due to the aforementioned systemic health disparities. MyPreventiveCare is an interactive preventive health record (IPHR) designed to make it easier for

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[1] McGlynn et al., "The Quality of Health Care Delivered to Adults in the United States."
[2] Siegel, Miller, and Jemal, "Cancer Statistics, 2019."
[3] "Behavioral Risk Factor Surveillance System: Prevalence Data."
[4] McGlynn et al., "The Quality of Health Care Delivered to Adults in the United States."
[5] Truglio-Londrigan et al., "A Qualitative Systematic Review of Internal and External Influences on Shared Decision-Making in All Health Care Settings."
[6] Yarnall et al., "Primary Care."
[7] Meyer, "Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations."
[8] Dilley et al., "Demonstrating the Importance and Feasibility of Including Sexual Orientation in Public Health Surveys."
[9] "HIV among Gay and Bisexual Men."
[10] Bauer et al., "'I Don't Think This Is Theoretical; This Is Our Lives.'"
[11] Green and Feinstein, "Substance Use in Lesbian, Gay, and Bisexual Populations."

patients to be engaged in their preventive care. No existing version of MyPreventiveCare has been created or tested on specific underserved populations, demonstrating a gap between research and practice that must be addressed. The IPHR can be used as a tool to make preventive care amongst LGBTQ communities easier for both patients and providers.

The Original MyPreventiveCare

History and Evidence

The IPHR's feasibility was shown through three preliminary studies. The first of which was a randomized controlled trial in 2007-2010, The other two were prospective observational time-series analyses at eight and six primary care practices in 2010-2012, and 2009-2011.[12] These studies allowed IPHR to be integrated into three electronic health records (EHRs), and two commercial personal health record (PHR) platforms. As of 2014, more than 70,000 patients and 190 clinicians used the IPHR, allowing practices to prepare patients for visits, improve counseling discussions, explain test results, and issue automatic patient prompts for services, remind clinicians about services patients need during encounters, and formulate personalized prevention plans. A considerable variation in usage was documented, with the proportion of patients who used MyPreventiveCare ranging from 2% to 60% from clinician to clinician.

Notably, a broad dissemination and implementation trial beginning in 2014 testing the scalability of MyPreventiveCare across three health systems and millions of patients in Oregon and Virginia, across urban, suburban, and rural settings, reaching patients of disadvantaged sociodemographic backgrounds.[13] The results of this study have not been released, possibly due to the immense size of the study.

While working with the transgender and HIV-positive community during my practicum, I was able to collaborate with providers at Callen-Lorde Health Center, a health center specifically catering to LGBTQ patients. I learned that LGBTQ patients face many unique health challenges that are not readily addressed, preventive health care being one of the issues. This experience motivated me to pursue the current project of adapting MyPreventiveCare to LGBTQ community health clinics in New York City.

[12] Krist et al., "Engaging Primary Care Patients to Use a Patient-Centered Personal Health Record"; Krist et al., "Interactive Preventive Health Record to Enhance Delivery of Recommended Care."
[13] Krist et al., "MyPreventiveCare."

Core Components

The core components of a patient-centered health information system like MyPreventiveCare includes five levels of functionality, with systems being most advantageous when they possess all five levels (see Table 1). Most commercial PHRs only deliver levels 1 and 2 functionalities. However, studies have shown that interpretation (level 3), personalization (level 4), and encouraging patient action (level 5) are essential to promote the usage of preventive health measures such as cancer screening.[14] Levels 3 to 5 define the "interactive" portion of an interactive preventive health record. There is room for improvement in the field of disseminating and implementing IPHRs, with the goal of IPHRs like MyPreventiveCare reaching every patient seeking primary care at all types of clinics across the country.

The team at Agency for Healthcare Research and Quality (AHRQ) that created the handbook on IPHRs encourages local tailoring in the clinical environment in order to optimize successful implementation, along with collaboration with administrators to redesign practice systems and care coordination with the patient's provider team.[15] MyPreventiveCare establishes a promising approach to simplifying and improving preventive care, giving patients more ownership over their preventive care while streamlining the provider's workflow.

Table 1: Model for core components of MyPreventiveCare

Level	Functionalities	Details
1	Patient-reported information	Collect information, e.g., self-reported demographics, outcomes, and risk factors
2	Existing clinical information	Integrate patient-reported information with pre-existing clinical information from electronic health records or insurance claims data
3	Interpretation of information	Interpret information for the patient by translating clinical findings into lay language, deliver health information through an accessible online interface
4	Individualization of information	Provide individual recommendations to the patient, e.g., screening reminders based on the patient's risk profile and evidence-based guidelines
5	Patient activation and engagement	Enable informed patient action through the provision of health information resources, decision aids Providing practical support for appointments and follow-up with primary and specialty care

[14] Solberg et al., "Lessons from Experienced Guideline Implementers"; Dolan Mullen et al., "A Meta-Analysis of Trials Evaluating Patient Education and Counseling for Three Groups of Preventive Health Behaviors."
[15] Krist et al., "An Interactive Preventive Care Record: A Handbook for Using Patient-Centered Personal Health Records to Promote Prevention."

From a more technical standpoint, MyPreventiveCare is programmed to integrate with EHR, ensuring that necessary patient data used to create preventive care recommendations are passed from the EHR to the IPHR, creating links to the IPHR through the health center's existing PHR, transferring clinician summaries, and alerts into the health center's EHR, and tailoring the IPHR content to meet each clinic's specific resources and needs.

MyPreventiveCare for LGBTQ Communities

My Perspective

For this project, my perspective will be that of a program director at the New York City Department of Health and Mental Hygiene, specializing in LGBTQ health program planning. As a program director who frequently collaborates with LGBTQ community health centers in NYC, I will be able to use my network to my benefit as I work to adapt, disseminate, and implement MyPreventiveCare for widespread usage across the health centers.

Adapted Program

MyPreventiveCare will be adapted to focus on usage in LGBTQ health centers in New York City. The scope of the original version of MyPreventiveCare is quite broad, with the 2014 D&I trial spanning three health systems across hundreds of health centers. There has been no previous attempt for a population-specific and locally tailored strategy for MyPreventiveCare. Because IPHRs are inherently open to adaptation and customization, my main focuses will be on disseminating MyPreventiveCare to key stakeholders at LGBTQ health centers and ensuring optimal implementation keeping resource limitations in mind.

Because MyPreventiveCare has not been implemented in the current setting yet, the program will be disseminated and implemented at multiple sites as pilot programs. A list of community health centers catering to or accepting of LGBTQ individuals was identified as locations to disseminate information to, and recruit for participation in implementing MyPreventiveCare in the program (see Table 2). Several of the organizations are federally qualified health centers (FQHCs). These centers are community-based that receive funding from the Human Resources & Services Administration to provide primary care services in underserved areas or to underserved populations. A total of 30 clinics will be included in the D&I plan, with a total of approximately 158,000 patients served per year. Although several of the centers do not advertise themselves as LGBTQ-specific health centers, they are openly accepting of LGBTQ patients, and their reported patient population consists of a large proportion of LGBTQ individuals.

Table 2: LGBTQ community health centers in NYC

Center	FQHC	Number of clinics across NYC	Approximate number of patients served per year
Callen-Lorde Community Health Center	Yes	3	18,000
Community Health Network	Yes	14	85,000
Planned Parenthood	No	5	25,000
GMHC	No	1	15,000
APICHA	Yes	1	15,000
Total		**30**	**158,000**

I chose NYC as the locale for the current location of the dissemination and implementation plan because both New York State and the city of New York have been socially liberal regarding LGBTQ rights. The community has had a long history and extensive culture in the city. The liberal political standpoint has been generally beneficial to the funding and development of numerous LGBTQ-friendly health clinics and programs. A program that specifically caters to the LGBTQ community is more likely to receive funding in NYC rather than a more conservative location. If MyPreventiveCare is successfully adapted in the currently proposed setting, other cities and states will possibly use the plan as a basis for their own IPHR adaptation plan.

Key stakeholders

Stakeholders of interest include health center board members and senior staff, such as the executive directors, chief medical officers, and senior information technology officers. Additional decision-makers such as directors of information technology, directors of finance also have deciding power over the implementation of MyPreventiveCare within the community health centers they run. All staff and clinicians of systems influenced by the IPHR should be included as stakeholders. Staff and clinicians who are involved with prevention delivery, nursing activities, managing phone calls, EHR support, and patient portal configuration and use should be a part of the conversation in adapting MyPreventiveCare to each community health center.

Community advisory boards at the community health centers, which are comprised of volunteer patients and families of patients, will be key stakeholders in this process. They can be depended on to provide valuable and honest feedback which aids improvements to the implementation process. They can also become champions in word-of-mouth promotion of MyPreventiveCare. Although patients can only enroll in MyPreventiveCare through their primary care

physician, a patient who already has a positive attitude regarding the IPHR through hearing it from a family member is much more likely to enroll.

The HIV Health and Human Service Planning Council of New York is another longstanding entity that will be involved. Because I will be expanding targeted preventive care items to sexual health and mental health, HIV care and prevention becomes a significant part of the adaptation plan. Key decision-makers attend the council's monthly meetings. Introducing the adaptation plan at a meeting would be an efficient way to spread information to a group of people who could help disseminate to LGBTQ health centers.

Executive directors at individual health centers will formulate task forces to implement the adapted IPHR in collaboration with the study team. The implementation task force should include around 15 members consisting of one learning collaborative facilitator, 4 to 10 learning collaborative members, and several performance and evaluation staff members.

Incorporation of "derailers," staff and clinicians who initially have a negative perception of MyPreventiveCare, is an integral part of the adaptation process. Derailers have the potential to be turned into champions if involved early on if their input is incorporated into the adaptation process.

Financial considerations

Community health centers, especially LGBTQ health centers, provide care to many Medicaid patients and are publicly funded or depend on private donors. Thus, the centers mostly likely will not be able to provide funding of their own to support the implementation of MyPreventiveCare at their clinics. Nonetheless, this adaptative effort is vital in showing the possibility of preventive care in LGBTQ communities, to inspire future improvements in underfunded health systems serving underserved communities.

Following the introduction of MyPreventiveCare to executive directors at the 30 community health clinics in NYC, my team will begin seeking grant funding. The 2014 D&I trial received funding from the National Cancer Institute and the National Center for Advancing Translational Sciences for their trial, which focused primarily on cancer prevention. For the current plan, my team will seek funding from the two institutes and, additionally: the Ryan White HIV/AIDS Program and Substance Abuse and Mental Health Services Administration (SAMHSA). Supplementary sources of funding are added because my adaptation plan aims to expand the types of preventive care suggestions MyPreventiveCare offers to encompass mental health, sexual health, and substance abuse, beyond cancer prevention. The program requires three years of funding at $500,000 a year.

The development and baseline phase will take up 1-1.5 years of the study timeline. During this time, integration of the adapted intervention into existing EHRs and PHRs will take place, as well as recruitment. From the 1-1.5-year time point until the end of three years, MyPreventiveCare will be implemented and evaluated across all 30 clinics across five LGBTQ community health centers in NYC.

Funding will ensure the successful promotion of adaptation, dissemination, implementation, evaluation, sustainability, and communication of findings.

Adaptation Models and Strategies

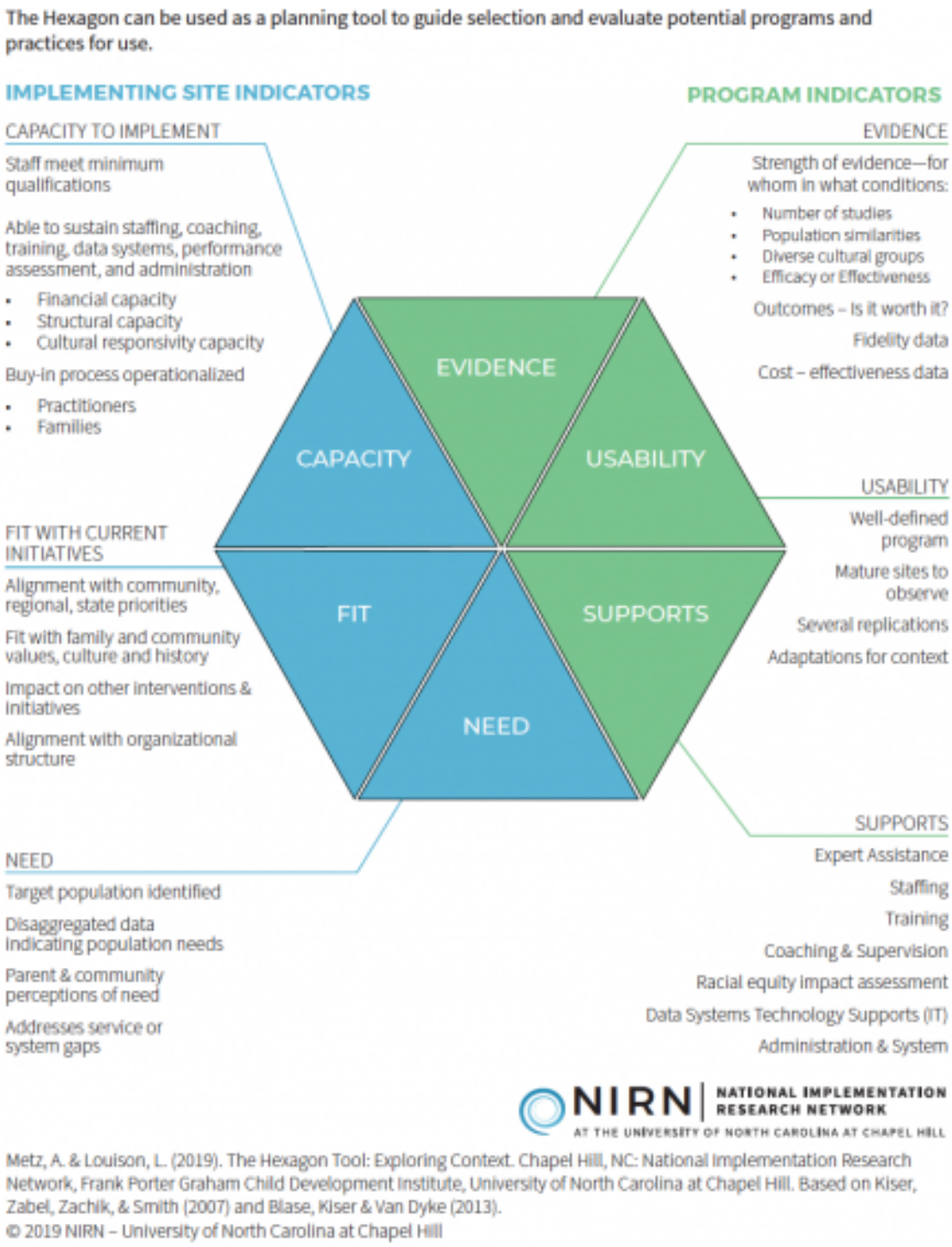
An advantage of adapting MyPreventiveCare is that it was designed by its creators to be fully tailorable to different clinics and individual patients. For instance, level 4 of the core components of an IPHR is individualization of information, which means the IPHR system should be capable of making suggestions based on two things: (1) information that the patient inputs, and (2) their EHR which is controlled by their primary care provider. However, IPHRs were initially designed to serve older individuals in promoting cancer screening. Although research has shown that specific subpopulations within the LGBTQ community tend to screen for cancer less readily than suggested,[16] cancer prevention will not be the focus when adapting MyPreventiveCare to LGBTQ community health centers. Patients who receive care at LGBTQ centers tend to be younger and have different health risks than the population used in the 2014 D&I trial and previous studies testing for efficacy.[17] Therefore, suggestions for preventive care will differ in the IPHR patient portal in the current study.

In addition to ADAPT-ITT, elements from Complex Adaptive Systems Theory will be used to encourage staff and clinicians at all health centers and clinics to use various creative solutions to experiment and evolve their implementation strategies according to their clinic's specific needs.[18] At the training, staff and clinicians will be encouraged to suggest tactics on how to motivate patients to use IPHRs. This helpful feedback has the potential to be incorporated into materials for later training sessions.

Component of the Hexagon Tool (see Figure 1) overlap with parts of the ADAPT-ITT model. It offers an additional way of assessing the readiness of the target setting for an adapted MyPreventiveCare intervention.

[16] Buchmueller and Carpenter, "Disparities in Health Insurance Coverage, Access, and Outcomes for Individuals in Same-Sex Versus Different-Sex Relationships, 2000–2007."
[17] Hafeez et al., "Health Care Disparities Among Lesbian, Gay, Bisexual, and Transgender Youth."
[18] Dooley, "A Complex Adaptive Systems Model of Organization Change."

Figure 1: The Hexagon Tool: An exploration tool



Metz, A. & Louison, L. (2019). The Hexagon Tool: Exploring Context. Chapel Hill, NC: National Implementation Research Network, Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill. Based on Kiser, Zabel, Zachik, & Smith (2007) and Blase, Kiser & Van Dyke (2013).

Usage of ADAPT-ITT in Adaptation Efforts

The ADAPT-ITT model will be used to detail the adaptation processes in applying MyPreventiveCare to the LGBTQ community health centers.[19] Deep adaptations are the focus of this effort, with some surface adaptation components that will aid the acceptability of MyPreventiveCare to the target population. By mapping steps of the ADAPT-ITT model onto the adaptation process, I can ensure each part of the original MyPreventiveCare is appropriately modified to match the needs of the LGBTQ community.

Assessment

The *assessment* step involves determining the target setting or population for intervention. For my adaptation of MyPreventiveCare, LGBTQ community health centers in New York City were determined to be a fitting setting due to their similarity in patients served, providers hired, and in funding levels. Preventive care may not be the top priority at the targeted health centers because clinicians are often limited in time and resources. Clinicians and staff at FQHCs have been increasingly dissatisfied with work conditions, which, combined with underinsured patients, exacerbate the issue of neglected preventive care.[20] MyPreventiveCare offers a way to ease the strain on both patient and provider by delivering a way for patients to take preventive care into their own hands and effectively communicate their concerns productively and simply. Health centers and clinics will all have a varying need for support. Minimal additional staffing will be needed, although staff and clinician buy-in in mandatory. With appropriate funding and expert consultancy, the locations will have sufficient capacity to implement and maintain MyPreventiveCare.

Decide

The *decide* step of the model refers to the selection of an EBI to be adapted. MyPreventiveCare was selected due to its broad evidence base; it demonstrated feasibility in several studies and experienced success thus far in the D&I trial that began in 2014. Although it is a large and expensive undertaking involving many specialists and consultants to initially implement, MyPreventiveCare has proven itself to be effective in improving preventive care among diverse populations long-term. Adapting it to LGBTQ communities is a good step in reducing the scope of implementing the IPHR to a specific population with a particular set of preventive care needs.

[19] Wingood and DiClemente, "The ADAPT-ITT Model."
[20] Friedberg et al., "Federally Qualified Health Center Clinicians And Staff Increasingly Dissatisfied With Workplace Conditions."

Administration

Detailed aspects of the EBI that are adapted are determined in the *administration* step. During this step, the team decides which adaptations are appropriate or inappropriate for maintaining the core components of the intervention. The appropriateness of adaptations is categorized into three levels: green light, yellow light, and red light. Green light adaptations are ones that are appropriate to use because they do not impact the core components of the program. Yellow light adaptations should be applied with caution as they could impact the core components of the program and reduce the effectiveness of the program. Red light adaptations are those that should not be applied as they would majorly change the core components of the program. My adaptation plan will involve mostly green light adaptations, seeing I am keeping all parts of MyPreventiveCare core components. The program is especially suited to adaptation because it was created with flexibility in mind, with personalization being an essential part of the IPHR.

Several adaptations are necessary to ensure MyPreventiveCare's relevance to LGBTQ communities. As previously mentioned, the original MyPreventiveCare implementation and dissemination trial focused on cancer screening in disadvantaged populations. Along with cancer-related preventive health modules, MyPreventiveCare for LGBTQ individuals should contain additional modules focused on mental health, sexual health, and substance abuse, being considerate of societal challenges and identity issues that LGBTQ individuals may face. For instance, gender-affirming procedures were not covered by Medicaid until 2015, which was a challenging experience damaging to the mental health of many individuals in the LGBTQ community.

Some front-end changes will need to take place in designing the visual components of the patient portal to contain imagery related to LGBTQ health issues. If photos of individuals are included, they should contain LGBTQ individuals of all races.

Focus groups will be conducted to test the effectiveness and appropriateness of the new drafted materials. After incorporating feedback from key stakeholders, the research team, in collaboration with senior staff members at each health center, will modify the materials accordingly.

Production

The *production* step describes the full draft of the intervention with adapted components. During this step, core components must be preserved. As such, all five levels of the IPHR core functionalities will be kept: (1) patient-reported information, (2) existing clinical information, (3) interpretation of information, (4) individualization of information, and (5) patient activation and engagement. Additionally, the newly proposed training modules will be included in this draft.

Topical experts

Topical experts are individuals who are considered to have expertise related to the contents of the intervention. For MyPreventiveCare, experts include consulting IT professionals with experience in EHRs and IPHRs. LGBTQ advocates will be consulted to provide direction on the relevance of suggested preventive health services, cultural sensitivity, and proper terminology. Because IPHRs are not yet widely used, it is also reasonable to involve the original researchers from the 2014 MyPreventiveCare D&I trial to gain their expertise in the adaptation process. These highly skilled individuals, in combination with the focus group mentioned above, will provide feedback on the full draft of the adapted intervention.

Integration

Successful *integration* comprises of including expert feedback into the adapted MyPreventiveCare program. This version of MyPreventiveCare will be piloted at the NYC health centers to test the program before more widespread dissemination and implementation at other LGBTQ-focused health centers and clinics across the country.

Train

The *train* step refers to the training that the staff and clinicians must receive in order to deliver the intervention. A loose suggestion of a training plan was outlined in AHRQ's IPHR guidelines with three main suggested topics: (1) Becoming familiar with the IPHR, (2) learning about how better to enter information into the EHR, (3) redefining roles for the revised workflow to include the IPHR. Examples provided of training activities include group lectures, handbooks, email updates, and peer-to-peer learning.

For the current purposes, a more detailed training plan will be developed because the adaptation plan seeks to reduce the EBI in scope and focus on a more sensitive population than the original trial. In the 2014 D&I trial, IT staff were tasked with around 200 hours of work to set up and maintain IPHR integration. Clinicians were then "asked to encourage adult patients age 18-75 to use their PHR with its new IPHR features."[21] In the adaptation process, we will work to develop a more detailed training strategy to inform clinicians to suggest the program to their patients better. All patient-facing staff will receive an hour-long group training offered by the study team on the functionalities of MyPreventiveCare and the types of preventive care issues it aims to address. They will be given a loose script that helps to recruit IPHR users. Subsequently, participants in the training

[21] Krist et al., "MyPreventiveCare."

will receive a short manual to take home and periodic email newsletters regarding the MyPreventiveCare implementation process. Lastly, the clinician at each clinic to enroll the most patients in IPHR will receive prizes and commendation in the abovementioned email newsletters. These additional components do not change the core component, fidelity, or evidence-base of MyPreventiveCare. Instead, they may help to encourage more dedication to the implementation efforts.

Test

The *test* phase involves designing a pilot test of the adapted intervention. MyPreventiveCare is an inherently tailorable intervention with proven efficacy and minor adaptive modifications. Moreover, the 2014 D&I trial did not use piloting before disseminating and implementing across 230 practices. Thus, all 30 clinics across five health centers will be enrolled in MyPreventiveCare for the current adaptation trial. This process will begin with the development phase, which includes integration of IPHR into health system EHRs and PHRs, local tailoring, and frequent consultation from the study team and topical experts. These efforts will last 1-1.5 years before MyPreventiveCare can be implemented and evaluated.

Dissemination Framework and Strategies

My team will be actively distributing information regarding the adapted MyPreventiveCare program in a process described as dissemination. The proposed intentional dissemination strategies will ensure that adopters and implementors receive appropriate information on the program. These strategies will involve both passive and active passage of information, which will boost the chances of successful adoption of MyPreventiveCare.[22] The Diffusion of Innovations (DOI) theory is a helpful framework to guide the process of planning dissemination strategies specific to individuals, communication channels, and content, as related to MyPreventiveCare for LGBTQ communities.

[22] Glanz, Rimer, and Viswanath, *Health Behavior*.

Diffusion of Innovations

Diffusion of innovations is a theory that aims to explain the ways that new technologies and ideas are adopted and spread.[23] Adopters are represented by a bell curve, with most individuals being early majority, late majority, and laggards (see Figure 2). The key to optimizing the dissemination process is to focus on 2.5% of innovators and 13.5% of early adopters. Glanz et al. describe important interconnected actors within these two categories of individuals who hold instrumental and influential roles in the dissemination process: change agents, potential adopters, implementors, and opinion leaders.[24]

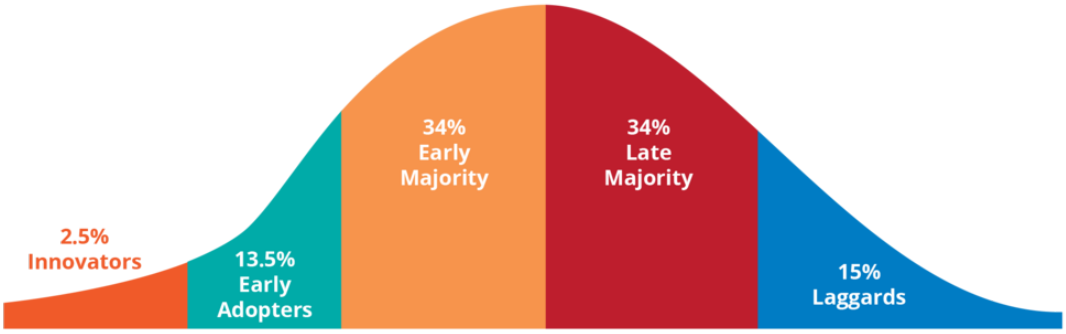


Figure 2:Diffusion of Innovations, Adopter Categories (Rogers)

Change agents represent external change agencies and can promote innovations within organizations through potential adopters. The latter are members of the same organization and have the power to decide whether adoption should occur. Implementors are potential adopters who have chosen to use the intervention in the given setting. Opinion leaders are well-respected members within the proposed setting of the intervention who have the power to influence the opinions of others in their community. Discovering the individuals who hold these roles and the social structure within an organization requires time and effort but can ultimately be a significant part of successful dissemination.

Rogers also describes five characteristics that an effective innovation must have: relative advantage, cost, simplicity, trialability, and observability.[25] Relative advantage measures how much better an innovation is better than the current intervention or technology. Cost refers to the return on investment into the innovation, and whether it is worth the funding it receives. Simplicity is the ease of integrating the innovation into the system and its ease of understanding. Trialability depicts the innovation's ability to be tried out before full implementation, while observability is the extent to

[23] Rogers, *Diffusion of Innovations.*
[24] Glanz, Rimer, and Viswanath, *Health Behavior.*
[25] Rogers, *Diffusion of Innovations.*

which its adopters can see its positive effects. Addressing these aspects of dissemination is imperative to promoting the adoption of a novel intervention and should be prioritized in the early stages of the D&I plan.[26]

MyPreventiveCare Dissemination Strategies

MyPreventiveCare change agents are individuals from health centers who consulted on the adaptation plan and the members of the research team. Adopters of the intervention are other LGBTQ health center leaders in NYC. Clinicians and staff at each clinic are implementors, and opinion leaders are well-respected, experienced clinicians who are known by their peers to be trustworthy and knowledgeable.

Table 3: MyPreventiveCare Dissemination Strategies

Type	**Strategy for Fulfillment**	**Addressed Intervention Characteristics**	**Actor Classification**	**Targeted Stakeholders**
Active	Webinar on proven functionality and benefits	Relative advantage, trialability, cost, simplicity, observability	Opinion leaders	Board members of health centers, senior staff, experienced clinicians and staff
	Personalized emails	Relative advantage, trialability, cost, simplicity, observability	Opinion leaders, adopters, implementers	Community advisory boards, HIV Planning council members, senior staff at health centers
Passive	Mass email newsletter through NYS LGBT Health & Human Services Network	Relative advantage, cost, simplicity	Adopters, implementers	Senior staff at health centers, experienced clinicians and staff
	Interpersonal relationships (word-of-mouth)	Relative advantage, cost, simplicity	Adopters, implementers	Senior staff at health centers, experienced clinicians and staff

Specific dissemination strategies are described in Table 3. A mixture of passive and active types of strategies will be utilized in the process, which will address desired DOI innovation characteristics. Each strategy was created with corresponding targeted stakeholders in mind. The NYS LGBT Health & Human Services Network is a coalition founded in 1994 consisted of 72 LGBT-specific and LGBT-supportive nonprofit organizations in New York State. Network members are leaders in providing LGBTQ care to New Yorkers.[27] A mass email newsletter informing members about the details and

[26] Glanz, Rimer, and Viswanath, *Health Behavior*.
[27] "The New York State LGBT Health & Human Services Network."

benefits of MyPreventiveCare allows a to become acquainted with the intervention. Because there is no way to test the IPHR without integrating it with existing EHR/PHR, a short webinar will be sent out to board members and senior staff to inform them of the advantages of implementing MyPreventiveCare. Additionally, word-of-mouth within health centers and personalized emails to known influential leaders will be used as a part of dissemination strategies.

Implementation Frameworks and Strategies

Similar to the adaptation phase, stakeholders will be involved in the development of implementation strategies. IPHRs are inherently implementable in a variety of settings. However, the study team must continuously collaborate with local executive directors, chief medical officers, senior information technology officers, and additional decision-makers such as directors of information technology, directors of finance. Each of the five health centers and each of the 30 clinics will have their own teams, team leaders, and a slightly different approach to implementing MyPreventiveCare. These individuals from different clinic settings will provide feedback and advice to optimize the implementation process.

Organizational Change Theory offers a toolset for research staff to help health centers and clinics to prioritize MyPreventiveHealth use, form a guiding coalition, develop and communicate a shared objective, empower clinics to act on their own objectives, plan for short-term successes, and track improvements and systemize achievements.[28] In addition to Organizational Change Theory, Consolidated Framework for Implementation Research (CFIR) will be used to develop implementation strategies, along with corresponding Expert Recommendations for Implementation Change (ERIC), to manage barriers and work with facilitators.

CFIR & ERIC

CFIR suggests five important barriers and facilitators that must be addressed in the process of implementation: intervention characteristics, outer setting, inner setting, characteristics of the individuals involved, and the process of implementation.[29] To date, 39 CFIR constructs have been listed, each belonging to one of the five constructs. Table 4 shows select constructs about the development of the MyPreventiveCare implantation plan, along with corresponding ERIC strategies and applicable implementation characteristics. ERIC originated from a 2015 study that intended to

[28] Batras, Duff, and Smith, "Organizational Change Theory."
[29] Damschroder et al., "Fostering Implementation of Health Services Research Findings into Practice."

consolidate implementation strategies by compiling strategies and definitions from numerous research studies.[30]

Table 4: MyPreventiveCare Implementation Strategies

CFIR Domain	Select CFIR Construct	ERIC Strategy	Implementation Characteristics
Inner context	Readiness for implementation, climate	Assess for readiness and identity barriers and facilitators	Surveys to clinicians, phone and in-person interviews with senior leadership at health centers
Outer context	Patient needs and resources	Needs assessment	Exploratory research selecting EBI and conducting adaptation
Individual characteristics	Self-efficacy	Ongoing training	Monthly on-site maintenance training by external change agent
Intervention characteristics	Complexity	Develop formal implementation blueprint	Work with stakeholders to develop timeline, goals, and performance measures
Process	Reflecting and evaluation	Audit and provide feedback	Collect data from each health center frequently to assess effectiveness, fidelity, and satisfaction
	Executing	Provide technical assistance	Continual collaboration with on-site IT teams, provision of guides and measurement tools

Evaluation Design

Study Design

The current dissemination and implementation study of adapted MyPreventiveCare for LGBTQ community health centers will have a hybrid-3 stepped-wedge approach across five health centers. The hybrid-3 design allows for focused evaluation of dissemination and implementation strategies and intent to observe and gather information on anticipated health outcomes. Because I am adapting MyPreventiveCare to a smaller, different population than the previous D&I trial, a hybrid design is vital to assess differences. Intended health outcomes will not be directly measured in evaluation. The effectiveness of MyPreventiveCare has already been established. Expansion of the types of recommended preventive services from cancer to include mental health, sexual health, and substance abuse indicates more information on the effectiveness of MyPreventiveCare is needed. However, evaluation of the health outcomes will require more resources and time than the allotted

[30] Powell et al., "A Refined Compilation of Implementation Strategies."

three years. At this time, the priority is testing the dissemination and implementation of MyPreventiveCare for LGBTQ community health centers. At a later time, intervention outcomes can be measured. Possible measurable intervention outcomes include the delivery of screening tests and other preventive measures, the extent to which the intervention succeeds in creating shared decision-making, and qualitative patient perceptions of MyPreventiveCare.

The five health centers will start at baseline following the development and recruiting phase. They will be randomized to implement MyPreventiveCare at different times to allow for thorough pre and post testing. Individual clinics will not be randomized because all clinics at the same health centers use the same electronic health system and can implement at the same time. The stepped wedge design gives the study staff sufficient time and resources to ensure each health center's success in implementing and evaluating MyPreventiveCare for LGBTQ health centers.[31] RE-AIM will be used as the basis for process and outcome evaluation design.

Dissemination Evaluation Approach

The success of dissemination can affect the fate of an EBI before it is ever implemented. The purpose of dissemination is to promote the adoption of the program by reaching key stakeholders early in the D&I process. Reach, acceptance, intention, and initial adoption are outcomes of interest during dissemination evaluation. Data collection will occur in the forms of adopter surveys, informal verbal and formal written agreements, and administrative records of targeted individuals receiving disseminated materials. Table 5 lists outcomes of interest, associated measures, and specific indicators.

Evaluation of dissemination is essential in determining useful methods of promoting MyPreventiveCare specific to LGBTQ community health centers, an important step in the adapted D&I plan.

[31] Brown et al., "An Overview of Research and Evaluation Designs for Dissemination and Implementation"; Mazzucca et al., "Variation in Research Designs Used to Test the Effectiveness of Dissemination and Implementation Strategies."

Table 5: Dissemination Evaluation Measures and Indicators

Outcome of Interest	Measure	Indicator
Reach	Receipt of disseminated materials	Proportion of individuals who self-report they have received a dissemination strategy out of those listed in study team's administrative records
Awareness	Knowledge of MyPreventiveCare for LGBTQ health centers	Level of knowledge regarding MyPreventiveCare indicated by an emailed survey to stakeholders
Acceptance	Approval of MyPreventiveCare as a relevant intervention	Self-reported attitude regarding MyPreventiveCare indicated by an emailed survey to stakeholders
Intention	Serious interest in MyPreventiveCare	Following initial awareness and acceptance, an individualized follow-up correspondence will occur for informal agreement to adopt
Initial Adoption	Interest in initial adoption of the program	Formal agreement in written language to document an interest in adoption

Implementation Evaluation Approach

Implementing an adapted program is challenging, and therefore requires extensive evaluation to measure the effectiveness of planned strategies. The outcomes of adoption, appropriateness, feasibility, fidelity, and cost will be measured in the implementation of MyPreventiveCare for LGBTQ community health centers. Outcomes will be measured through the following data collection methods: quantitative and qualitative surveys, focus groups, official documentation of the intervention, and financial records. Table 6 lists outcomes of interest, associated measures, and specific indicators for implementation.

Successful evaluation of implementation strategies paves the way for future implementations of MyPreventiveCare for LGBTQ community health centers across the country. As mentioned, the current study will not directly measure outcomes of actual usage of preventive care services, the intended health outcome. However, through observation at each site and input from patients and staff, the study team will be able to gain preliminary findings regarding the efficacy of MyPreventiveCare for LGBTQ communities.

Table 6: Implementation Evaluation Measures and Indicators

Outcome of Interest	Measure	Indicator
Adoption	Extent to which MyPreventiveCare is adopted	Successful recruitment of site champions and team leaders, list of participating health centers with senior leadership buy-in
Appropriateness	Fit of MyPreventiveCare into each health center and clinic	Self-reported attitudes through a survey and focus groups with stakeholders
Feasibility	Practicality of MyPreventiveCare to be implemented at each health center and clinic	Self-reported attitudes through a survey and focus groups with stakeholders, observation at each location
Fidelity	Extent to which the program was implemented as intended	Surveys clinicians and staff, surveys to patients, separate surveys and correspondence with senior leadership at each clinic
Cost	Cost of implementing at each health center and clinic	Official reports and invoices provided by senior staff at each health center and the study team

Sustainability

Sustainability is a vital continuation of successful implementation. Following the three years of planning and implementation, attention must be paid to developing sustainability efforts to sustaining MyPreventiveCare at all study sites. If the EBI achieves long-term success in LGBTQ community health center settings, MyPreventiveCare will have a higher likelihood of being adopted by more LGBTQ community health centers across the country. Relatedly, LGBTQ preventive health programming will receive more attention in public health research and more funding.

The Program Sustainability Assessment Tool (PSAT) will be used to assess the sustainability capacity of the program. The PSAT proposes eight domains that must be addressed for successful sustainability: environmental support, funding stability, partnerships, organizational capacity, program evaluation, communications, and strategic planning.[32]

Luckily, most of the challenging work in implementing MyPreventiveCare takes place in the beginning stages, where the study team and IT professionals collaborate to solve technical issues and integrate the IPHR system with existing EHR and PHR systems. Following this stage, staff will be

[32] Luke et al., "The Program Sustainability Assessment Tool."

responsible for software and hardware maintenance and updates, as well as appropriate adjustments to the content within the IPHR, as suggested by stakeholder feedback. This second stage requires less funding and staffing than the set-up stage but needs continued but limited collaboration with the study team and topical experts. Clinicians, who are responsible for informing their patients about MyPreventiveCare, will receive email updates and incentives to maintain their motivation to enroll participants.

To optimize maintenance despite possible staff turnover, the study team must encourage the upkeep of learning collaborative records, practice surveys, practice diaries, and transcripts of patient interviews will be produced within each health center throughout the implementation process. By doing so, current implementors are not only able to pass on knowledge to new staff, but also foster a sense of camaraderie among themselves. Moreover, early and continuous involvement of stakeholders and community advisory boards promotes environmental support.

Consistent, concise, and candid communication between the study team and health centers will emphasize the importance of MyPreventiveCare implementation. These communication networks, in addition to the sustainability strategies mentioned earlier, will help to build lasting relationships surrounding the program beneficial to future MyPreventiveCare implementation plans for LGBTQ community health centers on a broader scale.

Communication of Findings to Stakeholders

Communication of findings in all steps of the adaptation, dissemination, and implementation plan is critical to the future success of MyPreventiveCare. The study team must commit to informing current stakeholders and promoting the program for potential future adopters. The eventual goal of MyPreventiveCare for LGBTQ community health centers is an expansion to other large cities, and eventually to all LGBTQ health clinics across the country.

Specific communication strategies need to be utilized to reach different audiences. Senior leadership at all involved health centers will be given quarterly in-person or web-based presentations on the progress of MyPreventiveCare D&I. Using the previously proposed dissemination channel via mass email newsletters through NYS LGBT Health & Human Services Network, the study team will work to produce additional newsletters regarding results from the implementation process and outcome. Community health advisory boards and the HIV Health and Human Service Planning Council of New York will receive periodic updates in the form of emails or fact sheets reporting on the MyPreventiveCare implementation efforts. Detailed annual reports to the DOHMH and interested public will include quantitative and qualitative data regarding the performance of the D&I plan. This

report aims to inform senior leadership at the DOHMH on the successes and importance of preventive care for LGBTQ communities, and the effectiveness of MyPreventiveCare in addressing disparities. Support from senior officials at government entities improves the future success of the program. Furthermore, the methods and results of the current MyPreventiveCare for LGBTQ community health centers D&I plan will be compiled and published as an article in an implementation science journal to publicize findings further.

Adapting MyPreventiveCare to LGBTQ community health centers is an essential step in addressing numerous health disparities specific to the population. The successful demonstration of benefits and details of the D&I plan will improve public opinion and support the development of the intervention beyond the first NYC-area implementation sites, thereby promoting LGBTQ preventive health.

Conclusion

MyPreventiveCare began as a proposed IPHR that offers individualized preventive health suggestions for a broad population base. In recognizing the distinct preventive health risks LGBTQ individual are subject to, and the shortage of EBIs specifically targeting these issues, I adapted the IPHR to LGBTQ health centers. A program initially designed to chiefly prompt increased cancer screenings, MyPreventiveCare was expanded in the current D&I plan also to include mental health, sexual health, and substance abuse prevention measures. Additional minor changes were made, such as the use of appropriate and culturally sensitive language and imagery under the guidance of experts. Specific dissemination and implementation strategies were created through the direction of theoretical frameworks and identified stakeholders, with process and outcome evaluation informed by the RE-AIM framework. Upon consideration of program sustainability and communication of findings to stakeholders and the public, MyPreventiveCare for LGBTQ community health centers could establish itself as an instrumental milestone in LGBTQ preventive health.

Full Citations

Batras, Dimitri, Cameron Duff, and Ben J. Smith. "Organizational Change Theory: Implications for Health Promotion Practice." *Health Promotion International*, November 14, 2014, dau098. https://doi.org/10.1093/heapro/dau098.

Bauer, Greta R., Rebecca Hammond, Robb Travers, Matthias Kaay, Karin M. Hohenadel, and Michelle Boyce. "'I Don't Think This Is Theoretical; This Is Our Lives': How Erasure Impacts Health Care for Transgender People." *Journal of the Association of Nurses in AIDS Care* 20, no. 5 (September 2009): 348–61. https://doi.org/10.1016/j.jana.2009.07.004.

"Behavioral Risk Factor Surveillance System: Prevalence Data," 2019. http://apps.nccd.cdc.gov/brfss/index.asp.

Brown, C. Hendricks, Geoffrey Curran, Lawrence A. Palinkas, Gregory A. Aarons, Kenneth B. Wells, Loretta Jones, Linda M. Collins, et al. "An Overview of Research and Evaluation Designs for Dissemination and Implementation." *Annual Review of Public Health* 38, no. 1 (March 20, 2017): 1–22. https://doi.org/10.1146/annurev-publhealth-031816-044215.

Buchmueller, Thomas, and Christopher S. Carpenter. "Disparities in Health Insurance Coverage, Access, and Outcomes for Individuals in Same-Sex Versus Different-Sex Relationships, 2000–2007." *American Journal of Public Health* 100, no. 3 (March 2010): 489–95. https://doi.org/10.2105/AJPH.2009.160804.

Damschroder, Laura J, David C Aron, Rosalind E Keith, Susan R Kirsh, Jeffery A Alexander, and Julie C Lowery. "Fostering Implementation of Health Services Research Findings into Practice: A Consolidated Framework for Advancing Implementation Science." *Implementation Science* 4, no. 1 (December 2009): 50. https://doi.org/10.1186/1748-5908-4-50.

Dilley, Julia A., Katrina Wynkoop Simmons, Michael J. Boysun, Barbara A. Pizacani, and Mike J. Stark. "Demonstrating the Importance and Feasibility of Including Sexual Orientation in Public Health Surveys: Health Disparities in the Pacific Northwest." *American Journal of Public Health* 100, no. 3 (March 2010): 460–67. https://doi.org/10.2105/AJPH.2007.130336.

Dolan Mullen, Patricia, Denise G Simons-Morton, Gilbert Ramírez, Ralph F Frankowski, Lawrence W Green, and Douglas A Mains. "A Meta-Analysis of Trials Evaluating Patient Education and Counseling for Three Groups of Preventive Health Behaviors." *Patient Education and Counseling* 32, no. 3 (November 1997): 157–73. https://doi.org/10.1016/S0738-3991(97)00037-2.

Dooley, Kevin J. "A Complex Adaptive Systems Model of Organization Change." *Nonlinear Dynamics, Psychology, and Life Sciences* 1, no. 1 (1997): 69–97. https://doi.org/10.1023/A:1022375910940.

Friedberg, Mark W., Rachel O. Reid, Justin W. Timbie, Claude Setodji, Aaron Kofner, Beverly Weidmer, and Katherine Kahn. "Federally Qualified Health Center Clinicians And Staff Increasingly Dissatisfied With Workplace Conditions." *Health Affairs* 36, no. 8 (August 2017): 1469–75. https://doi.org/10.1377/hlthaff.2017.0205.

Glanz, Karen, Barbara K. Rimer, and K. Viswanath, eds. *Health Behavior: Theory, Research, and Practice*. Fifth edition. Jossey-Bass Public Health. San Francisco, CA: Jossey-Bass, 2015.

Green, Kelly E., and Brian A. Feinstein. "Substance Use in Lesbian, Gay, and Bisexual Populations: An Update on Empirical Research and Implications for Treatment." *Psychology of Addictive Behaviors* 26, no. 2 (June 2012): 265–78. https://doi.org/10.1037/a0025424.

Hafeez, Hudaisa, Muhammad Zeshan, Muhammad A Tahir, Nusrat Jahan, and Sadiq Naveed. "Health Care Disparities Among Lesbian, Gay, Bisexual, and Transgender Youth: A Literature Review." *Cureus*, April 20, 2017. https://doi.org/10.7759/cureus.1184.

"HIV among Gay and Bisexual Men." Atlanta: Centers for Disease Control and Prevention (CDC), February 2017.

Krist, A. H., S. H. Woolf, G. A. Bello, R. T. Sabo, D. R. Longo, P. Kashiri, R. S. Etz, et al. "Engaging Primary Care Patients to Use a Patient-Centered Personal Health Record." *The Annals of Family Medicine* 12, no. 5 (September 1, 2014): 418–26. https://doi.org/10.1370/afm.1691.

Krist, A. H., S. H. Woolf, S. F. Rothemich, R. E. Johnson, J. E. Peele, T. D. Cunningham, D. R. Longo, G. A. Bello, and G. R. Matzke. "Interactive Preventive Health Record to Enhance Delivery of Recommended Care: A Randomized Trial." *The Annals of Family Medicine* 10, no. 4 (July 1, 2012): 312–19. https://doi.org/10.1370/afm.1383.

Krist, Alex H, Rebecca A Aycock, Rebecca S Etz, Jennifer E Devoe, Roy T Sabo, Robert Williams, Karen L Stein, et al. "MyPreventiveCare: Implementation and Dissemination of an Interactive Preventive Health Record in Three Practice-Based Research Networks Serving Disadvantaged Patients—a Randomized Cluster Trial." *Implementation Science* 9, no. 1 (December 2014): 181. https://doi.org/10.1186/s13012-014-0181-1.

Krist, Alex, Stephen Rothemich, Paulette Kashiri, Rebecca Etz, and Ghalib Bello. "An Interactive Preventive Care Record: A Handbook for Using Patient-Centered Personal Health Records

to Promote Prevention." Rockville, MD: Agency for Healthcare Research and Quality: Virginia Commonwealth University, Department of Family Medicine, Virginia Ambulatory Care Outcomes Research Network (ACORN), June 2012.

Luke, Douglas A., Annaliese Calhoun, Christopher B. Robichaux, Michael B. Elliott, and Sarah Moreland-Russell. "The Program Sustainability Assessment Tool: A New Instrument for Public Health Programs." *Preventing Chronic Disease* 11 (January 23, 2014): 130184. https://doi.org/10.5888/pcd11.130184.

Mazzucca, Stephanie, Rachel G. Tabak, Meagan Pilar, Alex T. Ramsey, Ana A. Baumann, Emily Kryzer, Ericka M. Lewis, Margaret Padek, Byron J. Powell, and Ross C. Brownson. "Variation in Research Designs Used to Test the Effectiveness of Dissemination and Implementation Strategies: A Review." *Frontiers in Public Health* 6 (February 19, 2018): 32. https://doi.org/10.3389/fpubh.2018.00032.

McGlynn, Elizabeth A., Steven M. Asch, John Adams, Joan Keesey, Jennifer Hicks, Alison DeCristofaro, and Eve A. Kerr. "The Quality of Health Care Delivered to Adults in the United States." *New England Journal of Medicine* 348, no. 26 (June 26, 2003): 2635–45. https://doi.org/10.1056/NEJMsa022615.

Meyer, Ilan H. "Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence." *Psychological Bulletin* 129, no. 5 (September 2003): 674–97. https://doi.org/10.1037/0033-2909.129.5.674.

Powell, Byron J, Thomas J Waltz, Matthew J Chinman, Laura J Damschroder, Jeffrey L Smith, Monica M Matthieu, Enola K Proctor, and JoAnn E Kirchner. "A Refined Compilation of Implementation Strategies: Results from the Expert Recommendations for Implementing Change (ERIC) Project." *Implementation Science* 10, no. 1 (December 2015): 21. https://doi.org/10.1186/s13012-015-0209-1.

Rogers, Everett M. *Diffusion of Innovations*, 2003.

Siegel, Rebecca L., Kimberly D. Miller, and Ahmedin Jemal. "Cancer Statistics, 2019." *CA: A Cancer Journal for Clinicians* 69, no. 1 (January 2019): 7–34. https://doi.org/10.3322/caac.21551.

Solberg, Leif I., Milo L. Brekke, Charles J. Fazio, Jinnet Fowles, Diane N. Jacobsen, Thomas E. Kottke, Gordon Mosser, Patrick J. O'Connor, Kris A. Ohnsorg, and Sharon J. Rolnick. "Lessons from Experienced Guideline Implementers: Attend to Many Factors and Use Multiple Strategies." *The Joint Commission Journal on Quality Improvement* 26, no. 4 (April 2000): 171–88. https://doi.org/10.1016/S1070-3241(00)26013-6.

The Center. "The New York State LGBT Health & Human Services Network." Accessed May 10, 2020. https://gaycenter.org/recovery-health/health/lgbt-health-network/.

Truglio-Londrigan, Marie, Jason T. Slyer, Joanne K. Singleton, and Priscilla Worral. "A Qualitative Systematic Review of Internal and External Influences on Shared Decision-Making in All Health Care Settings:" *JBI Database of Systematic Reviews and Implementation Reports* 10, no. 58 (2012): 4633–46. https://doi.org/10.11124/jbisrir-2012-432.

Wingood, Gina M., and Ralph J. DiClemente. "The ADAPT-ITT Model: A Novel Method of Adapting Evidence-Based HIV Interventions." *Journal of Acquired Immune Deficiency Syndromes (1999)* 47 Suppl 1 (March 1, 2008): S40-46. https://doi.org/10.1097/QAI.0b013e3181605df1.

Yarnall, Kimberly S. H., Kathryn I. Pollak, Truls Østbye, Katrina M. Krause, and J. Lloyd Michener. "Primary Care: Is There Enough Time for Prevention?" *American Journal of Public Health* 93, no. 4 (April 2003): 635–41. https://doi.org/10.2105/AJPH.93.4.635.