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Access to care for vulnerable veterans with hepatitis C: a hybrid conceptual framework and a case study to guide translation

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ABSTRACT

The Veterans Health Administration (VHA) is the largest single provider of medical care to people with hepatitis C (HCV) in the USA. Given the advent of promising new HCV therapies, the VHA is now faced with a large number of chronically HCV-infected veterans with concomitant psychiatric or substance use comorbid conditions who will need to either be retreated or newly treated for HCV or will require management for chronic liver disease. There is a critical need in the VHA for behavioral medicine and hepatology specialists, along with infectious disease and primary care providers with an interest in hepatitis C, to provide coordinated care for these complex patients. The VHA Health Services Research and Development Service has advocated for the application of strong implementation science theories and methods to translate new models of healthcare delivery in clinical practice. To inform the delivery and evaluation of integrated behavioral medicine and specialty care for vulnerable patient populations, we sought to develop an enriched framework which incorporates implementation science theory and strong conceptual models for access to care. In this paper, we present a hybrid conceptual framework that accomplishes this goal. To illustrate how this hybrid model could inform the translation of a novel method of healthcare delivery, we provide a case study of a VHA initiative to improve access to integrated behavioral medicine and specialty care among veterans with HCV.

KEYWORDS

Hepatitis C, Integrated care, Veterans, Telemedicine, Conceptual framework

Implications

Policy: Implementation science offers strong conceptual frameworks to support the successful translation of healthcare delivery programs into practice.

Practice: This conceptual model provides a framework to inform the implementation of integrated behavioral medicine and specialty care for veterans with hepatitis C.

Research: Our hybrid framework that integrates the Andersen behavioral model and the Promoting Action on Research Implementation for Health Services model can be used to identify key patient and healthcare system variables important in the evaluation of early phases of program implementation prior to national dissemination.

INTRODUCTION

With an estimated hepatitis C (HCV) seroprevalence of more than 5%, the Veterans Health Administration (VHA) is the largest single provider of medical care to people with HCV in the USA, yet fewer than 20% of VHA patients with HCV have been treated and less than half have accessed a liver specialist [1–5]. Low treatment rates combined with poor treatment response has resulted in a dramatic increase in the prevalence of HCV-infected veterans with cirrhosis and related sequelae, including a sixfold increase in hepatocellular carcinoma cases [6, 7]. Approximately 85% of veterans with HCV have underlying psychiatric or substance use conditions, further complicating their overall management including eligibility for and adherence to treatment [8]. While new HCV treatment regimens promise a 20% increase, compared to prior regimens, in treatment response rates, these medications are likely to be quite costly, will require careful attention to adherence, and will need to be targeted carefully [9–12].

The VHA is now faced with a large number of chronically HCV-infected veterans with concomitant psychiatric or substance use comorbid conditions who will need to either be retreated or newly treated for HCV or will require management for chronic liver disease. There is a critical need in the VHA for behavioral medicine and hepatology specialists, as well as infectious disease and primary care providers with an interest in hepatitis C, to provide coordinated care for these complex patients. Underlying mental health or substance abuse disorder is a common provider-reported indication to decline HCV therapy [13, 14]. In contrast to other infectious diseases, such as human immunodeficiency virus (HIV), a larger proportion, approximately 30%, of VHA patients with

HCV reside in rural areas [5]. Yet, both rural and urban VHA patients with HCV experience access to care barriers. To address similar gaps in healthcare delivery, VHA Health Services Research and Development Service has advocated the application of strong implementation science theories and systematic implementation methods to translate new models of healthcare delivery in clinical practice. Over the past decade, the VHA Quality Enhancement Research Initiative has developed clinical practice guidelines and implemented successful quality improvement initiatives in relevant chronic disease areas such as diabetes, heart disease, and HIV/HCV [15, 16]. Theory-driven implementation science has facilitated the translation of evidence-based integrated behavioral medicine and specialty care into healthcare practice. The use of conceptual models to guide implementation typically follows a sequence of progressive steps, including: (1) assessing the need for change in clinical practice, (2) selecting an appropriate theory and rationale to guide implementation, (3) developing and executing of theory-guided implementation strategies, (4) evaluating changes in healthcare outcomes, and (5) assessing the fit of healthcare outcomes with initial theories [17].

Many of the existing conceptual frameworks used to guide the implementation of new methods of healthcare delivery focus on administrative and organizational variables. The premise of these models is that healthcare interventions are more likely to be successful provided that key elements and processes are in place within administrative and organizational environments [18]. Where the goal is to integrate behavioral medicine interventions and specialty care, the consideration of these structural factors in the healthcare environment is especially important. For example, barriers to integrated care include lack of alignment between the administrative units where behavioral medicine clinicians and specialists are based.

Conceptual frameworks that specify administrative and organizational concepts are thought to facilitate the identification of important factors that may impede or facilitate implementation. The Promoting Action on Research Implementation in Health Services (PARiHS) framework is especially appealing in understanding the delivery of integrated behavioral medicine because it provides a multidimensional and interactive perspective of organizational variables, allowing for interplay between program evaluation and implementation refinement [19, 20]. Since developed in the 1990s, the framework has evolved from its use in empirical case studies to its current iteration guiding implementation evaluation [21, 22]. The framework considers successful implementation to be most likely when: (1) scientific *evidence* is viewed as sound and fitting with professional and patient beliefs; (2) the healthcare *context* is receptive to implementation in terms of supportive leadership, culture, and evaluative systems; and (3) there are appropriate mechanisms in place to *facilitate* implementation.

While understanding healthcare administrative and organizational factors is critical to the implementation of integrated behavioral medicine and specialist care, incorporating patient variables, such as the factors that enable access to care and resources, is particularly relevant when implementation is planned for vulnerable populations, such as underserved urban and rural poor [19, 23–28]. Both urban and rural poor experience unique access to care difficulties, including geographic barriers or financial limitations, that may influence health outcomes even when integrated behavioral medicine and specialty care are successfully implemented to others [29]. A number of frameworks, such as the Andersen behavioral model (ABM) and its revisions, have been developed to organize thinking and research on patient factors hypothesized to influence healthcare access in underserved populations [30–32]. Compared to implementation theories, however, these access-to-care models provide less clear direction for the translation of novel healthcare delivery models to clinical practice settings.

To inform the delivery and evaluation of integrated behavioral medicine and specialty care for vulnerable patient populations, we sought to develop an enriched framework which incorporates implementation science theory and strong conceptual models for access to care. In this paper, we present a hybrid conceptual framework that accomplishes this goal. To illustrate how this hybrid model could inform the translation of a novel method of healthcare delivery, we provide a case study of a VHA initiative to improve access to integrated behavioral medicine and specialty care among veterans with HCV.

HYBRID FRAMEWORK OVERVIEW

Based on the critical need for integrated HCV care among underserved urban and rural veterans, we developed a conceptual framework for implementation that represents a hybrid of two established models: one that considers patient and community factors that influence access to care, the ABM, and another that guides implementation of evidence-based healthcare programs, the PARiHS model [21, 33]. We selected the ABM and its refinements to expand upon the domains included in the PARiHS framework. Our goal was to offer a systems perspective that incorporates both patient behavioral and social factors (ABM) and healthcare organizational factors (PARiHS) [34].

Figure 1 shows the key variables from both the frameworks. We hypothesize that the implementation of integrated behavioral medicine and specialty care is likely to be successful if patient factors are considered with the organization's clinical and administrative structures. To inform the evidence and context constructs of the PARiHS model, we incorporated patient and community constructs from the ABM, specifically individual, geographic, healthcare system, and population domains. The resultant hybrid model provides a more comprehensive and interactive understanding of the patient

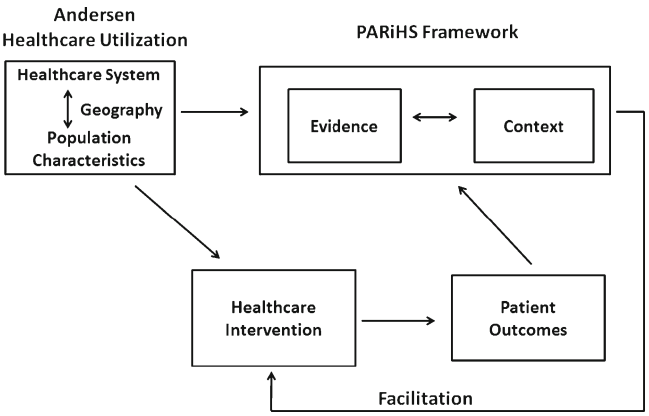

Fig 1 | Hybrid conceptual model. PARiHS framework domains and components. *Evidence* **research evidence, clinical experience, patient preferences/experiences, and local information.** *Context* **culture, leadership, and evaluation capability.** *Facilitation* **factors which enable partnerships, development of individual potential and project management. Andersen behavioral model constructs.** *Healthcare system* **resources and organization.** *Geography* **rurality, distance from care, and ease of transportation.** *Patient characteristics* **burden of a disease within a community as well as patient predisposing characteristics, enabling resources and risk perception**

and healthcare system variables involved in healthcare implementation and evaluation.

PARiHS FRAMEWORK

As conceptualized by the PARiHS framework, successful implementation is a function of a dynamic and simultaneous interaction between the elements of evidence, context, and facilitation [19]. The evidence element is comprised of four components which are research evidence, clinical experience, patient preferences and experiences, and local information. An assumption within the PARiHS framework is that in order for evidence-based practices to be implemented, the four components of evidence must be reviewed by an organization and a consensus reached finding the four components highly relevant and useful. The PARiHS framework conceives this data review process as involving negotiation and developing a shared understanding which is ultimately a dialectical process requiring a team approach [22]. An additional assumption of the PARiHS framework is that in order for the evidence to be gathered and used effectively, it must be reviewed in the appropriate context. The context element is comprised of three components which are culture, leadership and evaluation capability [22]. To summarize these components, factors thought to contribute to context are an organization's absorptive capacity for new knowledge, strong leadership, clear strategic vision, good managerial relations, visionary staff in pivotal positions, climate conducive to experimentation and risk taking, and effective data capture systems [35]. The facilitation element includes factors which enable partnerships, development of individual potential, and project management. Facilitation includes a person serving the role of facilitator whose success is correlated with being held in high regard, considered credible, empathic, flexible, and who is clear in his or her role. From the PARiHS model, we are integrating into our hybrid model a portion of the theoretical framework which is the following: if an organization believes there is evidence to support an integrated care and the organizational environment is conducive to and is comprised of personnel facilitating change, then the likelihood of integrated care to succeed increases [22].

ANDERSEN BEHAVIORAL MODEL

The ABM regards healthcare delivery systems as aggregate, structural properties characterized by two main elements–resources and organization. For integrated care, the resource element would include the distribution of behavioral medicine and specialty care resources in the geographic region. The organization component is divided into two elements: entry and structure. Entry refers to the "means through which the patient gains entry to the medical care system." The structural element concerns "the characteristics of the system that determine what happens to the patient following entry" [34, 36]. While the PARiHS framework more explicitly considers provider and organizational behavior, the ABM does as well integrating provider-related variables within the more germane terminology of "environment" which we have more explicitly included as "healthcare system" [30]. Later iterations of the ABM included "feedback loops" to depict the reciprocal relationship between provider and patient behavior. For example, patients are more likely to seek integrated care in a health system which is staffed by providers committed to providing a regular source of integrated care.

The ABM also considers the influence of external environmental factors, such as geography, on healthcare utilization. Integrated care targeting rural residents, for example, would need to explore the

influence of geographic barriers on access to care. Similarly, urban poor patients may experience transportation-related barriers to care. Determining the influence of geography and transportation on a patient's healthcare utilization patterns may influence a healthcare agency's decisions to, as in the case example described below, bridge gaps in care using telemedicine modalities. The ABM suggests that population characteristics, specifically the burden of a disease within a community, and patient predisposing characteristics, including enabling resources and risk perception, are the determinants of care utilization [30]. The predisposing characteristics component includes variables that describe the likelihood a patient will seek care such as their demographics, quality of life, and health status. The enabling resources component describes the "means" available to an individual to access care. These resources include income, insurance coverage, and the individual's community attributes such as the rural–urban character of their residence. The risk perception component is the individual's perceived need for care [34].

INTERACTION OF PARiHS AND ABM FRAMEWORKS

The hybrid conceptual framework integrates organizational, health system and patient variables. Understanding the interplay between the two frameworks provides a structure upon which a clinician simultaneously implements and evaluates a healthcare intervention. Data gathered on the vulnerable population, as guided by the ABM, would provide the evidence, as guided by the PARiHS framework, to inform a healthcare organization's opinion on resource allocation and the best model of integrated care delivery. Within the hybrid framework, the ABM provides a rich understanding of the interplay between patient, community, and healthcare system level interactions [34]. Based on the ABM's assumptions, we hypothesize that the higher the community burden of disease, the more likely a health center will implement a disease-targeted healthcare intervention. We hypothesize that patient perception of mortality risk secondary to liver disease, their quality of life, as well as health status will influence their respective decisions to utilize healthcare. Furthermore, we hypothesize that patient's enabling resources such as third party insurance, connectivity (access to internet, phone), and higher levels of income and education will increase the likelihood of accessing care. The ABM provides a robust evaluation guide of patient and community health variables which, when presented to clinical and administrative staff participating in healthcare intervention, would inform the design and adoption of a healthcare intervention. The original developers of the PARiHS framework envisioned its use in conjunction with other models or frameworks [37]. The PARiHS framework accepts the ABM inputs and additionally requires a pre- or early formative implementation assessment and the subsequent utilization of these findings to facilitate the intervention [37].

CASE STUDY: APPLICATION OF THE HYBRID CONCEPTUAL FRAMEWORK CONCEPTS TO A LIVER TELEMEDICINE INTERVENTION

The hybrid framework was developed to conceptually represent the patient and health system considerations involved in the implementation and evaluation of a novel integrated liver care delivered via telemedicine within the VHA. Within the VHA, behavioral medicine clinicians and specialists reside in central locations while primary care physicians are located in the community-based outpatient clinics. For example, the San Francisco Veterans Affairs Medical Center (SFVAMC) is the specialty care center for three northern outpatient clinics located 60, 115, and 270 mi, respectively, from the SFVAMC. To reach veterans residing in outlying areas, the VHA has developed telemedicine capabilities which also serve veterans in Hawaii, American Samoa, Guam, Puerto Rico, and the US Virgin Islands. The VHA national home telehealth program has served 32,000 veterans [38–41].

Liver telemedicine clinics, within the VHA, currently exist as a live video telemedicine encounter with the specialty care provider, located in an urban VHA center, conducting a visit with a patient located in an outpatient clinic center. The VHA is implementing a new model of telemedicine care, based on New Mexico's Project ECHO (Extension for Community Healthcare Outcomes) telemedicine program that would consolidate liver telemedicine care into one provider to provider visit [42–44]. The model is based on case-based learning like a tumor board conference whereby primary care providers dialing in from multiple outpatient clinics present a patient's case to the specialists and discuss options for management. The hybrid framework was developed to better understand how the VHA, given its unique patient and health system characteristics, could restructure and implement the Project ECHO, renamed Project SCAN-ECHO, within the VHA healthcare system. The hybrid framework, while representative of the patient and health system considerations involved in the VHA expansion of liver telemedicine care, is applicable to health services and implementation researchers seeking to evaluate novel healthcare programs.

UNDERSTANDING ACCESS TO LIVER CARE

Geography

Rural veterans, compared to their urban counterparts, are more dependent on care provided through the VHA as they typically have lower incomes and are less likely to have private insurance. Because of these geographic and social

factors, they have less access to both VHA and non-VHA care [45]. Compared to urban veterans, rural veterans have lower quality of life, higher hospital readmission rates, less access to specialty and mental health services, and are vulnerable to urban healthcare regionalization [46–51]. In an integrated healthcare system such as the VHA, understanding geographic differences in disease prevalence as well as access to care guide targeting of liver telemedicine initiatives.

To understand geographic differences, rural versus urban, in liver disease prevalence and liver specialty care access, we conducted data analyses using national registries to determine geographically the distribution of HCV-associated liver disease and receipt of liver specialty care visits. Following a cohort of 186,000 patients with HCV over a 4-year period, we determined that less than half of all VHA patients with HCV received a liver or gastroenterology specialty care visit, which is consistent with prior literature [5]. While approximately 30% of VHA patients reside in rural areas, rural veterans are significantly less likely to receive a liver or gastroenterology appointment as well as receive quality liver care as determined by recently defined quality indicators [5, 52, 53]. The data support that there is a system-wide deficiency in the access to liver care. Expansion of liver telemedicine care should target both urban areas, where there is the highest concentration of HCV, and rural, where there is the greatest disparity in access to care.

Healthcare system

A healthcare system's characteristics from an aggregate level, e.g., Veteran Integrated Service Networks, influence the likelihood a veteran will seek healthcare from the VHA. Within the VHA, specialty care is centralized within urban centers. As a result, rural veterans due to barriers such as distance and transportation may attempt to either seek specialty care through local non-VHA health centers or through primary care providers [54, 55]. Mapping healthcare utilization patterns of veterans will inform the model of liver telemedicine care.

Understanding that veterans with access to care barriers may be seeking specialty level care through primary care providers is driving the VHA's efforts to reorganize telemedicine care similar to the Project SCAN-ECHO model. Understanding VHA and non-VHA healthcare utilization of veterans with chronic HCV could include structured surveys to identify and map the informal healthcare systems which underserved veterans develop for themselves. Efforts to determine the resources which enable underserved patients to access liver care as well as the barriers could inform how the Project SCAN-ECHO model of telemedicine care can meet the needs of veterans with HCV-associated liver disease.

Population characteristics

The ABM suggests that population characteristics, specifically the burden of a disease within a community as well as patient predisposing characteristics, patient enabling resources, and patient risk perception, are the determinants of care utilization [30]. The predisposing characteristics component includes variables that describe the likelihood a patient will seek care such as their demographics, quality of life, and health status. The enabling resources component describes the "means" available to an individual to access care. These resources include income, insurance coverage, and the individual's community attributes such as the rural–urban character of their residence. The risk perception component is the individual's perceived need for care [34]. While flexible to interpretation, the ABM domains provide the structure upon which to explore through surveys or secondary data analysis patient and community level variables which influence access to care.

Based on the ABM's assumptions, we hypothesize that the higher the community burden of liver disease, the more likely both the specialist and provider will participate in HCV Project SCAN-ECHO. We anticipate that urban-based outpatient clinic primary care providers are more likely to adopt Project SCAN-ECHO as HCV is more prevalent in urban communities. As the majority of VHA patients with HCV have concomitant psychiatric and substance use comorbidities, we hypothesize the care model, particularly if integrated with behavioral medicine, would enhance patient adherence to visits as well as clinical management including treatment adherence. We hypothesize that patients' perception of mortality risk secondary to liver disease, their quality of life as well as health status will influence their respective decisions to seek specialty care. Furthermore, we hypothesize that patient's enabling resources such as third part insurance, connectivity (access to internet, phone), and higher levels of income and education will increase the likelihood of accessing specialty care. The Project SCAN-ECHO model of care resolves the limited specialist–large community burden of disease dilemma but does not directly address the patient level predictors of specialty care access. As such, understanding patient and community barriers and facilitators to specialty care may inform and subsequently change existing or newly implemented healthcare interventions, such as Project SCAN-ECHO.

Utilizing the PARiHS domains in program development and evaluation

In contrast to prior studies, we propose operationalizing the PARiHS framework early in the intervention process as a formative evaluation tool [56, 57]. Particularly within the VHA setting, in which healthcare interventions are gradually disseminated

in a stepwise fashion nationally, early understanding of the organizational and administrative barriers and facilitators to healthcare implementation are critical. The PARiHS framework domains could guide survey instruments querying clinical and administrative staff on the key elements which facilitated or hindered the acceptance, modification, and eventual adoption of Project SCAN-ECHO. We have briefly summarized below potential key informant questions from each element and subelement [19, 37].

Evidence

Project SCAN-ECHO is most likely to be successful in VHA clinics and centers which actively evaluate existing research and clinical evidence, solicit patient preferences, and assess local healthcare outcomes. Project SCAN-ECHO is more likely to be successful in healthcare environments which not only value telemedicine as a means by which to improve access to and quality of specialty care but also fitting within their existing healthcare practice. The research and clinical evidence for the broad dissemination of Project SCAN-ECHO, as in most telemedicine-based studies, is not strong [58]. While Project ECHO, the model upon which the Project SCAN-ECHO is based, has been successful in New Mexico, the healthcare model has not been tested on a national scale nor within the VHA healthcare system. With the understanding that existing research and clinical evidence in support of Project SCAN-ECHO is not strong, we propose elucidating the key elements of evidence which increase the likelihood of a center not only adopting a particular healthcare intervention but also inform how the care model could be changed. Examples of subelement exploration when the level of evidence is weak include the following: *research*–querying administrative and provider understanding of the available research evidence on quality of care provided via telemedicine; *clinical experience*–explore staff's prior experience with telemedicine as well as perceptions on the Project SCAN-ECHO's role in facilitating or hindering management of patients with specialty care needs, and explore the impact of Project SCAN-ECHO model on the care management of all patients within the clinic; *patient experience*–this is an opportunity to understand how centers solicit and value patient experience captured within Project SCAN-ECHO; and *information from local context*–a query could include elucidating which centers collect and value key patient and system health outcomes. Again, as with many implementation frameworks, the patient and community elements are not robust necessitating the inclusion of the ABM inputs.

Identifying outpatient primary care clinics which have a low level of clinical experience knowledge of telemedicine or the Project SCAN-ECHO model would facilitate training of key clinical and administrator staff on the SCAN-ECHO model. If Project SCAN-ECHO has already been implemented, the clinical and patient experience as well as "information from local context" domains would inform the care model further. If it is determined that the Project SCAN-ECHO is not valued by outpatient primary care providers as the model potentially increases their workload within a minimally staffed clinic (see context below), then VHA would need to offer alternative solutions of which could include a mix of telemedicine services of which Project SCAN-ECHO is part, not central.

Context

As the Project SCAN-ECHO will require interactions between a specialty care site and multiple primary care provider sites, understanding the organizational and administrative environmental elements which facilitate or hinder adoption and adaption of the Project SCAN-ECHO is critical. The subelements of context could potentially guide interviews with providers and administrators. *Receptive context*–explore the available resources, including staffing, information technology support, equipment, and dedicated rooms for telemedicine, within each outpatient clinic. Probe to determine if the initiative fits within each clinic's goals of care. *Culture*–this subelement seeks to understand what are the prevailing values and beliefs of each clinic. This could include discussions with staff regarding their perceived working relationships with each other, probing to determine if their work is recognized or if the environment values learning, i.e., grand rounds or quality improvement meetings. *Leadership*–perhaps one of the most critical elements of a healthcare intervention's success is the "clinical champion" [59]. While this element can be explored further within the facilitation domain, staff relationships with clinic medical and administrative leadership could also be examined. Probes could include determining if the working environment is one which values teamwork and staff members are recognized for their work. *Evaluation*–explore if and how each site, partnered outpatient primary care and hepatology, utilizes multiple methods and data sources to assess quality of care delivered through the Project SCAN-ECHO. Understanding the organizational and clinical environment is perhaps the strongest element in this framework.

The Project SCAN-ECHO model relies upon primary care staff's ability and willingness to build specialty level knowledge to provide care. Context exploration could elucidate key incentives, such as continuing medical education credits, work load credit, funding for telemedicine equipment, and recognition from central office, which would increase the likelihood of adopting the Project SCAN-ECHO. As the Project SCAN-ECHO requires collaboration between primary and specialty care,

in which the specialist is "mentoring" primary care physicians on HCV management, context exploration could determine important characteristics of the mentoring specialist which facilitated a collaborative and team-based approach. Borrowing lessons learned from the contextual elements of the New Mexico-based Project SCAN-ECHO could include terming specialty and primary care coordinated care as "learning loops" or "collaborative groups" to reinforce the team-based, dialectical approach to care [43, 44]. Contextual assessment would strongly influence the early processes of implementation by simultaneously developing the optimal organizational and clinical environment for the intervention and tailoring the intervention with the contextual environment.

FACILITATION

Perhaps the most provocative, though little studied, element of the PARiHS framework is the role of facilitation. In addition to considering processes or tools which facilitate implementation, the PARiHS framework also considers the facilitator as a "change agent" [60]. The implementation scientist could potentially assume the role as the facilitator, provided they embody key characteristics of successful facilitators which include a holistic and enabling approach to team building [19]. Our model is consistent with prior literature which supports better integration of those who generate evidence, either a care disparity or quality of care measures, and those who implement healthcare innovations [22]. Facilitation could include pairing of implementation or health services researcher with clinicians implementing a healthcare intervention [61]. In an integrated healthcare system such as the VHA, successful facilitators adept at evaluating key evidence and contextual domains which facilitated implementation on a local level could rapidly transmit their findings to influence implementation on a national level.

IMPLICATIONS FOR RESEARCH AND PRACTICE

The importance of translating medical advances to the community has been recognized by the US government's recent and unprecedented action of turning to physicians and researchers to develop and test different healthcare delivery strategies within the broad community [62]. We propose a hybrid conceptual framework which redefines the role of health service or implementation researcher and guides this rapid assessment of research knowledge into practice. The ABM alone would not address the contextual factors such as provider attitudes towards teleconsultation with experts which would influence regional variations in patient clinical outcomes. Similarly, the PARiHS framework alone would not consider patient and community variables such geography (e.g., distance to care) which would impact utilization of care, particularly among vulnerable populations with transportation barriers.

The VHA is well suited for testing the domains of the hybrid framework as clinical innovations are often developed and disseminated quickly, particularly in the case of Project SCAN-ECHO which is rapidly being developed with planned national dissemination within the year. The VHA, with a rising burden of sequelae of end-stage liver disease secondary to HCV and promising new HCV therapies, is experiencing an increasing demand for hepatology services. The Andersen–PARiHS hybrid framework guides a rapid sequence of evaluation, implementation, reassessment, and dissemination of a care model which could potentially result in national improvements in access to and quality of liver care.

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