HIV/Hepatitis QUERI Strategic Plan

2010

VA Greater Los Angeles Health Care System
VA New England Healthcare System

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1. EXECUTIVE SUMMARY

The mission of HIV/Hepatitis QUERI is to partner with the VA Public Health Strategic Health Group (PHSHG) to improve the identification and care of Veterans infected with the Human Immunodeficiency (HIV) and Hepatitis C (HCV) viruses.

To support our mission, we have developed three overarching goals: (***1) Better Disease Identification, (2) Better Chronic Disease Management*****,** and (**3) *Improve Access and Equity*.** Goal 1 recognizes that the benefit of better disease management depends first and foremost on identifying infected individuals and linking them to care. Goal 2 acknowledges the need for patient centered, comprehensive, coordinated care and treatment that not only addresses the chronic viral infections but the mental and physical comorbidities and complications that affect HIV and HCV outcomes. Goal 3 reaches out to infected Veterans at highest risk for impaired access, including African Americans, the homeless, rural residents, and those with mental health and substance use disorders. In achieving these goals, we hope to promote a more general understanding of implementation science principles and contribute to theory development, incorporating the Promoting Action on Research Implementation in Health Services (PARIHS) and diffusion of innovations frameworks.

Highlights of Recent Accomplishments

Our QUERI has made enormous progress in the last few years. We have deepened our productive relationship with key VA operations stakeholders, especially PHSHG. The PHSHG and this QUERI have intertwined missions. We share planning activities, Executive Committee (EC) members and staff, and strive to make our work mutually relevant in a rapidly changing policy environment. We also have joint projects with other QUERIs, Substance Use Disorder (SUD) and Mental Health (MH), that have related missions. We will also continue to collaborate with an ever growing network of facility and VISN-based VA clinicians and managers to develop, test, and disseminate methods for achieving accessible, high quality HIV and HCV care.

Our accomplishments in service of Goal 1 are most mature. We are proud that our work has led to measurable increases in risk-based HIV testing across several VISNs now (3, 16, and 22), and have determined that a national model for implementation is superior to a local one in increasing rates. Moreover, we have adapted our premier project in this area to recent VA policy

changes promoting routine HIV testing without requiring written consent. Several rapid HIV testing projects have reached maturity, expanding capabilities to reaching out to homeless shelter residents, SUD clinic attendees, and other special populations. In Goal 2, our results show that the TIDES model works in HIV clinics to improve depression care and we have begun a major project to extend that work to HCV clinics in cooperation with the MH QUERI. An earlier QUERI stage project identifying gaps in HCV care has revealed a number of promising areas for intervention. Other projects include work focusing on adherence, self-management, and integrated care systems. For Goal 3, in addition to the outreach work already mentioned, we have developed telemedical and other approaches to link specialists to rural and even disadvantaged urban areas.

Our portfolio of projects has both grown and broadened since the last strategic plan. We now have 14 active projects, with nine of them in HCV, a substantial increase from the last report. We have increased our capabilities in qualitative, organizational, and economic analyses with good coordination across the Los Angeles and Bedford sites. This has resulted in informative cost effectiveness and process evaluations of all major interventions, easing dissemination. A full description of our Active and Completed Projects is found in Table 3 of our 2010 Annual Report. A full listing of our Staff and Executive Committee Roster is found in Table 5 of the Annual Report.

Key Features of Future Plans

Our relationship with PHSHG will continue to be at the core of our activities in the coming years and we are confident that changes in leadership and VHA reorganization will further increase opportunities for collaboration. Key challenges in the upcoming years include relating our work to the enormous changes being wrought through the VA PACT program and preparing and reacting to the release of new more effective drugs for HCV.

Goal 1 activities will move toward national roll-out and cost effectiveness analyses of existing implementation activities particularly as they relate to routine HIV testing. We will also begin sustainability activities to promote repeated testing of those at continued risk of HIV. We will further develop methods for linking newly identified HIV patients to VA care. While HCV testing rates reached a high peak after the turn of the century, we plan to evaluate whether these high rates have been sustained and examine whether projects promoting newly available rapid HCV testing can follow the pattern of our successful HIV rapid testing projects.

For Goal 2, we will continue to develop and test methods for supporting medication adherence and controlling comorbid conditions, especially integrating the depression and substance abuse care that so clearly affects treatment in both HCV and HIV. We have already begun initial formative evaluation for the development of an HIV medical home along the PACT lines, and plan a major demonstration project in this area in the next few years. Earlier QUERI stage projects assessing cost/quality tradeoffs for the new HCV drugs will inform policy makers and be another area of emphasis. We also plan to develop projects in eHealth, continuing collaborations with My Health*e*Vet and the new eHealth QUERI.

For Goal 3, we will work in a cross-QUERI context to promote equity oriented analyses. We will analyze the effects of out developed interventions on vulnerable groups and craft targeted interventions if they are left behind. Developing and testing more outreach programs to improve access for disadvantaged patients, especially homeless, incarcerated, and rural Veterans will remain a priority as well.

Our QUERI has grown a great deal in the dozen or so years since it began, and its scope and staff have expanded greatly across multiple VA facilities and in close collaboration with two successful HSR&D Centers of Excellence. We have strong alignment with partners in the VA PHSHG, and look forward to working in a research and operational environment that will increasingly emphasize the sort of partnered work we strive to foster, and improving the care that Veterans infected with HIV and HCV receive as a result.

2. CLINICAL FOCUS AND SCOPE

2.1. Areas of Focus

The HIV/HCV mission is to improve the identification and care of Veterans infected with HIV and HCV in partnership with the PHSHG.

The HIV/Hepatitis QUERI will maintain its clinical focus and scope on the care of HIV-infected patients but will continue to expand its scope to include issues related to the care of HCV-infected individuals. HIV and HCV share many similarities, such as risk factors for acquisition of infection, high prevalence of mental health disorders, alcohol and substance use, increased rates of complications related to the aging population and chronic nature of infection, and disproportionate rates of disease in vulnerable patient populations who often have poor access to care. Moreover, many early HIV and HCV cases are asymptomatic, which delays disease identification and management. This poses a serious problem as early identification and initiation of treatment can prevent transmission, complications, and deaths.[1,2] As a result, there

are many synergies in care delivery and implementation of interventions between the two conditions. For example, lessons learned from the roll-out of highly active antiretroviral therapy for HIV-infected patients, including those related to accommodating the increase in pharmaceutical costs, prioritizing patients for care, ensuring equity in access, to the importance of medication adherence, will be highly informative as the substantially of more potent agents for HCV treatment will become available in the next 12 months.

The health and financial burden of HIV and HCV is significant for Veteran patients. In developing our strategic goals, we have benefited from the work of the PHSHG and other stakeholders who have recently completed comprehensive assessments describing variations in HIV and HCV quality within the VA and identifying critical areas to improve practice and health outcomes among vulnerable Veteran populations.[3-7] Finally, there is a wealth of high quality evidence that can be implemented to improve the quality of care for both conditions.[4,8-13] In 2009, the VA, the largest single provider of HIV and HCV care in the United States, provided care for more than 24,000 HIV infected Veterans and over 150,000 viremic HCV-infected Veterans.[14,15] Substantial numbers of HIV and HCV infected patients are seen in every VISN throughout the country, many of whom would suffer and die in the absence of treatment (see Section 3). The yearly cost of care is substantial, estimated at $19,912 for non-VA HIV-infected patients in 2008.[16] Within the VA, HCV-infected patients cost $12,989 per year in published data from 1999,[17] and although not yet published, current analyses from Dr. Hanchate of our QUERI place annual VA costs at $14,132. The introduction of combination anti-viral therapy and increased rates of complications of advanced liver disease will undoubtedly increase these costs, perhaps to as much as one billion dollars in drug cost alone.[18]

For both HIV and HCV, coordinated multi-disciplinary care is of great value. Veteran patients with both illnesses are now treated primarily by specialists in disciplines of Infectious Diseases (HIV and HCV) or Gastroenterology/Hepatology (HCV), though case identification usually takes place in primary or urgent care. For HIV-infected patients, many specialist clinics have chosen to become the designated primary care providers for these patients and coordinate care with other specialists to address the increasing prevalence of medical co-morbidities associated with aging and chronic immunosuppression. For HCV-infected patients, specialists serve in a more consultative role and care coordination is needed not only to address the complexities of antiviral therapy, which requires high levels of adherence and results in worsening of pre-existing depression, but also to accommodate complications emerging from rising rates of advanced fibrosis, cirrhosis, and hepatocellular carcinoma in chronically infected

patients. Importantly, care coordination for both HIV and HCV refers not only to access to multiple specialists, but also to the development of systems to share care between specialists and primary care physicians within or across clinics (e.g., by Telehealth applications), especially for patients residing in areas of low specialist availability. One area of future focus will be to develop solutions that bridge the two different care paradigms for HIV and HCV and relate them to the Patient Alignment Care Teams (PACT) innovations underway in the VA.

To promote these solutions, the HIV/HCV QUERI has three strategic goals**: (1) Better Disease Identification, (2) Better Chronic Disease Management,** and **(3) Improve Access and Equity** that guide the Center's activities. Our first goal responds to the recent VA Directive that promotes routine HIV testing and recent reports demonstrating fewer than 10% of all Veteran patients have ever been tested for HIV within the VA.[15,19] Our second goal addresses the management of both chronic viral infections as well as their comorbidities and complications. In projects addressing our third goal, we reach out to vulnerable populations most at risk for HIV and HCV and work to reduce the disparities in care that they receive. These goals are discussed in more detail in Section 7.

2.2. Collaboration across QUERI Centers and Stakeholders

The three goals of the HIV/Hepatitis QUERI have been crafted to address issues of importance to our key partner, PHSHG.[3,6,14,15] The PHSHG is responsible for developing and promoting the implementation of policies related to the care of HIV and HCV-infected patients. We are extremely proud of our outstanding partnership with PHSHG. We have had a shared senior leadership position funded half-time by QUERI and half-time by PHSHG for the past three years, cementing collaboration at the highest levels. This position is held by Jane Burgess, former Deputy Chief Consultant for PHSHG. Maintaining regular communication with PHSHG, we hold monthly calls with the PHSHG leadership for ongoing exchange of information. This year, there has been a change in leadership at PHSHG as Dr. Ronald Valdiserri (former Chief Consultant) has moved to a new position within HHS. Janet Durfee has been named Acting Chief Consultant and Ms. Burgess has intermittently returned to Washington to function as Deputy Chief Consultant for two short-term details. This is a an asset to our strategic planning, as it allows Ms. Burgess to better understand and coordinate communication between this QUERI and PHSHG during this time of planning. The most significant new change at this time is the charge for PHSHG to develop a Population Health Program. The HIV/Hepatitis

QUERI is ready to provide assistance in any way that it can and that has been communicated to PHSHG.

In addition to PHSHG, the three QUERI goals have been developed with critical input from our Executive Committee, which includes members of the PHSHG and the VA HIV and HCV Technical Advisory Groups. Finally, many projects overlap with activities of the Mental Health (MH) and Substance Use Disorder (SUD) QUERIs, with which we have a well-established track record of productive collaboration, and with the new eHealth QUERI. We have many other partnerships for specific projects and goals, and these are detailed in section 7.3.

3. SIGNIFICANCE AND CONSEQUENCES

3.1 HIV

At the present, there are approximately 1.1 million HIV-infected persons in the United States and about 40,000 new infections per year.[20,21] The VA cares for more than 24,000 HIV infected Veterans and is the largest single provider of HIV/AIDS care in the United States.[15] HIV/AIDS continues to be an epidemic that poses serious threats to public health because up to 21% of infected patients are unaware of their infection.[20,22] There is a well-distributed prevalence of HIV/AIDS patients in VA facilities throughout the country, although increased concentrations are observed in the southwestern, southern, and eastern seaboard states. African-American and Latinos are more likely to be infected with HIV. For example, even though African Americans account for about 13% of the US population, they make up close to half (46%) of those with HIV/AIDS in the United States. The proportion is similar in the VA HIV-infected population. Recent data indicate that for non-VA settings in the United States, the cost of treating HIV-infected persons in 2008 was $19,912 per year, ranging from $40,678 for persons with advanced AIDS to $16,614 for persons with relatively intact immune systems.[16]

Care for HIV-infected patients has long been complicated by the fact that disadvantaged, socially stigmatized, substance using populations and persons with concomitant mental health conditions have been disproportionately affected by the epidemic. More recently, care for these patients has been further complicated by the dispersion of the population from coastal urban centers that were first impacted into more rural environments, especially in the Gulf Coast (e.g. VISN 16).[23]

A abundance of recent data has indicated that HIV infection not only results in opportunistic infection and opportunistic malignancies as seen in persons with advanced

immunodeficiency (i.e., among persons with fewer than 200 $CD4^+$ cells/μL), but also results in increased rates of co-morbid conditions including non-AIDS-defining malignancies, liver related disease, cardiovascular disease, and pulmonary or renal disease among persons with less advanced immunosuppression (i.e., among persons with 200 - 500 $CD4^+$ cells/μL).[24-29] All of these co-morbidities are more common with increasing age, especially among HIV-infected patients.

Older adults in the U.S. are greatly affected by HIV disease. Those 50 years of age and older made up 28% of all U.S. adults living with HIV infection in 2007 and are expected to account for 50% of living HIV-infected individuals by 2015.[21,30] Within the VA, the aging of HIV infected patients is even more prominent. In 2009, fewer than 34% Veteran HIV-infected patients were younger than 50, whereas 40% were age 50-60 and 26% were 60 years and older. [21] The impact of HIV on the aging process is such that, less than four years of HIV infection increases frailty rates among HIV-infected patients to resemble to those of HIV-uninfected patients with ten more years of chronological aging.[31] The importance of aging for HIV-infected patients has received attention by the White House and the National Institutes of Health.[32,33]

3.2. HCV

In the United States, HCV infection is the most common chronic blood borne infection, and the leading cause of chronic liver disease. The Centers for Disease Control and Prevention (CDC) estimates that some 3.9 million Americans (1.8% of the US population) have been infected with the virus and that 2.7 million of these individuals suffer from chronic infection. Infected individuals serve as a source of transmission to others, and are themselves at risk for chronic liver disease and other HCV-related illnesses. According to recent population based studies, approximately 40% of chronic liver disease cases are HCV-related, resulting in 12,000 deaths per annum.[34] The sequelae of chronic HCV infections include cirrhosis of the liver as well as hepatocellular carcinoma, both of which carry significant socio-economic costs and public health consequences. In developed countries, HCV-related liver disease is currently the leading cause of liver transplantation.[34]

The clinical course of HCV infection is more indolent than that of HIV; the consequences of long term infection, such as cirrhosis, liver failure, hepatocellular carcinoma, etc., can take years to develop. However, with the aging of VA HCV-infected patients and the consequent increase in duration of the infection, the prevalence of cirrhosis has increased dramatically such that in 2008, 13% of HCV-infected patients had a history of cirrhosis and over

900 were newly diagnosed with hepatocellular carcinoma.[15] The most recent data that are available from 1999 estimated that the average annual cost of HCV care in the VA was $12,898 per patient,[17] and the current unpublished data from our QUERI place annual costs now at $14,132. For the United States as a whole, the direct medical care costs for all HCV-infected patients in 1997 were estimated to be $1.80 billion.[35] Since then, the costs of care are likely to have escalated dramatically due to the increasing use of combination anti-viral therapy with Pegylated-interferon and ribavirin, and increasing rates of uncompensated cirrhosis, hepatocellular carcinoma and liver transplantation. With the aging of HCV-infected patients and the imminent availability of new, more potent, but also more toxic and expensive treatments for HCV, it is estimated that the cost of HCV treatment may increase exponentially. Taking into account the 75,000 Veterans who would be potential treatment candidates, the PHSHG estimates that total cost of HCV antiviral therapy including the combination telaprevir/PEG/ribavirin and the projected use of supportive therapy could reach one billion dollars in drug cost alone, with the greatest impact occurring in FY2012.[18]

4. TREATMENT/MANAGEMENT EVIDENCE BASE

4.1. Evidence for Effectiveness of Early Disease Identification and Improved Linkage to Care

HIV/Hepatitis QUERI stresses the importance of early identification and linkage to care of HIV- and HCV-infected individuals. Asymptomatic individuals who are HIV-positive would have no knowledge of their serostatus without testing and therefore cannot access appropriate care until the onset of immunological failure and emergence of symptoms. While of long-standing importance, the relevance of early diagnosis has been strengthened by recent studies suggesting that there are significant clinical benefits with very early administration of antiretroviral therapy (i.e., at $CD4^+$ counts of 350 – 500 cells/μL and possibly in persons with > 500 $CD4^+$ cells/μL).[36,37] Within the HIV/Hepatitis QUERI, Douglas Owens, former Executive Committee Member from VA Palo Alto, and others demonstrated that adoption of routine, non-risk based HIV testing, results in earlier diagnosis of HIV infection than that would occur with risk- or symptom-based testing. Earlier disease identification leads to earlier intervention, improves clinical outcomes and proves cost-effective even in populations with a seroprevalence rate of 0.05%.[2,38] This evidence led the CDC, the American College of Physicians (ACP) and the VA to recommend routine HIV testing in populations where the seroprevalence of HIV infection is not known to be less than 0.1%.[1,2,19,39] Critically, based on analyses that demonstrate

cost-effectiveness of HIV testing at least up to the age of 75 [40], neither the ACP nor the VA have an upper age limit for routine HIV testing. Research conducted in the VA by QUERI collaborators demonstrated that among patients treated in ambulatory setting at six VA facilities, persons 75 years and older had a 0.1% prevalence of undiagnosed HIV infection.[41]

Our QUERI has demonstrated that implementing an integrated package of quality improvement interventions that utilizes decision support, a provider education (activation) campaign, feedback reports, and organizational changes, more than doubled HIV testing rates for at-risk individuals.[42] These results were robust, sustainable and exportable, demonstrating 2-4 fold increases in the likelihood of being tested for HIV observed across patient-level, provider-level, and sub-facility-level factors.[43,44] Furthermore, the fraction of HIV test results that were positive remained constant (0.45%) and well within the range at which HIV testing costs less than $50,000 per quality-adjusted life year when societal benefits of testing are considered.[2] Long-term follow-up data indicate that implementation of this program has resulted in earlier HIV diagnoses (i.e., at higher $CD4^+$ counts).[45] More recently implementation of this project in VISNs 3 and 16 led to a doubling to tripling of HIV testing rates. Data on the effect of this intervention on routine, non-risk based HIV testing are pending.

Once identified, linkage for subspecialty and prioritized primary care is critical to ensure that HIV-infected patients receive appropriate prophylaxis against opportunistic infections, antiviral therapy to suppress HIV replication, and reconstitute the immune system as treatment of co-morbidities are becoming increasingly common in HIV-infected patients.[30,46] Of note, our group has evaluated the relationship between HIV testing modalities and linkage to care. We found that while routine blood based testing (for which test results are not available for at least one and often 3 -5 days) is of benefit in many circumstances, rapid testing, in which results are available in 20 minutes, leads to increased access to care this is particularly important to patients with poor follow-up because it allows patient identification and linkage to care to be accomplished in one visit, circumventing the problem of visit-to-visit patient attrition.[47] Ideally, such linkage is to a setting with coordinated, multidisciplinary care as we have found that such programs provide the greatest benefit to patients.[48]

Early disease identification is also of benefit to persons infected by HCV. Administration of specific antiviral treatment delays progression to cirrhosis and hepatocellular carcinoma and is more curative and better tolerated in persons in the earlier stages of disease. Furthermore, early case recognition allows for patients to be counseled about alcohol and substance use and, as appropriate be referred to treatment programs; these are measures of great importance

given that such behaviors greatly accelerate the course of liver disease in HCV-infected individuals and complicate or preclude the administration of effective anti-viral therapy.[10,13,49]

4.2. Evidence for Relevance and Effectiveness of Chronic Disease Management

Effective treatments for HIV/AIDS and HCV *per se* as well as their complications and co-morbidities are generally well-defined and strongly evidence-based. In HIV, robust guidelines specify appropriate antiretroviral therapy, prophylaxis for opportunistic infections, and tests for monitoring disease progression.[9,50-52] Moreover, as HIV is transformed into a manageable chronic condition and as the HIV-infected patient population ages [21,30], evidence has emerged and guidelines have been developed regarding the management of the increasingly prevalent co-morbidities (e.g., diabetes, depression, hypertension, cardiovascular, renal and hepatic disease).[8,9,53] Similarly robust guidelines exist for antiviral treatment and management of complication of chronic HCV infection.[4,10,12,13]

At present time, nearly 80% of VA HIV-infected patients receiving antiretroviral therapy have achieved virological control of their infection. [6] Nonetheless, attention to consistent, lifetime adherence to antiretroviral therapy remains a challenge for patients who have not achieved virological success and is crucial for sustaining virological suppression. In addition, antiretroviral resistance and drug-drug interactions still require specialized expertise in HIV treatment. However, future challenges will increasingly relate to chronic disease management given the growing prevalence of comorbidities due to aging of the HIV-infected patient population. The VA is especially impacted by aging as 64% of HIV-infected Veteran patients are already over the age of 50.[6] These older individuals are at increased risk for complications due to comorbid medical conditions that are exacerbated by the toxicities of long term antiretroviral therapy, aging, and previously unforeseen complications of chronic HIV infection. [8,30]

The clinical impact of co-morbidities in patients with access to effective antiretroviral therapy now overshadows the impact of traditional HIV-related complications. Not only is the frequency of serious non-AIDS events approximately 50% greater than that of AIDS events, but mortality following these serious non-AIDS events is more than double that following AIDS events. [54] Within the VA mental health disorders and diseases of the circulatory system were the leading causes of hospitalization for HIV-infected patients in 2008.[6] Furthermore, preexisting comorbidities, age-related decreases in hepatic and renal function, and drug-drug interactions related to polypharmacy affect the tolerability of antiretroviral therapy. [30] In particular, older patients are more likely to develop hypercholesterolemia, anemia, hyperglycemia, and renal dysfunction after the initiation of therapy.[55,56] In one analysis, 61% of

HIV-infected individuals between 50-59 years of age had at least one medical comorbid diagnosis.[24] VA data indicate that 51% of HIV-infected Veterans suffer from depression, 49% have hypertension, 43% have dyslipidemia, 25% are co-infected by HCV. [6] In addition, we have found that depression and other comorbidities are under-diagnosed. These gaps are further discussed in Section 5. [57,58]

In summary, medical comorbidities, both mental and physical, are critical and treatable contributors to long-term outcomes in HIV-infected patients.[59] The increasing importance of medical comorbidities and the observation that many providers of HIV-specialty care are less comfortable with providing primary care [32], suggest that optimization of care of older HIV-infected patients will benefit from systems of care that provide coordination of primary care, mental health and specialty services. Given the multiple comorbidities, these complex and older patients will benefit from the development of programs to comprehensively assess risk of morbidity and mortality, identify modifiable mediators of risk, and prioritize the delivery of high-quality medical care. [46]

The challenges of HCV therapy are somewhat different, but equally demanding of patients and the healthcare system. Untreated, HCV infection progresses relatively slowly, and is asymptomatic often until liver damage is advanced. [10,13] Depending on when infection occurs, some patients may never experience problems with HCV before succumbing to other unrelated illnesses, possibly at advanced age. However, HCV is the most common cause of liver failure in the United States, leading many infected patients to suffer from serious disability as well as death from end-stage liver disease.[13,60] Although cure rates, measured by the Sustained Virological Response (SVR), have been less than optimal, especially for patients with HCV genotype 1, which is by far the most common form of HCV in the United States, successful antiviral treatment not only cures the viral infection but also prevents cirrhosis**,** progression to end stage liver disease and improves health related quality of life. [61-67] Therefore, the American Association for the Study of Liver Diseases (AASLD) and the VA recommend antiviral therapy in patients without treatment contraindications.[10,68]

The incentive for HCV treatment will increase with the availability of new treatments (i.e., telaprevir and boceprevir) which are expected to be approved by the FDA in 2011. These new medications have shown to increase SVR rates from 40-50% to over 70%. [69-73] Just as importantly, the racial differential in efficacy observed in two drug regimens appears to be much less in the new three drug regimens that include these new agents. This improved rate of success will increase the relevance of assuring linkage to care for the 80% of VA patients with

chronic HCV infection who have not yet received antiviral treatment and for the many patients who have received therapy but not been cured of HCV infection. [15] How the effectiveness of these drugs will fare outside of clinical trials is unknown, and will be a focus of future QUERI activities.

One thing that is known is that the drugs will be costly. Potentially over 75,000 Veterans may begin a 12- to 48-week treatment course at an estimated cost ranging from $15,000 to $25,000 per Veteran and perhaps an additional $3500 - $10,000 more in over a quarter of these patients who may require erythrocyte stimulating agents (ESAs) or granulocyte colony-stimulating factor (GCSF) for treatment-related adverse effects. Estimates of total costs are not available, but drug costs alone may exceed $1 billion. Refining those estimates will be another focus of future QUERI research.

Table 1. Veteran Population Excluded from HCV Treatment

Reference	% Contribution in treatment exclusion		
	Medical comorbidity (%)	Depression alone (%)	Depression & alcohol (%)
Leman et al., 2002 [74]	5	22	15
Tavakolitabas [75]	-	38	-
Knott et al., 2006 [76]	8.2		-
Muir et al., 2002 [77]	20	19	32
Bini et al., 2005 [78]	18	30	-
Rowan et al., 2004 [79]	26	23	-
Cawthorne et al., 2002 [80]	6.5	21	~10

Unfortunately, despite the known effectiveness of treatment, 60%-70% of HCV Veteran patients are considered ineligible, and thus excluded from receiving antiviral treatment. [74-82] Co-existing depression (with or without substance use disorders) is the leading patient-related barrier to antiviral treatment (Table 1). This exclusionary criterion was established because of the concerns that interferon may worsen underlying depression, thus resulting in premature discontinuation of antiviral treatment, noncompliance to antiviral treatment, and suicidal ideation. [83-88] In light of this, the AASLD and the VA recommend against anti-viral treatment in patients with severe, uncontrolled depression (about 10% of patients may fall under this category).[89] However, in routine clinical practice, a much larger segment is excluded due to co-existing depression (Table 1), suggesting that clinicians may be reluctant to treat patients with milder depressive symptoms. Critically, depression is a modifiable barrier to antiviral treatment.[75,76,90,91]

In a prospective study by Tavakoli-Tabasi, depression was the sole contraindication to antiviral therapy in 38% of Veterans initially evaluated in viral hepatits clinics. Of these, 30%, all managed with referral to mental health care (MHC) clinics, became eligible and received antiviral therapy.[75] Unfortunately, depression is under-recognized and under-treated in HCV-infected patients.[74,92] In an audit of patients seen in the Palo Alto VA viral hepatitis clinics, 34% of patients with moderate to severe depressive symptoms did not have a prior clinical diagnosis of depression;[7] depression was undertreated in more than 50% of patients with known depression diagnosis. Nelligan et al. reported similar data from the Portland VA clinics.[92] Similarly, since recent alcohol use is associated with higher rates of treatment discontinuation,[93] ongoing alcohol use is considered a contra-indication to therapy. In contrast, persons with past histories of alcohol use of a rate of treatment success similar to those of nondrinkers (Table 1).[93]

With the potential reversibility of these conditions, extensive attention has been paid to identify the best ways to manage these co-morbidities and thereby allow more patients to become candidates for anti-viral treatment of HCV. Evidence from trials of integrated care is available on the integration of substance use and psychiatric treatment with primary medical care. [91,94,95] The strongest trial compared usual outpatient care with alcohol interventions integrated into long-term primary care for medically ill alcoholics at a VA facility.[94] Patients in the integrated model had significantly better drinking outcomes and a trend towards reduced mortality over two following years. The incremental cost of the model was an estimated $1100/patient /year. Another study among US Veterans with alcoholic liver disease found that repeated monthly contacts with nurses over the course of the study resulted in substantial decreases in drinking among all study participants.[96] More recently a retrospective study demonstrated that brief treatment addressing heavy drinking delivered by hepatitis clinicians with psychiatric-specialist follow-up was associated with abstinence or a significant reduction in alcohol consumption in over 50% of patients.[97] These studies suggest that for persons with alcohol dependence, non-intensive medically focused attention to drinking can result in substantial improvement in outcomes.

In summary, depression and both alcohol and substance use are serious, reversible impediments to the provision of anti-viral therapy for HCV. Our group has recently reported that the care of quality for VA HCV-infected patients increases in settings where better coordination of care between specialists and primary care providers is present. Notably, patients with better care were not only more likely to receive HCV antiviral therapy, but also more likely to achieve virological cure.[98]

4.3. Evidence Addressing Access and Equity

There is substantial evidence that gaining timely access to high-quality, coordinated medical care improves a variety of health outcomes, including mortality and quality of life, for HIV-infected patients.[2,48,99,100] For persons with known HIV infection having subsequent timely, consistent and equitable access to care has been associated with improved clinical outcomes. Ample evidence also indicates that optimal care for HCV infection request that patients maintain consistent, frequent contact with their providers not only to optimize the safety and effectiveness of anti-viral treatment but also to assure appropriate monitoring and management of the complications of chronic HCV infection.[10,13]

One way to operationalize access is access to medical appointments. Our work and others have shown that missed appointments result in poor outcomes. Studies indicate that missed HIV appointments are common and that rates consistently range from 25% to 40%. [101-104] A limited group of demographic and clinical characteristics that are clearly and consistently associated with missed HIV/AIDS primary care appointments have been identified; these include younger age, racial/ethnic minority status.(especially African American), and a history of substance use disorders. [101,105-110] Patients who do not maintain regular clinic attendance miss more medication doses and have higher levels of plasma HIV and higher rates of drug-resistance.[104,106,107,111-113]

Another way to conceive of access is access to medications, as medical appointments are not enough in diseases that require high levels of medication adherence.[94] Partial adherence and frequent switching of drugs in response to side-effects and adherence problems can in turn lead to drug-resistant HIV isolates which may not respond even to well-planned therapies.[50] Similar findings have been found among vulnerable HCV-infected patients.[114-116] The lack of adherence has serious consequences for HCV-infected patients, especially during the receipt of antiviral therapy. For genotype 1-infected patients, who comprise 80% of VA HCV-infected patients, receipt of at least 80% of interferon and ribavirin doses for at least 80%of the intended duration is necessary to optimize virological responses.[117] As new therapies become available for HCV, excellent adherence will also be necessary to minimize the emergence of resistance to these directly acting antiviral agents.[73] Issues regarding adherence are likely to increase as the HIV and HCV patient populations age and neurocognition declines.[118,119] Thus poor access to medications impairs outcomes as much as poor access to medical appointments.

In combination with data cited in Section 5.3, the above cited studies make it clear that the highest need most vulnerable populations are: the homeless, the mentally ill, substance abusers, and racial minorities, and that improving access for such patients will likely improve morbidity and mortality.

5. CURRENT PRACTICES AND QUALITY/OUTCOME GAPS

5.1. Gaps in Early Disease Identification and Linkage to Care

As mentioned previously, approximately 21% of HIV-infected individuals in the United States have no knowledge of their infection status.[20] The consequences of the failure of current strategies to identify HIV disease early have been demonstrated; historically, fully half of all VA patients with newly diagnosed HIV infection had 200 $CD4^+$ cells/μL or fewer; a degree of immunodeficiency which presages the imminent development of severe infectious and neoplastic complications of HIV.[38] These gaps in diagnosis exist despite evidence that HIV screening programs for all Veterans would be cost-effective [1,40,41] Recent analyses by the VA PHSHG indicate that as of the end of 2009, only 9.2% of the 5.7 million Veteran patients with an outpatient visit had ever been tested for HIV in the VA. The VISN-level rates of ever having tested varied from 5.6% to 20% and the rates of being tested in the prior year varied from 0.3% to 5.7% with the highest rates for both being for VISN22 (the site of our **VISN QI project**) [99] In the general US population, data from 2008 suggest that 314,000 of the 1.1 million HIV-infected patients were not receiving regular medical care [120] Comparable data regarding linkage to care are not readily available for the VA.

In recognition of the increased rates of HCV infection in the VA [121] the VA has already developed a highly effective program to identify patients at risk for HCV-infection and to offer such persons once per lifetime diagnostic testing.[122,123] As a consequence of the extensive attention therefore already paid to identifying patients with HCV, disease identification is a smaller issue among VA HCV-infected persons than it is among the HIV infected population. [122,123] As a result, our efforts have focused less on that goal than they do on improving the quality of chronic illness disease management for HCV-infected patients and for improving access to care and equity for disadvantaged patients, rural patients, and racial and ethnic minorities with HCV infection.

5.2. Gaps in Chronic Disease Management

For those who already have access to specialized HIV care, highly active antiretroviral therapy (HAART) has proven effective;[124] guidelines for HAART use are clear, and HAART uptake within and without the VA has been rapid and effective.[125] More recently, the VA has assessed the quality of HIV care using a series of recently published quality indicators that were developed by the National Committee for Quality Assurance (NCQA).[11] VA performance on these measures related to traditional HIV and Infectious Diseases care (e.g., *Pneumocystis jiroveci* pneumonia prophylaxis, administration of antiretroviral therapy and monitoring immunological and virological responses, and administration of vaccines were generally above 75%.[6]

However, results for issues related to primary care management were less satisfactory with, for example, only 65% of patients receiving antiretroviral therapy had a test to measure serum lipids in 2009.[6] These results are little changed from an earlier study by our group which found that despite the development and promulgation of relevant guidelines,[8,53,126] only 63% of HIV-infected Veterans patients had any tests to monitor for the presence of dyslipidemia.[58] We are unaware of any comparative data from other large healthcare systems. These findings are consistent with the observation that many providers of HIV-specialty care are less comfortable with providing primary care.[32]

Depression is a particularly common co-morbid condition that is widely under diagnosed in HIV-infected patients.[24,127,128] The Veterans Aging Cohort Study, an ongoing cohort study of Veterans with and without HIV infection,[129] demonstrated that providers are often unaware of important comorbid conditions including and depressive symptoms,[130] as well as hazardous alcohol consumption.[131] Data from provider focus groups confirm these challenges in managing co-morbidities in HIV-infected patients, indicating that the biggest challenges in managing HIV-infected patients relate to issues of medication adherence and management of concurrent conditions, such as HCV co-infection and mental illnesses.[132]

Maintenance of stringent, lifelong adherence to anti-viral therapy continues to be a considerable and critical challenge for many HIV-infected individuals.[94] Our QUERI's Research Co-Coordinator, Allen Gifford's data from VA patients using HAART indicated that 28% were adherent less than 80% of the time.[94] In a QUERI-HIV/Hepatitis patient survey, 16% said that they missed doses of their antiretroviral therapy at least once a week. Objective, electronically-monitored antiretroviral adherence data from the QUERI-HIV/Hepatitis **ACE** project showed worse adherence – as low as 60-65%.[133] Finally, work by our group has shown that Veteran

HIV-infected patients visiting clinics that offered coordinated hepatitis, psychiatric, psychological, and social services in addition to HIV primary care were 3.1 times more likely to achieve viral suppression than patients visiting clinics which offered only HIV primary care.[48]

Similar gaps in care exist for HCV in the VA. Work done by the PHSHG indicate that in 2008, 32% of HCV-infected patients with a diagnosis of cirrhosis did not receive any recommended screening for HCC.[15] This is complemented by our recent work in which our group applied recently developed quality indicators to a cohort of 127,496 HCV-infected patients who received care in the VA between 2000 and 2006. We found that 22% of patients received all indicated pre-treatment care and 8% received all indicated preventive/comorbid condition care; only 55% of eligible patients received specialty evaluation.[98,134] Of note, these results are similar to those found outside the VA.[4]

In other work, Kanwal et al. found that antiviral treatment rates are low among patients who may be eligible for treatment and that these rates vary greatly. [114] This analysis revealed that fewer than 16% of eligible patients received antiviral treatment prior to 2007 and that treatment rates varied across several patient characteristics and providers' experience (for example, patients seen by less experienced providers are less likely to receive treatment than those seen by more experienced providers), and across treatment facilities (treatment rates varied from 6% to 28%). Even in patients in whom treatment is highly effective (that is, those with HCV genotype 2 or 3) and in patients more likely to be interested in pursuing treatment (that is, those who underwent a liver biopsy) treatment rates were lower than 50% and varied significantly across providers' experience and treatment facilities. Our group has recently reported that the care of quality for non-VA HCV-infected patients increases in settings where there is better coordination of care between specialists and primary care providers. Notably, patients with better preventive care and treatment of comorbid conditions were not only more likely to receive HCV antiviral therapy, but also more likely to achieve virological cure.[98]

In summary, we have identified significant gaps in chronic disease and comorbidity management for both of our target conditions. Reductions in unwanted variations of care for HIV- and HCV-infected patients are of great importance to the PHSHG and the VA as a whole.[3,6,15]

5.3. Gaps in Access and Equity

Many studies have found that patients who are women, older, members of racial and ethnic minorities, poorer, less educated, homeless or uninsured are less likely to receive needed

care. Despite the reduction of barriers typically faced by disadvantaged populations in the non-VA setting, Saha et al. found that racial disparities in the VA exist across a wide range of clinical areas and service types. Disparities appear most prevalent for medication adherence, surgery and processes that are impacted by the quality and quantity of organization-patient interaction and patient-provider communication.[135]

The evidence for gaps in access is strong for HIV [105-107,136] and developing for HCV.[4,98,114,115] Disadvantaged populations, including homeless patients, rural residents, racial and ethnic minorities, and those with substance use disorders, have greater need for HIV and HCV care given the higher rates of the two diseases in these populations. There is an argument that they should receive more not less care. Yet we often find the opposite. For example, African-Americans with HIV infection are less likely to receive timely antiretroviral therapy and rural residents are less likely to receive newly developed therapies.[105,114,136,137] One VA facility reported that HCV-infected patients not known to be of white ethnicity were less likely to be referred for subspecialty care. [138] Furthermore, Rousseau et al. found that African Americans were significantly less likely than their white counterparts to have complete laboratory evaluation and viral genotype testing.[115] African-Americans are also less likely to receive antiviral treatment for HCV in the VA, but whether this is due to lack of access or to the known lower rates of response of African-American patients to treatment, which is determined by genetic polymorphisms, remains uncertain.[10,13,98,114,115,138,139] Nevertheless, it will be important to monitor treatment rates by race given the global improvement in treatment response with therapies which should soon be approved.

6. SIGNIFICANT INFLUENCES ON CURRENT PRACTICES AND OUTCOMES

6.1. VA Directives

Several key VHA directives are important guides for QUERI HIV and HCV activities. In the past, efforts to improve HIV disease identification have taken place under policies limiting testing largely to those with sexual risk, substance abuse, and other markers of risky behavior. VA directives have also required signed informed consent for testing. As of 2009, however, new VA directives have eliminated signed consent, and instead require documented verbal informed consent as VA standard of care. [19] This new directives stems from influential policy changes by non-VA agencies (CDC) and medical societies (ACP) that encourage routine testing for most or all adults.

Implementation and dissemination of routine testing within VA facilities has been, and

will continue to be a major focus of our QUERI. So far, programs in response to the routine testing directive have largely focused on primary care. However, the directive also applies to inpatient, emergency, mental health, substance abuse, and homeless programs, as well as other settings. The routine testing policy also stipulates that newly identified HIV-positive Veterans be referred to and enrolled in state-of-the-art HIV and comorbidity care as soon as possible after diagnosis. Accordingly, establishing systems to assure such linkage to care will be an important strategic focus of QUERI during our next phase.

VA directive 2007-022 establishes and maintains the national hepatitis C quality program, maintaining and promulgating quality programs for HCV testing and treatment. Under the directive, HCV quality guidelines have been established and published.[10,13] The directive also sets priorities for dissemination of HCV resources and education, and supports HCV support groups, technical advisory activities, and quality data monitoring. QUERI investigators found that routine confirmatory ("reflex") testing improved disease identification in Veterans found to have HCV antibodies and the VHA has issued a special directive to successfully disseminate that practice.[140,141]

The VHA National HCV program directive has established EPRP data collection to track and monitor screening of Veterans for hepatitis risk factors, and testing for HCV of those with risk factors. Success rates have been high in the past (95% and 90% respectively), future tracking of EPRP results to ensure ongoing successful HCV screening will be important.

6.2. National and Regional Initiatives

The National VA Clinical Public Health Program Office under the leadership of David Ross and Maggie Czarnogorski remains a crucial partner for our QUERI. This office is currently leading major regional quality initiatives focused on disseminating routine HIV testing in several areas, including the Pacific Islands region, New England, , and others. For HCV care, national initiatives are currently being developed, as the four Hepatitis C Resource Centers (HCRC) are being sunseted as they are currently operating and the HCV national strategy is being reconfigured. The National Clinical Case Registry (CCR) programs that support both HIV and HCV care for quality monitoring and population management continue, and remain important, managed by the Public Health Strategic Healthcare Group (PHSHG). VA Directives targeting the needs of rural Veterans, and of those who are homeless and unstably housed, coincides with our Goal 3 efforts to address geographic and socioeconomic disparities in Veterans. We're therefore collaborating with telehealth initiatives including those being developed by Michael Ohl

of Iowa City VA and the VA rural health centers to implement HIV care outreach via telehealth, and we're working with the national VA HUD-VASH program on a project to improve linkage and retention in care among homeless Veterans.

6.3. System Redesign

PACT are a major redesign initiative underway in all regions of the VA, thus far exclusively within primary care. We have shown that comprehensive HIV clinics deliver better results, and many HIV clinics across the country have that goal.[48] Based on the medical home model of comprehensive, and continuous healthcare, the PACT approach has great appeal for HIV treatment, but there's little known and few skills or organizational schemas available for applying PACT to HIV care. The HIV/Hepatitis QUERI is working with VA Specialty Care and the VISN 22 PACT to study and develop an HIV PACT. Opinion leader/stakeholder interviews are being conducted in Los Angeles and Boston HIV care centers, and results will lead to collaboration with VISN 22 PACT lab to create and evaluate an HIV PACT in Los Angeles. In HCV, the specialty care coordination with primary care will likely be the predominant model and developing the HCV portion of the medical home "neighborhood" will remain a challenge in working with System Redesign.

7. HIV/HEPATITIS QUERI CENTER GOALS

As mentioned in Section 1, we have three overarching goals in support of our mission: (***1) Better Disease Identification***, for which we have developed screening and case-finding project streams or initiatives; ***(2) Better Chronic Disease Management***, for which we have developed provider behavior, adherence and co-morbidity management project initiatives; and ***(3) Improve Access and Equity,*** for which we will address inequitable access and health disparities in both disease identification and chronic disease management.

Goal 1: Better Disease Identification

Disease identification is a major quality gap within the VA in the management of HIV, and to a lesser extent it remains an issue for HCV as well (see Section 5). The link between disease identification and desirable outcomes, while it involves several steps, is clear. As described in Sections 4.1, the evidence supports increased testing as it leads to improved outcomes. Increased testing is likely to increase early identification in the course of the disease. Veterans with an early diagnosis are more likely to be linked to care and who in turn, are more likely to receive definitive treatment. Treated patients have decreased disease specific

morbidities, and in the case of HIV, decreased mortality and costs. Moreover, because both conditions are transmissible, identified patients are less likely to spread the disease to others. In this QUERI's 2010 strategic plan, we have added a new emphasis on the third step in this chain linking testing to outcomes, which is the linking of newly identified patients to definitive care.

Our efforts to identify and link HIV patients to care are two-pronged. For our first objective, we will continue to build up organizational capacity to provide testing as part of clinical preventive services in primary care and other settings. The short term goals here are to complete the development and evaluation of a spreadable implementation package including informatics and social marketing components. The second objective of our efforts to identify HIV patients will focus on outreach to high risk populations (e.g., the homeless and incarcerated) and linking them to care. Our short term goals here involve demonstration outreach projects, using rapid testing, with plans for evaluation of dissemination strategies. For HCV disease identification, the gaps are likely smaller than those in HIV, so our short term goals focus more on parallel linkage strategies to those for HIV disease. For all efforts, our long term goal is to hand off lessons and developed protocols to the PHSHG and facilities.

Since our portfolio in this area is quite mature, our research and implementation objectives for Goal 1 are inextricably intertwined. Formative and process evaluations for each of the projects evaluate organizational and contextual barriers and facilitators that inform other similar disease identification projects. For example, several of the early rapid test projects identified laboratory service concerns about the quality of point of service HIV rapid testing. This contextual factor was incorporated into the interventional development of subsequent rapid test projects and will inform planned projects in this area (e.g., CBOC Rapid Test). We believe that many of the linkage aspects of these projects have implementation lessons for other QUERIs as well, and plan to work specifically with the Substance Use Disorder (SUD) and Mental Health (MH) QUERIs on these issues in the next few years.

We have no goal to decrease inappropriate care in disease identification because the evidence does not support this as a major problem for either of our target conditions (just the opposite). Our investigation of HCV antibody testing showed modest overuse, but we believe the minimal costs of repeat testing do not warrant a focus of our research.

Goal 2: Better Chronic Disease Management

Goal 2 is a natural follow up to Goal 1 because once patients are linked to care, managing their viral infection, its comorbidities, and complications can lead to better health

outcomes. To that end, Goal 2 has the following objectives: (1) Comorbidity management - assessment, management and coordination of the many complex clinical and psychosocial problems of Veterans with HIV or HCV, especially those that may interfere with antiviral therapy; (2) Medication management -optimizing all aspects of the use of antiviral regimens that are critical to good HIV and HCV care; and (3) Evaluation of cost-quality trade-offs.

The co-occurrence of mental and behavioral health problems with HIV or HCV infection has long been a major concern for our QUERI. Our first objective focusing on co-morbidity management will therefore be achieved initially through collaborative efforts with the MH and SUD QUERIs. As a myriad of clinical complications including heart disease, non-AIDS associated malignancies, liver disease and metabolic disorders, which have been traditionally regarded as non-HIV related [30], now often account for more morbidity and mortality in HIV infected patients than do traditional AIDS-related diagnoses. [54] Previous research has shown that even providers of high-quality HIV care are less comfortable with the provision of comprehensive primary care [32]. Toward the end of the strategic planning period, we plan to evaluate the contribution of the PACT model to improving care for these comorbidities in HIV clinics.

The second objective focusing on medication management will remain a critical objective because studies continue to demonstrate lower than expected compliance rates in both HIV and HCV patients and that these rates vary across different patient and organizational factors. We have several studies currently in progress to identify ways to improve medication management using innovative information technology and qualitative research. In the long term, the patient centered PACT approach could conceivably help in improving adherence as well. Our short term goals here are to complete the development and evaluation of the tablet-based adherence intervention.

We have added the third objective in Goal 2 due to the imminent release of the new HCV protease inhibitor therapy. Upon approval of these agents, it is estimated that a substantially higher number of patients will seek treatment than that in prior years, as many providers and Veterans have chosen to defer treatment until the availability of more effective agents. Similarly, considerable numbers of Veterans who have failed prior anti-HCV treatment will likely seek retreatment with a telaprevir based regimen. Therefore, the VA must be prepared for the impact of the increased numbers of patients initiating HCV treatment once these agents are approved. This third objective will address the costs of the new therapies, including logistic

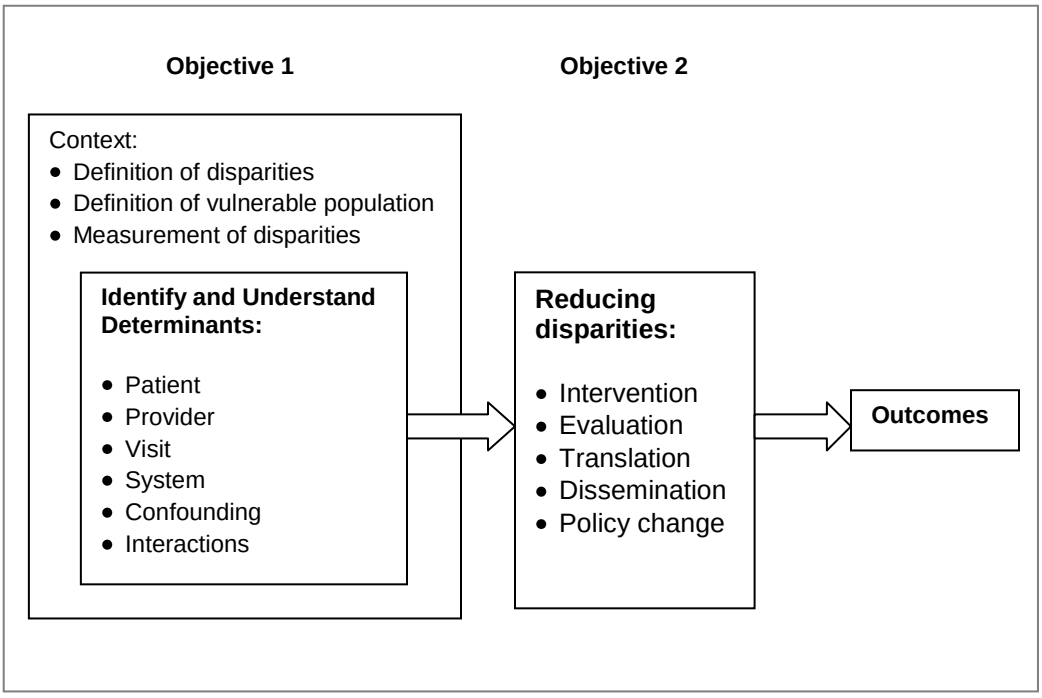
planning and resource allocation, including pharmaceutical budgeting, with the goal of assuring that systems and plans are in place to support the expected demand.

This third objective will also address the potential for overuse or misuse of these new expensive therapies. The progression to chronic liver disease is relatively slow in HCV, and even with new regimens 30% will not expect sustained response, and side effects are not inconsequential.[69-73] It is essential that patients who are poor candidates for therapy due to otherwise limited life expectancy or co-morbidities that increase the risks of antiviral therapy for HCV (e.g., uncontrolled diabetes, bone marrow suppression or unstable cardiovascular disease) not receive therapy which is more likely to offer harm than benefit.[10,13] Similarly, given the slowly progressive nature of HCV disease, therapy should be delayed while mutable conditions that lessen the likelihood of successful therapy (e.g., unstable living circumstances), such as severe, uncontrolled depression and active alcohol and substance abuse, are addressed.

Goal 3: Improve Access and Equity

The HIV/Hepatitis QUERI 2008 strategic plan included the third goal to improve access to and the equity in receiving HIV/AIDS and HCV care within the VA. Available literature to date has well documented disparities in HIV and HCV care, where African American and Latino patients have reported lower therapeutic adherence, lower odds of viral suppression, and higher mortality rates.[142-144] Within the VA, racial/ethnic disparities have been observed in access to HIV and HCV care, service utilization, process of care, and health

Figure 1. Goal 3 Objectives



outcomes. For those with HIV, age-adjusted mortality is higher among non-white Veterans. Minority Veterans also tend to be diagnosed with HIV at a later stage and therefore experience increased severity in illness at the time of diagnosis. Among HCV patients, African American and Latino Veterans have been less likely than their white counterparts to receive antiviral treatment and one study reported a higher likelihood of discontinued treatment in Hispanic Veterans. [135] In addition to these important racial/ethnic disparities, Veterans residing in rural areas represent a vulnerable group that is of particular concern to the VA due to the very high numbers of Veterans spread across the low population-density areas of the country. These individuals face different, but similarly formidable barriers to access care. Therefore, Goal 3 of the HIV/Hepatitis QUERI addresses these gaps with two objectives guide our research activities (Figure 1): (1) Identifying and understanding underlying sources contributing to disparities; and (2) Reducing disparities through interventions and outreach.[145] As our two objectives are inter-related, our short term goal is to capture types and sources of disparities and assess long term goals such as the effect of tailored intervention on reducing disparities.

7.1. Plans for Achieving QUERI Center Goals

7.1.1. QUERI Center Process

The HIV/Hepatitis QUERI refers to the now familiar QUERI six-step process in our efforts to plan, develop, and implement interventions and programs to improve HIV and HCV care:

1. To identify priority conditions and opportunities for improving the health of Veterans
2. To identify effective practices for improving outcomes for HIV- and HCV-infected Veterans;
3. To examine variations in existing practices, sources of these variations, and impact on health outcomes;
4. To identify and test interventions, including coordinated programs, for quality improvement and delivery of best practices;
5. To evaluate the adoption and implementation of interventions to promote the diffusion of best practices;
6. To understand the impact of program improvement and best practices on Veterans' quality of life, intermediate, and ultimate health outcomes.

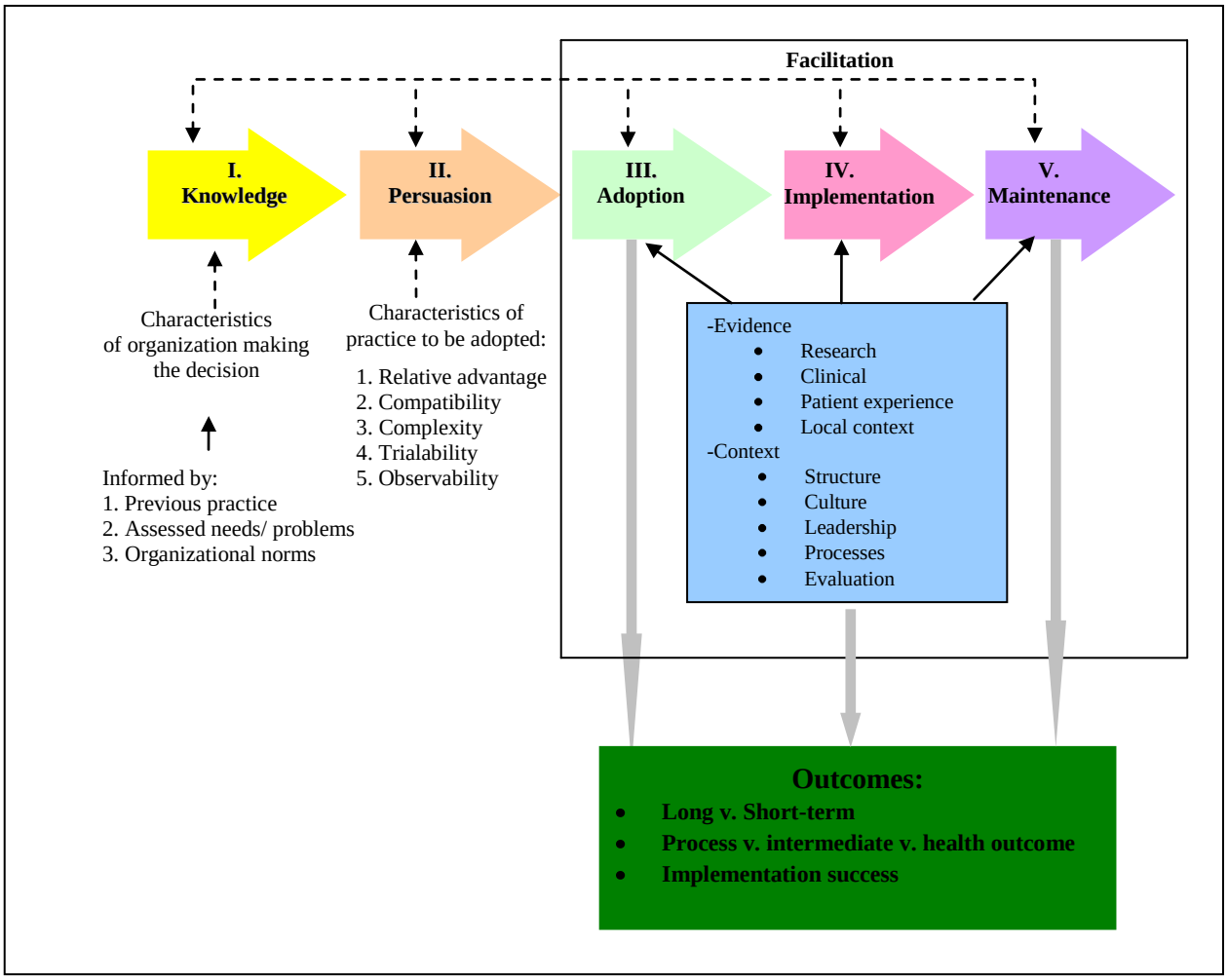
As with all of our activities, we work with our strategic partners in the PHSHG to sequence projects in each of goals and objectives that move through these steps. We also work to ensure

that each of the step 3 and 4 projects has process and cost (or business case) evaluations to aid in future dissemination.

7.1.2. Analytic Framework

In guiding the HIV/Hepatitis QUERI activities, we developed an analytic framework integrating the Promoting Action on Research Implementation in Health Services (PARIHS) model with components of the Diffusion of Innovations model (Figure 2). The diffusion model emphasizes characteristics of the policy/practice that increase the likelihood of adoption, implementation, and maintenance by individuals and organizations. Spreading innovative practices, an organization undergoes a five-stage process in making decisions regarding implementation. The individual adopter must first gain relevant knowledge, be persuaded that the practice/policy is valuable and applicable, decide to use, implement, evaluate and confirm it.[146-148] The PARIHS model posits that implementation success is a function of relationships among evidence, context, and facilitation. The nature of evidence, quality of context, and facilitation technique determine the dynamic of these relationships that lend insights into how outcomes are achieved.[149-153]

Figure 2. Analytic Framework



Each of the five stages of the diffusion model describes activities that facilitate the spread process, providing information upon which this QUERI can generate hypotheses to examine our implementation efforts.[146-148] The five stages are summarized below:

- **Knowledge:** Individual adopters conduct a self assessment for adoption. Its knowledge base should include a survey of pervious/prevailing practices, needs assessment, and understanding of organizational culture and norms. A growing perception of the need can occur because of the need to provide more cost-effective services to key stakeholders, dissatisfaction with current practices, requirements by regulatory agencies/government, etc. More proactively, a need for change may occur when stakeholders identify opportunities to improve performance to exceed current standards.

- **Persuasion**: When a new practice has been identified for adoption, attributes of the practice may affect the rate of uptake.
- **Adoption:** Adoption occurs when decision makers accept the proposed innovative practices as a valued institutional goal. Some studies have tested strategies used by organizations to adopt and implement new practices, such as feedback, adopter involvement or user attitude, organizational investment, such as training and resources), timeliness of delivery, ease of use, perceived efficiency of the practices, and relevance. These mechanisms channel information to organizational members, convey the salience of the practice, and enable a change in behavior. Additional factors related to the new practices that impact adoption and implementation include adaptability or modifiability, type (administrative vs. technical),[154] and readiness for implementation (incremental vs. radical).
- **Implementation and Maintenance:** Implementation occurs with the actual use of the new practice. The implementation stage, being the most crucial step of the change process, is often the focus of both management commitment of resources and research efforts. Implementation can vary, depending on the types of change and internal barriers and facilitators. Barriers that are often cited in the implementation process include resistance to change, insufficient time to adapt practice, difficulty in understanding new practices, lack of support in administrative or other key disciplines, insufficient resources, etc.

The development of our framework was based on our survey of literature on organizational change and implementation science.[155-162] The organizational change perspective focuses on contextual features that enable an organization to respond to both internal pressures and external influences. Implementation science examines specific characteristics that enable organizations to successfully uptake a practice. While the diffusion model encompasses elements of the organizational change paradigm, the PARIHS model provides a critical examination and interpretation of the processes involved in adoption, implementation, and maintenance.[149,151,153] The integration of these two perspectives renders a robust framework to examine implementation success, which are measured by outcomes that are both short- and long-term, process, intermediate, or ultimate health outcomes.

While this is the dominant analytic framework, we also will apply other models when the useful. The Behavioral Model of Health Services Utilization by Vulnerable Populations

(BMHSVP) will help analysis of disparities in Goal 3. The Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis, and Evaluation (PRECEDE) - Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development (PROCEED) further informs the adoption, implementation, and maintenance stages of the diffusion process and provide guidance to specific research projects.

7.1.3. Project Portfolio

To achieve our three overarching goals, the HIV/Hepatitis QUERI has a portfolio of ongoing and planned projects.

Goal 1: Better Disease Identification

Table 2 provides an overview of ongoing and planned projects that will be conducted to achieve Goal 1.

Table 2. Current and Planned Projects for Goal 1

Project Label (Project ID)	Title/Description	Status			
		Planned	Submission Timeline	Ongoing	Project Timeline
GOAL 1: Better Disease Identification					
Objective 1: Increase in capacity for testing					
Multi-VISN QI* (SDP 08-002)	Multi-VISN Implementation of a Program to Improve HIVScreening and Testing			X	10/08-9/11
Extension of Multi-VISN QI	The Use of HIV clinical reminder and facilitation of audit feedback reporting in HIV screening	X			
Nurse-Initiated RT (IIR 04-023-1)	Improving HIV screening with nurse-based rapid testing and streamlined counseling			X	1/05-6/07
MH RT	Building capacity of inpatient mental health units for HIV testing	X			
Objective 2: Outreach to high risk population and linkage to care					
HepCAT (HHSA2902006000012)	Program Evaluation to Improve Hepatitis C Virus (HCV) Screening Practices and Testing Uptake in Select Primary Care Provider Settings			X	10/07-9/09
RT in CBOCs	Rapid Testing in CBOCs	X	1/11		
Homeless Outreach Bedford	Implementing shelter-based HIV and HCV screening	X	1/11		
Linkage to Re-entry Care*	Linkage to Re-entry Care for HCV and HIV Infected Veterans	X	Submitted 9/10		

*This project also addresses Goal 3 objectives.

Objective 1: Increase Capacity for Testing

Our plan to build capacity to provide HIV testing across the VA builds on the success of the Multi-VISN implementation (**MultiVISN-QI)**. Now that the first phase of the project evaluating the spread of risk-based testing is complete, we have transformed it into an evaluation of routine testing in order to better inform current VA policy. In that first phase, we found that national based implementation teams did perform somewhat better than local ones. In our evaluation of routine testing already underway, we will confirm that those lessons apply equally to non risk based testing. We will not only evaluate the effectiveness of the now standard package of reminders, social marketing, and removal of systemic barriers, but will continue to evaluate interventional costs. Qualitative interviews will identify aspects of VISN and facility and clinic

level organization that may impede or promote adoption of routine testing. Collaborative lessons from this project have already begun to be shared with PHSHG informing the national roll-out of testing policies. We have helped out with the VISN 1 routine testing roll out that will extend into the early part of the strategic planning period, and we expect this to continue. Final results are expected in early 2012.

A one-time routine offer of HIV testing is the most important strategy we plan to support. However, there are other implementation protocols that may prove useful in building organizational capacity for testing. Once national roll-out is underway in the second half of the period covered by the plan, the problem of periodic testing for those at continuing risk of acquiring HIV will deserve attention. We plan to develop a follow-on project to MultiVISN QI to address this population in primary care. As in the past we will develop this in collaboration with our partners in PHSHG. This will likely require a new quasi-experimental design and modification of the current clinical reminder and may need further SDP support. We will also continue to work with primary care providers, perhaps in conjunction with PACT development, to ascertain how best to prioritize and deliver clinical preventive services like HIV and HCV testing among the many competing demands primary care teams face. This is a natural extension of our current **Provider Prioritization** project.

Our current efforts to develop special protocols for VA clinical settings, where there is a continuity or access problem and/or a high HIV prevalence, will also continue. The **Nurse Initiated Rapid Testing (RT)** program should show results in the first year covered by the strategic plan. Preliminary reports indicated initial success of the implementation package developed, as did the **SUD RT** project. We will use the lessons learned to develop a rapid test intervention for CBOCs where laboratory access problem have been addressed in two VISNs (**RT in CBOCs**, led by Dr. Anaya). We will also plan another RRP, **MH RT**, led by Dr. Mari-Lynn Dranoni to build capacity of inpatient mental health units for HIV testing as the estimated prevalence in this sites is quite high, though the high continuity of inpatient setting may allow a reliance on traditional rather than rapid testing. We will also work to evaluate the sustainability of HIV testing in the SUD and primary care settings where the nurse-initiated rapid testing has been introduced and to work with PHSHG to disseminate the package to other high prevalence low continuity sites across the VA.

Objective 2: Outreach to High Risk Population and Linkage to Care

Reaching out to patients unaware of their HIV or HCV status who are not yet in VA care is the second objective for this goal. Most patients who have been in VA care for some time

have been tested for HCV as a result of national directives and performance measures, in contrast to HIV, and our work has concentrated on applying those lessons to non VA settings (**HepCAT**). Those not using VA services may have been missed, however. We plan to work with PHSHG to test the hypothesis that the success of HCV testing of those in VA care has sustained since the 1990s through an Austin data analysis. If confirmed, this will support our planned emphasis on outreach rather than clinical preventive service testing for this condition.

While we have met with some success in our **Homeless Outreach** HIV testing project, we expect that activity in this area should occupy more of our attention over the next three years. Specifically, we plan to extend the shelter based work to HCV. We will work with the Bedford-based homeless shelter to extend our shelter based outreach work to Veterans stably housed in the VASH program for both HIV and HCV. The shelter based project that is currently in progress has established a strong partnership with local Los Angeles health authorities. This partnership should allow us to begin reaching out to Veterans incarcerated in local prisons and screen them for both HIV and HCV in the **Linkage to Re-entry Care** (PI: Dr. Sonali Kulkarni). Veterans in these settings are disproportionately from the OEF OIF era and thus of particular policy interest to the VA. A version of this project is already underway under the auspices of the University of California, Los Angeles. We plan to also work with the Office of Rural Health to use electronic My HealthEVet direct-to-consumer methods of activating patients to ask for HIV and HCV tests at their rural facilities under the leadership of Dr. McGinnes in conjunction with the eHealth QUERI. As each of these projects matures, we will work with PHSHG to test dissemination efforts.

Linkage to care for HIV patients identified in VA clinics has proved quite easy in the projects in pursuit of this goal. Most HIV services around the country monitor positive tests and have been more than willing to accommodate identified patients, though rare, patients have declined treatment. Linking patients identified through outreach projects is not so straightforward. Our original **Homeless Outreach** project found that only half of identified patients made it to VA care. We plan to develop and test methods for linking Veterans identified in these high risk settings. Possibilities include immediate appointment making authority for VA outreach workers. The first planned project here is the afore-referenced **Linkage to Re-entry Care** and we are planning similar efforts in homeless shelters and VASH housed Veterans.

Goal 2: Better Chronic Disease Management

To achieve the three objectives in Goal 2, Table 3 illustrates the current and planned projects.

Table 3. Current and Planned Projects for Goal 2

Project Label (Project ID)	Title/Description	Status			
		Planned	Submission Timeline	Ongoing	Project Timeline
Goal 2: Chronic Disease Management					
Objective 1: Comorbidity Management					
HCV Care Model (IIR 07-101-3)	An Integrated Care Model for Improving HCV Patient Outcomes			X	11/08-10/12
HIV/HCV Self-Management	Development of Self-Management Interventions for HIV/HCV Co-infected Drug users	X	6/11		
Objective 2: Medication Management					
HepTIDES (SDP 10-044-2)	HCV Translating Initiatives for Depression into Effective Solutions			X	9/10-9/14
MedCHEC (1 R01 MH076911-01A2)	Implementing Computerized Clinical Assessment of HIV Patient Adherence			X	9/07-10/12
PATHS (IIR 05-281)	Barriers to Initiating Antiviral Therapy for Veterans with Hepatitis C			X	9/06-8/11
HIV PACT Evaluation	Patient Aligned Care Team formative evaluation			X	6/10-5/11
HIV PACT Pilot	Patient Aligned Care Team pilot	X	6/11		
Objective 3: Evaluation of Cost-Quality Trade-offs					
HCV Care Quality (IIR 07-112-2)	Quality of Care Among Patients with Chronic Hepatitis C Virus Infection			X	4/08-3/11
Hep C Cost (RRP 09-138)	Cost of Healthcare Utilization from Chronic Hepatitis-C Patients in the VA			X	5/10-4/11
New HCV drugs cost (RRP 10-228)	Modeling the VA Cost Impacts of New Medications for Hepatitis C (HCV)	X	Submission 6/10- Funded		
HCV drugs cost in IDUs	Agent-based Modeling of Cost-Effectiveness of New Hepatitis C (HCV) drugs in Injection Drug Users	X	Submission 6/10- under review		
HCV Comparitive Effectiveness	Comparative Effectiveness of HCV Therapy Alternatives	X	1/13		

The current and planned **HIV PACT Evaluation** project spans all objectives for this Goal. An initial qualitiative formative evaluation is already underway in collobartion with the LA based

PACT demonstration lab. We will interview staff from four HIV clinics (three in GLA and one in Boston) to assess barriers and facilitators to PACT principle implementation in this unique specialty setting. The interview will be based on published medical home principles of patient-centeredness, team-based, efficiency, comprehensiveness, and continuity, as well as the VA PACT pillars of access, coordination and practice redesign. We will use standard content analytic techniques to analyze themes and subthemes. These findings will inform the design of an **HIV PACT Pilot** project later in the planning period. Design elements will certainly be based on the existing primary care oriented PACT efforts now spreading rapidly throughout the VA. We will need to tailor it to the particular organizational and clinical settign of HIV patients so as to promote better care of comorbidities and adherence to medications. The PACT pilot may also have effects in improving access in service of Goal 3. [149,163-165]

Objective 1: Comorbidity Management

As we have rapidly expanded our HCV agenda over the past year, our new HCV projects have nearly all focused on understanding HCV disease management, and improving the integration of HCV and comorbidity care. Dr. Samuel Ho, a VA San Diego-based gastroenterologist and former head of the Minneapolis VA Hepatitis C Resource Center, has teamed with Dr. Erik Groessl, a VA San Diego-based psychologist, and received HSRD IIR funding to test the effectiveness of a protocol-based integrated care model merging psychological and substance abuse support within HCV specialty clinics to improve HCV treatment outcomes **(HCV Care Model)**. If patient evaluation and treatment rates can be increased with this approach, then further VA dissemination/implementation will be planned. The appropriate approach should also integrate findings from the successful **HCV Self Managment** project.

In addition, Dr. Groessl is planning on a grant submission, **HIV/HCV Self Management,** to explore the development of self management interventions for HIV/HCV co-infected drug users. The successful **HITIDES** model was another model for integration in HIV care, focusing on depression managers external to the clinic. We will work with PHSHG to disseminate this model. In the meantime we plan to test a similar idea in HCV clinics in **HepTIDES**.

Objective 2: Medication Management

Our major project in chronic HIV disease management addresses the key issue of HIV medication adherence. Multi-drug HIV regimens are highly efficacious, but must be taken

consistently by patients. **MedCHEC** is a multimodal program to improve adherence support in HIV clinics by using tablet touch-screen computers to *assess* adherence, and behavioral care managers to *support and counsel* patients to improve adherence, when needed. **MedCHEC** is now beginning a multi-site trial to assess effectiveness. If successful, we will plan a subsequent project to roll it out to more sites. Dr. Susan Zickmund is conducting qaulitative data analyses within the **PATHS** project to study barreirs to initiating antiviral therapy in those with HCV. The recently completed SDP-funded **HITIDES** project for integrating depression care with HIV treatment has shown that this integrated care modality has decreased major depression symptoms and increased depression-free days over the 12-month follow-up of HIV patients. Since depression is of equal or even greater concern in HCV, our QUERI has now obtained SDP funding to start a successor **HepTIDES** project, which proposes the implementation of TIDES depression care management within subspecialty HCV treatment. In addition, this QUERI is lending support to Dr. Megan Orser's CDA application, in which she proposes to investigate barriers to patient engagement in HCV treatment Findings may provide novel and important information for identifying where patients are likely to disengage from the referral chain and process of HCV care. These data can be used to develop behavioral interventions and practice guidelines addressing specific needs of HCV infected Veterans to increase treatment rates, enhance adherence, and improve HCV outcomes. Findings from this research may also have VA health policy implications for HCV patients for whom the medical treatments/procedures may be difficult, thereby affecting compliance.

Objective 3: Evaluation of Cost-Quality Trade-offs

Improving antiviral treatment in HCV is challenging because treatment alternatives evolve rapidly. Thus, some major HCV disease management projects are at earlier QUERI stages, identifying and explaining quality gaps by examining determinants of treatment offer and aherence with quantitative (**HCV Care Quality**) and qualitative **(Completing HCV Treatment**) methods. Given the new medications that are becoming available, we have one current project and two that have been approved for funding that will begin to examine cost-related issues. **Hep C Cost**, which is estimating VA costs for caring for Veterans with HCV and partitioning those costs according to HCV and comorbidity treatments. Dr. Amresh Hanchate will analyze the cost of health care utilization in HCV patients within the VA. Dr. Kee Chan will model the VA costs as a function of the use of new medication for HCV patients. Taken together, this projects will allow QUERI to make recommendations to PHSHG and others about cost quality tradeoffs as the new HCV drugs come into play.

We also plan to develop a project to evaluate the comparative effectiveness of new anti-viral treatments for HCV **(HCV Comparative Effectiveness).** This work will be informed by the findings from the aforementioned projects led by Drs. Amresh Hanchate and Kee Chan and will benefit from collaboration with the Center for Quality Management , led by Larry Mole, Pharm D within PHSHG, using data from the Hepatitis C case registry. In addition, we envision that this project will evaluate the appropriateness or overuse of antiviral therapy for HCV.

Goal 3: Improve Access and Equity

Table 4 summarizes the ongoing and planned projects that address Goal 3.

Table 4. Current and Planned Projects for Goal 3

Project Label (Project ID)	Title/Description	Status			
		Planned	Submission Timeline	Ongoing	Project Timeline
Goal 3: Improve Access and Equity					
Objective 1: Identify and understand determinants of disparities					
PATHS-2/HCV Equity (IAA 06-213)	Understanding Racial Disparity in Treatment for Hepatitis C			X	5/10-4/13
HCV Care Quality (IIR 07-112-2)	Quality of Care Among Patients with Chronic Hepatitis C Virus Infection			X	4/08-3/11
HCV Treatment Experience (IIR 08-298)	Patients' Experiences of Antiviral Treatment for Hepatitis C in the VHA			X	5/09-4/12
Multi-VISN QI (SDP 08-002)	Multi-VISN Implementation of a Program to Improve HIV Screening and Testing			X	10/08-9/11
HCV Treatment Experience (IIR 08-298)	Modeling the VA Cost Impacts of New Medications for Hepatitis C (HCV)	X	Resubmitted 9/10-under review		
Objective 2: Reducing disparities through intervention and outreach					
Telemedicine SF	Video Telemedicine to Improve Access to Hepatology Care for Heard to Reach Veterans with Chronic HCV			X	3/10-9/11
Information Needs of HIV+ Veterans (CDA 09-016)	Understanding Health Information & Informatics Needs of Veterans			X	2/10-1/15
IHRISS (RRP 09-192)	Intervention to Provide Veterans with Health-Related Internet Skills			X	
Veterans Rural Health Resource Center	Virtual Team Based Care for Rural Veterans with HIV: A Model for the Generalist-Specialist Interface in the Rural Patient Centered Medical Home			X	10/10-9/11
HIV PACT Evaluation	Patient Aligned Care Team Formative Evaluation			X	6/10-5/11
HIV PACT	Patient Aligned Care Team	X	SDP planned		
Linkage to Re-entry Care*	Linkage to Re-entry Care for HCV and HIV Infected Veterans	X	Submitted 09/10		

Objective 1: Identify and Understand Determinants of Disparities

Current projects identifying disparities include **PATHS-2/HCV Equity, HCV Care Quality**, and **HCV Treatment Experience**. Each of these studies, in part, focused on identifying

patient-level predictors of quality (e.g., homelessness, race/ethnicity) that have been associated with disparities in other studies. Findings from these projects will be added to findings from previous studies to render a more comprehensive narrative of variables that are associated with disparities.

A number of projects have enhanced our understanding of the sources of health disparities. In addition to actually running an HIV testing program, he **Homeless Outreach** project conducted key informant interviews that identified factors that impeded access to services. These results will inform the design of the **Homeless Outreach Bedford** project. Initial findings from the **Veterans Rural Health Resource Center**, showed that HIV drug introduction lagged in rural areas.

Although not specifically designed to examine disparities, a number of studies have contributed in identifying determinants of interventional effects of race/ethnicity. We anticipate that results from **Multi-VISN QI** will provide insights into the differential effects of HIV testing. The **HITIDES** study showed equal effects by most categories of vulnerability, and we plan to conduct similar sub- analyses for **HepTIDES**.

For HCV care, analyses examining the uptake and costs of new drugs will also generate new information about the effect of new treatment on minority patients. Current research has reported poorer HCV-related health outcomes in African Americans, compared to those of their white counterparts. Researchers have attributed these findings to the higher likelihood of African Americans to have (1) lower adherence to medications in African Americans; (2) delay in starting treatment; and (3) genetic predisposition, as they tend to be worse off even when adherence and treatment start are controlled. As triple therapy has demonstrated equal effectiveness across radical/ethnic groups, the new innovation in HCV treatment may potentially narrow the gap in health outcomes across the same groups. Race/ethnicity will be a variable of interest and entered into the analytic model in studies involving new HCV medications.

Objective 2: Reducing Disparities Through Intervention and Outreach

As many of our projects over the past three years have focused on identifying predictors of disparities, this QUERI will apply the wealth of information generated to date to expand the efforts of objective 2 in the next three years to develop and assess interventions to reduce disparities among patients already identified with HIV and HCV. These efforts will emphasize improving access for such patients and better engaging them in care.

Access, particularly for rural Veterans, is a major factor contributing to disparities in obtaining services and treatment. This QUERI Center has a number of projects that address this issue by adopting and implementing tools and programs to ameliorate access problems. Video telemedicine is particularly useful. The **Telemedicine SF,** led by Dr. Catherine Rongey with core funding from PHSHG has targeted HCV patients in rural areas and urban specialist shortage areas for better disease management. QUERI has boosted the evaluation component of that project with participation of our qualitative core and coordinator team. For HIV patients, our major efforts in this arena will be lead by Dr. Michael Ohl. We are supporting his CDA and plan to apply for funding to extend the development of virtual HIV care teams for rural Veterans (**Veterans Rural Health**). Follow-on projects are being considered.

Another route to improve access is to use electronic media to directly activate and inform HIV and HCV patients. The **Information Needs of HIV+ Veterans** (PIs: McInnes and Justice)**,** assesses the informatics needs of Veterans, and the **IHRISS** project (PI: McInnes) is increasing access to health information by teaching HIV and HCV positive Veterans health-related internet skills. While generally useful, this mode of outreach is particularly significant in providing HIV and HCV care to rural populations.

Many of our Goal 1 activities described above will also serve this outreach objective of Goal 2 during the planning period. The **RT in SUD Implementation** study has worked to introduce nurse-initiated HIV rapid testing to two VHA SUD clinics, an effort that has increased HIV identification among a disadvantaged high risk patient populations. Dissemination and sustainability activities will form the preponderance of work for SUD clinics during the planning period, but the lessons learned will help the planned extension to the equally vulnerable inpatient mental health population (**MH RT**). Similarly, **RT in Primary Care** project will investigate how best to spread the successful rapid testing model developed by our previous nurse based rapid testing project in the primary care and urgent care settings. The lessons here will inform outreach efforts to rural and other hard to reach Veterans in small CBOCs without laboratory testing facilities in the planned RRP, **RT in CBOCs**. To improve HCV care, the **HCV Care Model** and **HepTIDES** assists patients with vulnerable mental health and substance use problems obtain treatment. Moreover, we will develop new research streams to add to our existing equity focused portfolio that provide a more comprehensive approach to coordinate care, which benefits particularly those who are disadvantaged, with projects such as **HIV PACT** and **Linkage to Re-entry Care**. For each of these projects, analyses of differential effects on

the most vulnerable are underway or planned, and we will support roll-out of the most successful with our 13B partners.

Our efforts to promote equity oriented research will continue to go beyond our QUERI. The **I-QEW** project identified a conceptual framework for advancing health disparities research, which we then used to establish a basis for future disparities related research and activities. Future IQEW efforts include the development of QUERI specific recommendations for future health disparities research (see cross QUERI contributions below)

7.2. Anticipated Key Impacts

We are proud of the impact that our projects for Goal 1 have already had and we are optimistic that they will continue in the future. VISN 22 had the highest rate of HIV testing in the VA according to an PHSHG survey. We expect a similar effect in VISN 3, 16 and possibly VISN 1 as our projects mature. Other anticipated key impacts include a handoff of the routine testing program to PHSHG. The handoff packages and disseminates HIV rapid testing protocols for high risk clinical settings and homeless shelters. It also develops a periodic HIV testing protocol, and provides a dissemination of linkage programs for incarcerated Veterans.

This QUERI has made significant progress in Goal 2 in co-morbidity and medication management. Based on previous findings we anticipate that improvement in intermediate health and quality of life outcomes will be observed in a number of projects. In particular, the **HepTIDES** project, which incorporates lessons learned from the successful **HITDIES**, will establish a case management structure for depression collaborative care to improve co-morbidity. We expect to see similar improvement in intermediate health outcomes related to depression in HCV patients also observed in HIV patients. The HIV PACT model, once developed and tested, could have significant effects on the way HIV care is organized.

Leveraging the IT advances within the VA, the HIV/Hepatitis QUERI is using various IT tools to facilitate medication adherence. Studying the use of these tools allows us to identify the most effective means to manage medications and identify lessons associated with implementation to ensure the best strategies are deployed in enhancing utilization of these tools.

It is clear that the new medication will revolutionalize HCV care, where the triple therapy is likely to improve cure rate from 30% to 70%. However, the cost burden level caused by the new therapy has yet to be determined. The cost and utilization projects that are underway will

provide insights into the cost effectiveness of the new HCV medications and generate information for the VA to make decisions that will balance fiscal and patient responsibilities.

Based on previous findings, we anticipate that our disparities reduction efforts for Goal 3 will lead to improvement in access, health care utilization, and outcomes among the most vulnerable patient groups infected with HIV or HCV. We plan to disseminate the most successful outreach efforts to rural, homeless and incarcerated Veterans.

7.3. Primary Partners

At the core of the HIV/Hepatitis QUERI is a partnership with the PHSHG to improve care for Veterans with HIV and HCV. This productive relationship permeates our activities. We are also fortunate to have developed important partnerships with VA research centers (Figure 3).

7.3.1. Partnerships with VA Stakeholders

The Public Health Strategic Healthcare Group (PHSHG). PHSHG is our major partner and has a role in all our QUERI activities. This QUERI has a longstanding partnership with the PHSHG that continues to be productive, particularly in the expansion of care for HCV. This relationship has flourished under a number of leadership configurations and we have no doubt that it will continue to do so even with the pending VA reorganization. Key responsibilities for HIV and HCV management will continue to reside in PHSHG.

Our partnership with PHSHG is particularly important in achieving Goals 1 and 3, disease identification and disparities reduction. We plan to continue our excellent working relationship in aiding in the national rollout of routine HIV testing policies under the leadership of David Ross and Maggie Czarnogorski. Rapid testing projects have demonstrated that this is a particularly good strategy with special populations who may not be frequent or regular users of VA services. Currently, the **Nurse-Initiated RT** is being conducted in partnership with the PHSHG, which encourages stronger roles for nurses and other non-physician personnel in testing. In addition, PHSHG has taken the lead in initiating and funding a major VISN1-wide Primary Care HIV testing initiative that is employing **Multi-VISN QI** methods and is engaging all primary care practices throughout VA New England. In addition, our efforts to develop linkage with My HealtheVet for the purpose of improving HIV testing rates are also conducted in partnership with PHSHG.

To facilitate communication between PHSHG and this QUERI, we hold monthly teleconference calls with PHSHG leadership, in addition to in-person meetings occurring throughout the year. PHSHG's former Deputy Chief Consultant, Jane Burgess, RN, has joined the HIV/Hepatitis QUERI and currently oversees all operational and administrative matters within our QUERI. Ms Burgess remains 50% funded from PHSHG and is an integral part of the PHSHG senior staff and participates in their weekly calls. Ms. Burgess has also been involved in ongoing HCV /HIV initiatives of PHSHG, including the brief alcohol intervention and the psycho-social liver transplant workshop, the cross agency HCV workgroup. She is actively involved in HIV activities and is a part of the newly formed HIV and smoking workgroup. Ms. Burgess continues to serve as liaison to PHSHG.

Our interactions with other VACO offices (e.g., the Office of Quality and Performance Patient Care Services, the Office of Information and Technology) have been facilitated by our partnership with PHSHG. We provide highlights of these relationships below:

Program Evaluation and Resources Center (PERC): Given the QUERI-HIV/Hepatitis emphasis on access and equity in vulnerable populations, we have collaborated with the PERC Center of the VA Office of Mental Health Services (OMHS) to target substance-using Veterans. This QUERI has provided and will continue to provide expertise in program assessment for HIV and HCV testing in the substance abuse care setting.

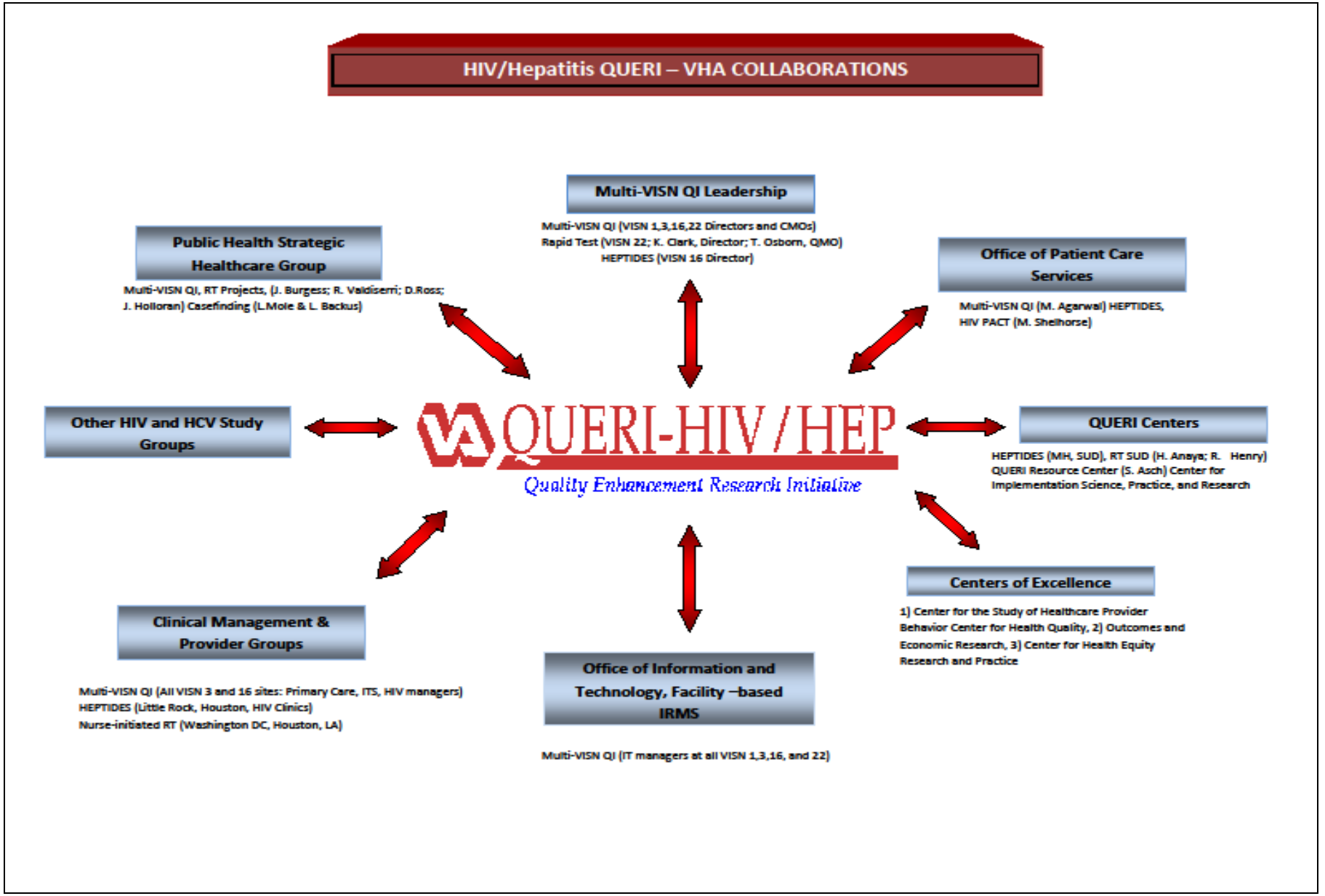
Patient Care Services (PCS): This QUERI has worked closely with the mental health branch of PCS. We plan to strengthen our partnership with PCS and the PACT office and help inform the clinical preventive services aspects of medical home development.

VA Clinician and Facility Partners: This QUERI partners with key clinicians and providers at the regional and facility levels, including lead clinicians at Bedford, Boston, Atlanta, Greater Los Angeles, Houston, Little Rock, St. Louis, Palo Alto, Washington, DC, and San Diego VAs. These sites contribute data and in-kind support to various HIV/Hepatitis QUERI projects, especially **HepTIDES**, **Nurse-Initiated RT**, and **HCV Care Model**. The HIV/Hepatitis QUERI also plans to continue the joint efforts with facility and clinic managers in support of the **MultiVISN QI** project at a dozen facilities in VISN 3 and 16 and in-kind support for our homeless and incarcerated Veteran outreach projects.

VA Veterans Integrated Service Networks (VISNs): Led by PHSHG and the VISN 1 of New England Primary Care Service line, a demonstration is in place that has implemented a number of QUERI-developed QI methods and will extend HIV testing to rural Veterans outside

of traditional HIV epicenters. Our partnership with VISN 1 allows us to use to data related to quality and access to HIV testing. We will continue to work with VISN 22, and to a lesser extent, VISN 16 and 3 leadership in Goal 1 activities. With the current reorganization placing more emphasis on VISN quality management, we plan to increase our VISN level partnerships to support of all three goals.

Figure 3. Partnership



7.3.2. Partnerships with Other VA Research Centers

The HIV/Hepatitis QUERI works with a number of HSR&D Centers of Excellence and REAP to share expertise in quality measurement and implementation science. The Center for the Study of Healthcare Provider Behavior (CSHPB) provides the main physical home for QUERI core staff. We rely on CSHPB expertise for many of our projects and Steven Asch serves on the CSHPB's executive committee and will continue to be our main liaison. Dr. Lisa Rubenstein has been a key contributor to the overall planning of this QUERI's implementation research agenda, particularly on the Goal 2 TIDES-related projects (e.g., **HITIDES, HepTIDES**). Dr. Elizabeth Yano has given this QUERI access to her Clinical Practice Organizations Survey data and is consulted regularly for her expertise in implementation science and health organizations in advising QUERI projects. Furthermore, as PACT is adopted as a VA-wide effort and is particularly relevant to all three of the QUERI's overarching goals, the CSHPB will also provide guidance in our effort to apply PACT to HIV care as CSHPB is one of the demonstration sites for the Patient Centered Medical Home initiative from the Office of PCS. The Center for Implementation Science, Practice, and Research (CIPRS), which is also partnered with CSHPB, will lend its expertise in implementation to assist with a range of QUERI projects. CIPRS is led by Dr. Brian Mittman.

This QUERI has benefited and will continue to do so, from the assistance provided by the Center for Health Quality Outcomes and Economics Research (CHQOER), in qualitative evaluations and economic analyses. We collaborate with a number of investigators at CHQOER and hold weekly project meetings via the telephone. Allen Gifford, the HIV/Hepatitis QUERI's Co-Research Coordinator, serves as the Center's Associate Director, and leads implementation research activities. Dr. Gifford will continue to be the liaison between this QUERI and CHQOER. Our collaborators at CHQOER include Dr. Jack Clark, who leads the **Completing HCV Treatment** project; Dr. Amresh Hanchate, who leads the **Hep C Cost** project; and Dr. Keith McInnes, who leads the **IHRISS** project. Two other CHQOER investigators have leadership roles: Dr. Barbara Bokhour continues to lead the qualitative core; and Dr. Kee Chan serves on the economics core and provides consultation on topics related to cost effectiveness.

Third, Center for Health Equity, Research and Practice (CHERP) has been contributing to the achievement of Goal 3 activities. Dr. Susan Zickmund serves as a member on our Executive Committee and Dr. Keri Rodriquez is a co-investigator on the **I-QEW** project.

Finally, the West Haven VA REAP-affiliated Veterans Aging Cohort Study (VACS) is conducting landmark investigations to understand the overall impact of HIV and comorbid conditions on survival and health-care utilization on Veterans. Dr. Amy Justice, the principal investigator of VACS, serves on our Executive Committee, and VACS has supported the HIV/Hepatitis QUERI leadership and particularly CDA applications from investigators affiliated with this QUERI. A current CDA award recipient, Dr. Keith McInnes, is using VACS data to assess internet utilization among HIV-infected patients and the utility of My HealtheVet in self-management of chronic health conditions. VACS, along with this QUERI, will support Dr. Michael Ohl's CDA application, in which he proposes to assess the quality of care for rural Veterans with HIV.

7.4. Implementation Science

As Figure 4 demonstrates, the portfolio of projects covers the spectrum of the diffusion process that corresponds to the HSR&D Implementation Research Pipeline. Please consult Section 7.1.2. for the analytic framework that guides our work. Please see the annual report for a comprehensive list of projects, as this table is meant to illustrate that our QUERI has projects at all stages rather than represent a list of all QUERI projects.

Figure 4. Implementation Pipeline

Ground Work	***Pre-implementation***	***Implementation Planning***	***Implementation Trial with Evaluation***	***Free-Standing Implementation Evaluations***
Knowledge	Persuasion/ Adoption	Implementation/Maintenance		
• Information Needs of HIV+ Veterans • Provider Prioritization	• Homeless Outreach Bedford • Completing HCV Treatment	• MH RT • HCV Treatment Barriers • HIV PACT Evaluation • Linkage to Re-entry Care • Process evaluations associate RT implementation trials	• Multi-VISN QI • Multi-VISN QI Extension • HIV PACT • MedCHEC • HepTIDES • HCV Care Model • HIV/HCV Self-Management • IHRISS • Nurse-initiated RT	• Hep C Cost • New HCV Drug Costs • Telemedicine SF

The HIV/Hepatitis QUERI has a diverse set of projects that address different stages of the implementation process, informed by the PARIHS framework.[149,151] Several ongoing

projects have the purpose of data collection to synthesize information and add to the *groundwork* of the current knowledge base. This in turn may inform the development of future interventions. For example, recognizing the increased reliance on the use of information and health IT, the **Information Needs of HIV+ Veterans** project explores and assesses the availability and utility of these tools. As gaps in HIV and HCV care have been observed in racial/ethnic minority and other vulnerable populations and that there are variations in care provision, a number *of pre-implementation* projects are designed to identify factors that contribute to these gaps and help QUERI investigators to develop measures and approaches to ameliorate the disparities. For example, the **Completing HCV Treatment** project investigates patient perspective of HCV treatment in terms of completion and withdrawal. These ongoing and planned projects help generate information in the pre-implementation phase to facilitate adoption of programs and practices to minimize these variations in care. They contribute to the PARIHS framework in that they emphasize the element of "evidence" in the framework, incorporating different sources of information, taking into account patient experiences and local context in the design of potential interventions.

Describing the sequence of projects in rapid testing is perhaps the best illustration of how our QUERI contributes to *implementation planning*. During the last planning period we conducted qualitative formative evaluations that informed a design of a now completed successful effectiveness trial **Rapid Test.** This showed that a combination of rapid testing and nurse initiation increased receipt of testing results. The implementation of this new innovation sets up an excellent opportunity for the HIV/Hepatitis QUERI to examine the context and evidence from the PARIHS framework in the evaluation of the adoption, implementation, and maintenance processes in the Diffusion model.[149,151,153,166] This led to the current implementation trial, **Nurse Initiated RT,** that tests leadership influences discussed below. We now have a suite of projects surrounding the use of rapid testing, which will allow HIV/Hepatitis QUERI to understand the uptake of an intervention and at the same time, make contribution to improve conceptual clarity of the implementation framework (**MH RT**, **RT in COBCs**).[149,151] In each of these project, we have explore factors related to resources, workforce, and organizational structure in facilitating HIV rapid testing using process evaluation, contributing to the design of subsequent projects in this research stream. The capacity in which this QUERI is able to test an intervention at different settings lends rigor to the examination of the dynamics among elements (i.e., evidence, context, facilitation) and sub-elements (e.g., leadership, culture, structure, role, etc.) of the PARIHS model.[149,153,167] We expect that implementation of the intervention in different settings will have yield variations in effect. These findings will likely demonstrate how

these sub-elements interact or act as modifier, confounders, or contingencies, and their subsequent effect on the implementation or change process itself.[149,151] These findings have practical applications in that they can be translated into recommendations for enhanced organizational strategies. These include staff training and certification in HIV rapid testing, structural modifications, and resource allocation in different clinical settings. These findings will be confirmed in a number of planned projects, such as **MH RT, RT in CBOCs,** and **HIV PACT Evaluation**.

Many of our QUERI projects fall within the *implementation trial evaluation* categories. For example, the planned **HIV/HCV Self-Management** will follow its predecessor projects and will assess context and facilitation characteristics to get evidence into practice. The current **IHRISS** project represents a novel outreach strategy, where an intervention has been designed and implemented to provide Veterans with health-related internet skills. Ongoing evaluation of this process will generate evidence on facilitators for individual user adoption as well as structural and system requirements that facilitate readiness for change. Other PARIHS model contextual factors (e.g., structural elements and culture) are examined in **MedCHEC, HepTIDES, HCV Care Model,** and other projects' qualitative process evaluations.

This QUERI most directly contributes to implementation science through *implementation trial evaluations* that specifically manipulate implementation and spread processes. The **MultiVISN QI** project has two different elements of structure embedded in the spread model – local and national support – and to date, we have found the national support model more effective. We will work to generalize this finding in other QUERI projects (e.g. rapid testing). Moreover, preliminary findings identifying site- and region-specific factors associated with successful implementation of quality improvement (QI) interventions in the **Multi-VISN QI** project provide significant insights into the differences in contextual variables and facilitation mechanisms that can be applied in the implementation process. The **Nurse Initiated RT** project tests the extent to which local opinion leaders are needed. Such leadership factors may make critical differences in implementation.[149,151,152].

Our QUERI has a number of *free-standing implementation evaluation* projects that examine costs associated with program implementation and adoption of innovations, particularly in the area of HCV care. The **Telemedicine** project evaluates an existing technology and its application for hard-to-reach Veteran population. These projects again generate information, describing factors that are often external and out of control of the implementing organization.

They provide lessons on the interactions and possible frictions between organizations and their environment, which may impact and shape organizational readiness for change.

Together, these projects that cover the implementation research pipeline address key questions that explain the implementation process and advance the field of implementation science. More importantly, these lessons are translated and applied to promote the efficiency of intervention design and the uptake and spread processes in caring for our HIV/HCV infected Veterans.

7.5. Cross-QUERI Contribution

The three goals of the HIV/Hepatitis QUERI provide tremendous opportunities for this QUERI to make cross-QUERI contributions. This QUERI plans to continue our work in disease identification (Goal 1) in collaboration with other QUERIs, MH and SUD, that addresses conditions presented as risk factors for HIV or HCV. As the first objective of Goal 2 focuses on co-morbidity management, cross-QUERI collaborations with MH and SUD are also crucial here. As a consequence, HIV/Hepatitis QUERI investigators have proactively approached MH and SUD QUERI to explore additional opportunities for collaboration. Specific projects already on the drawing board include a mental health inpatient disease identification project, and an evaluation of the sustainability of the SUD clinic testing project. These discussions are ongoing.

With increased effort in using health IT tools to achieve medication adherence (Objective 2 of Goal 2), this QUERI has formed a partnership with the recently funded eHealth QUERI. As eHealth QUERI resides at Bedford, one of our primary partners, we have begun and anticipate a very productive relationship with investigators from the eHealth QUERI. An ongoing project with eHealth QUERI is the patient portal outreach efforts led by Dr. Keith McInnes, who is a principal of the new eHealth QUERI. These efforts represent a cross QUERI collaboration in support of Goal 1. The HIV **MedCHEC** project exemplifies another cross-QUERI collaboration with eHealth QUERI, and has implemented tablet touch-screen PC assessment of HIV medication knowledge, adherence, barriers, and adherence-related behaviors in Veterans receiving HIV care at urban VA epicenters of the epidemic (Boston and LA).

This QUERI also plans to make cross-QUERI contributions in service of Goal 3 disparity reduction, most concretely through the **I-QEW** project led by Co-Implementation Research Coordinator, Randal Henry, which surveys and identify gaps in current QUERI disparities

reserach. In additions, Dr. Keith McInnes is a member of the My HealtheVet cross-QUERI workgroup, which will work to improve electronic access to health information and care.

Our newly recruited Co-Implementation Research Coordinator, Ann Chou, also serves as an investigator for the CIPRS QUERI resource center and will be developing projects with other CIPRS investigators to assess this process of uptake to spread.

7.6. Data Development, Implementation, Evaluation

This QUERI is fortunate that many data needs are met by existing VA data resources, especially those maintained by the PHSHG. We have also extracted data from data warehouses from facilities and VISNs with which we collaborate and the Austin data resources. This makes our need to develop data resources less pressing and we will continue to rely upon these data extracts to meet most of our data analyses and research objectives. However, we plan to investigate The VA Informatics and Computing Infrastructure (VINCI) as possible data sources in support of future analyses as the data extraction from VINCI may be simpler compared to the other sources.

7.7. Health Information Technology (HIT) Development, Implementation, Evaluation

With our PHSHG partners, we have developed several electronic clinical reminders for HIV testing. We plan to help deploy them as part of the **MultiVISN QI**, SUD, CBOC rapid test and other projects. We also will develop a periodic testing reminder for those at continuing risk to be deployed and tested in the second half of the strategic planning period. Patient portal outreach software activating patients to advocate for HIV and HCV testing if they are at risk will also be a target for development and testing during the planning period.

The use of health IT has been a major part of the QI strategies which we have developed and tested. The **MedCHEC** project developed the Tablet PC technology and the use of clinical reminders mentioned above. The **HepTIDES** will apply a sophisticated web-based decision support system, which was developed with our MH QUERI collaborators. The system includes a pre-written care management scripts, standardized instruments, and protocols, to guide depression care using the telephone. We will also explore the full utility and potential of health IT applications in ameliorating disparities in access and disease management, which specifically address Goal 3.

8. METRICS

We have developed a more extensive set of quality metrics and matched them to our short and long term goals and objectives as depicted in Table 5. These metrics span the spectrum of project, process, and clinical outcomes. We believe that we will have substantial influence on all of them, though some will be more partnership metrics. For example, the first metric under Goal 1 will be greatly influenced by QUERI activities in support of **MultiVISN QI**, while the second metric will assess longer term effects requiring more general input from VISNs 3,16, and PHSHG.

We have composed each metric using the SMART (Specific, Measurable, Achievable, Relevant and Timely) principles. Using the same example of the first metric, the proportion of Veterans at risk who have been screened is quite specific to the intervention, and measurable using VA administrative data. We believe based on pilot data that it is achievable, and it is quite relevant to PHSHG objectives as described above in Section 7. The timeframe for measuring the metric is next fiscal year, when we hope it will not only guide our future follow-on activities but dissemination by partner stakeholders as well. We plan to reevaluate our metrics at our executive committee meetings annually, as well as revise or construct new measures as new goals, objectives and projects are developed.

Table 5. Performance Metrics

Performance Metric (Type)				Timeline
Goal 1: Better Disease Identification				FY2011-2016
Objectives	**Scope**	**Project**	**Metric Data Source**	
(1) Increase capacity for HIV testing				
HIV testing rates among those with identifiable risk in intervention sites baseline=4.5% (Clinical Process)	VISN 3, 16	MultiVISN QI	VA Administrative	FY 2011
HIV testing rates among all patients regardless of risk in intervention sites and sustained in all sites (Clinical Process)	VISN 1,3,16	MultiVISN QI	VA Administrative	FY 2012-16
Repeated HIV testing rates among those at continued risk (Clinical Process)		Planned submission	VA Administrative	FY 2013-14
(2) Outreach to high risk population and linkage to care				
Number of SUD clinic using HIV rapid testing one year after intervention is complete (Project Outcomes)	Pittsburgh, GLAHS	Rapid test SUD	Rapid test SUD	FY 2012
Number of HIV/HCV patients screened in jail/ linked to VA (Process Outcome)	GLAHS	Linkage to Re-entry Care	Linkage to Re-entry Care	FY 2012
Number of homeless shelter residents tested for HIV/HCV (Project Outcomes	GLAHS	Homeless outreach, Planned HCV project		Fy 2011-16
Goal 2: Chronic Disease Management				FY2011-2016
All objectives				
Development and evaluation of HIV PACT demonstration package (Project Outcome)	GLAHS	Proposed SDP	Proposed SDP	FY2011-15
(1) Comorbidity management				
Depression treatment rates in HIV clinics participating in intervention (Process Outcome)	Little Rock, Atlanta, Houston	HITIDES	HITIDES	FY2011
Depression and substance abuse treatment rates in HCV intervention sites (Process Outcome)	Bronx, Palo Alto, St. Louis, Little Rock, GLAHS	HepTIDES, HCV Care Model	HepTIDES, HCV Care Model	FY2011-13

2) Medication management				
Evaluation of tablet based adherence guide (Project outcome)	Boston, GLAHS	Medchec	Medchec	FY 2011
Medication adherence in tablet interventional cohort compared to (Process Outcome)	Boston, GLAHS	Medchec	Medchec	Fy 2012
(3) Cost / quality tradeoffs				
Estimates of HCV costs (Project Outcome)	National	HCV Cost	CCR	FY 2011
Compare cost and effectiveness of HCV treatment regimens	National	Planned IIR	CCR	FY 2014
Goal 3: Improve Access and Equity				FY2011-2016
Objectives	**Scope**	**Project**	**Metric Data Source†**	
(1) Identifying and understanding underlying sources contributing to disparities				
HIV testing rates among vulnerable populations (African American, homeless, rural) compared to others	VISN 3.16	MultiVISN QI	VA Administrative data	FY 2011-12
(2) Reducing disparities through interventions and outreach				
Satisfaction with access in HCV/HIV telemedicine sites (Clinical Outcome)	VISN 21,22	Telemedicine	Telemedicine	FY2011-13
Development of virtual HIV care teams (Project Outcome)	VISN 23, GLAHCS	VRHRC	Telemedicine	FY 2012-14

9. MANAGEMENT PLAN

The basic management plan for coordinating QUERI-HIV/Hepatitis activities will continue largely as has been done in the past. Drs. Asch and Gifford continue as co-Directors and Research Coordinators, with Dr. Asch leading the Administrative and Analytic Core at VA GLA, and Dr. Gifford leading the Qualitative Methods and Economics Core at VA Bedford. Dr. Goetz (Clinical Coordinator), and Dr. Randal Henry (co-Implementation Research Coordinator) are also GLA-based as will be Dr. Ann Chou, new QUERI-HIV/Hepatitis co- Implementation Research Coordinator and Organizational scientist. Both Dr. Chou and Dr. Henry will contribute to the role of implementation research coordinator with their respective expertise. Dr. Chou's work involves organizational theory and implementation science in addition to managing day-to-day QUERI activities. Dr. Henry's area of focus is in studying topics related to equity and disparities.

Core staff will be based at both GLA (Jessica Beroes, Administrative Coordinator) and VA Bedford (Joanne Dussault) and will be responsible for managing scheduling, assisting with reporting requirements, grant preparation, and budget management. QUERI project staff are hired and maintained at project field sites, including projects based at the core GLA and New England sites, as needed for project requirements. As in the past, we continue the general policy of maintaining a largely provider-behavior focus at GLA, and a patient-behavior focus at VA Bedford. As QUERI HIV/Hepatitis has grown, these role divisions and communication structures have allowed the growing numbers of projects to be efficiently tracked and kept on task, and have allowed the QUERI coordinators to avoid unnecessary overlap so as to work at maximal efficiency on program development.

The core QUERI coordinator group (Asch, Gifford, Goetz, Henry, Chou, and Burgess) has a regularly scheduled hour of telephone meeting time per week to discuss program development and management issues. In addition, Drs. Gifford and Asch each have site visits to Los Angeles and Boston approximately twice annually to meet with investigators and staff. These activities help maintain a shared focus despite the bi-coastal locations of our core sites. In addition, Dr. Goetz will continue to represent the QUERI on the HIV treatment advisory groups and will begin service on the HCV treatment advisory group next year.

Jane Burgess fulfills a unique and critical role within the organization of QUERI-HIV/Hepatitis and the PHSHG. As former Deputy Chief Consultant, Acting Chief Consultant. Acting Director of the National HIV and HCV Program Office and National Clinical Coordinator in Washington, and now based in Los Angeles, she is jointly hired by our QUERI and by VACO

explicitly to act as a communications liaison and to coordinate joint projects. Having a high-level professional dedicated to this important liaison role assures good communication and joint investment of the two offices in shared activities.

As the VA-wide reorganization is implemented in the next couple of years, our QUERI has a solid history of collaboration and the flexibility to adapt to changing environmental and programmatic strategic shifts, as demonstrated by the shift from risk based to routine HIV testing. QUERI was quick to adapt to this new directive and philosophy because of the open and frequent communication with our partners in PHSHG.

As the reorganization takes effect and as PHSHG rolls out its new population health initiative, QUERI will be an active partner. We have monthly conference calls with leadership of PHSHG so that all of our projects remain relevant as environmental, organizational, and funding sources influence the program.

Projects are led by investigators based at a range of VA field sites including VA GLA and Bedford, as well as Houston, St Louis, Boston, San Diego, San Francisco, Iowa City, and others. Although each project is managed individually, all are included as part of the weekly QUERI management calls on which all PIs participate, alternating weekly between HIV and HCV project agendas. In this way, the full community of QUERI investigators is able to remain up to date on activities across projects, and exchange feedback and ideas about them. Both core-funded and independent (IIR-, RRP, SDP- and SDR-funded) projects are included. The coordinators regularly attend more than ten weekly or biweekly project conference calls during which decisions for the management of individual component projects are made.

The QUERI HIV/Hepatitis Executive Committee is comprised of clinical and policy leaders in both HIV and HCV, and includes VA physicians, nurses, and VA operations leadership. With the Center's two disease foci, we find it efficient to have one HIV Executive Committee meeting and one HCV Executive Committee meeting per year, generally appended to major HIV and Liver professional conferences. EC members review and comment on project progress, advise about future trends to anticipate, and help select and prioritize among multiple potential activities to pursue.

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