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An Educational Intervention to Enhance Health Care Providers Knowledge in the Prevention and Identification of Hepatitis C in a Military Setting

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Final Project/Thesis

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An Educational Intervention to Enhance Health Care Providers Knowledge in the Prevention and
Identification of Hepatitis C in a Military Setting

Scott Alexander Rivers

Submitted as Partial Fulfillment for the Doctor of Nursing Practice Degree

Regis University

September 15, 2014

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Executive Summary

Executive Summary: This hepatitis C virus knowledge improvement capstone project is an evidence base practice educational intervention project in a military setting.

Problem

It is estimated that 3.2 to 4.1 million persons are living with chronic hepatitis C and that 4.2 million to 5.1 million people are antibody positive in the United States. Hepatitis C virus accounted for approximately 15,000 infections and 8,000 to 10,000-deaths annually. The Institute of Medicine reports that healthcare providers have a generally poor knowledge of hepatitis C and that a possible solution can be achieved through increased provider understanding of hepatitis C.

Purpose

The purpose of this evidence-based practice project was to improve the knowledge of health care providers in the area of hepatitis C as recommended by the Institute of Medicine.

Goal

The goal was to design and implement a hepatitis C virus educational program to meet the knowledge needs of the health care providers.

Objectives

The objectives for this project included: 1) Complete the Hepatitis C Virus Education Needs Assessment Questionnaire by health care providers at a military treatment facility in Colorado, 2) Design and implement an evidence-based practice educational improvement project for health care providers, 3) Evaluate the effectiveness of an evidence-based practice educational improvement project on provider hepatitis C virus knowledge using the hepatitis C virus pretest-posttest.

Plan

Assess health care providers learning needs by administering a needs assessment questionnaire, developing a teaching plan to focus on the areas of need, and present an educational intervention. The effectiveness of the educational intervention will be measured using a pretest-posttest.

Outcomes and Results

All three project objective were met. Objective one found several areas needing intervention. Objective two developed a comprehensive teaching plan. Objective three found a significant difference in the aggregate scores for pretest ($M=12.9$, $SD=3.50$) and posttest ($M=20.0$, $SD=2.83$) after the educational intervention; $t(29)=8.820$, $p < .001$. These results suggest that the educational intervention improved health care provider's knowledge of hepatitis C.

Keywords: DNP capstone project; hepatitis C educational interventions; hepatitis C teaching plans; hepatitis C teaching best practices.

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Capstone Project

The evidence-based practice educational improvement project to improve health care provider's knowledge of hepatitis C virus was conducted in partial fulfillment of the Regis University, Loretto Heights School of Nursing; Doctor of Nursing Practice (DNP) program. The DNP graduate is focused in the areas of clinical prevention and population health and efforts to improve the overall health status of the people of the United States while continuing to integrate nurses' long-standing emphasis on health promotion and disease prevention (Terry, 2012). The identified practice issue was the need to improve hepatitis C virus knowledge of health care providers as recommended by The Institute of Medicine (2010). This evidence-based practice project was the implementation of a health care provider Hepatitis C Virus Education Needs Assessment Questionnaire (HCV-ENAQ) and Hepatitis C Virus Education Program and Intervention. The project intended to benefit the health care providers (HCP) education needs related to hepatitis C knowledge with the purpose of benefiting the population at risk.

Problem Recognition and Definition

Purpose and Appropriateness for Evidence-Based Practice Project

The purpose of this evidence-based practice project was to improve the knowledge of HCP's in the area of hepatitis C virus (HCV) as recommended by the Institute of Medicine (IOM). The HCP's were asked to complete an HCV-ENAQ to determine learning needs. Questionnaire data was used to develop an HCV Education Program and Intervention.

This project is relevant to the DNP role as specified by the American Association of Colleges of Nursing (AACN), The Essentials of Doctoral Education for Advanced Nursing Practice, which state, "DNP graduates must be proficient in quality improvement strategies and

in creating and sustaining changes at the organizational and policy levels” (American Association of Colleges of Nursing [AACN], 2006, p. 10). This project also was relevant to the DNP role as it focused in areas of clinical prevention and population health (Terry, 2012).

Project Scope, significance, and rationale

Liver cancer is the fastest growing cause of cancer mortality in the world with HCV identified as one of the leading causes. HCV was first identified in 1989 and prior to that time was known as non-A, non-B hepatitis. The hepatitis C virus is a small, enveloped, positive-sense single-stranded RNA virus of the family Flaviviridae. HCV is identified as the most common blood-borne pathogen in humans and the most common cause of liver failure and reason for liver transplantation in the United States (Centers for Disease Control and Prevention [CDC], 2012). It is estimated that 3.2 to 4.1 million persons are living with chronic hepatitis C and that 4.2 million to 5.1 million people are antibody positive in the United States. HCV accounted for approximately 15,000 infections and 8,000 to 10,000-deaths annually. The majority of infections occur among those born during 1945-1965 with an estimated 50 percent unaware of their infection. Most people with HCV are unaware of their infection because a majority of people have nonspecific symptoms such as jaundice, flu-like symptoms, dark urine, nausea and abdominal pain or those infected may have no symptoms. Those at high risk for acquiring HCV, include current or former injection drug users, recipients of clotting factor concentrates made before 1987, recipients of blood transfusions or solid organ transplants before July 1992, chronic hemodialysis patients, persons with HIV infection, children born to HCV-positive mothers, and persons with known exposures to HCV (Centers for Disease Control and Prevention [CDC], 2011). People infected with HCV have a high probability of clearing their disease with modern

treatment (CDC, 2012). This makes identifying HCV-infected persons early on in the disease process essential. Those in the front lines of identifying HCV-infected patients are HCP.

According to the Institute of Medicine (IOM, 2010), “Health care providers are unaware of the high prevalence of HCV infections in some US populations and often fail to identify infected individuals and those at risk for infection so they can be managed appropriately” (p. 79). The report singled out health care providers as having “generally poor” knowledge of chronic hepatitis C (p.80). This is unfortunate because appropriate understanding of HCV by HCP’s is necessary since 80 percent of patients are primarily tested and diagnosed by non-G.I. specialist (Fontana & Kronfol, 2004, p. 904). That fact makes it imperative that HCP’s recognized how to identify patients at risk for HCV infection and institute proper screening, diagnostic testing, and referrals along with knowing how to counsel patients on preventive measures to decrease further transmission.

Problem Statement and PICO

A knowledge gap was identified at a primary care clinic located at a Military Treatment Facility (MTF) in Colorado. This knowledge gap was in the area of clinic health care provider understanding of HCV epidemiology, screening, testing, prevention, and diagnosis of patients at risk for HCV infection. The HCV knowledge gap was concerning since the area served by the clinic is home to over 171,000 military beneficiaries that includes veterans, active duty military, military retirees, and family members. The knowledge gap was also troublesome considering the infection rates among veterans are higher than the general population and are estimated between 5-22% (Dominitz et al., 2005, Sloan, Straits-Troster, Dominitz, & Kivlahan, 2004). Historically, “Veterans of foreign combat appear to be at the highest risk for infectious hepatitis, since all

major engagements over the past 70 years, were associated with higher rates of infectious hepatitis” (Baker, 2008, p. 2). Presently there are no routine screening or testing for HCV at this location. The CDC guidelines recommend risk-based and birth cohort testing for HCV of all individuals with risk factors for infection, regardless of the setting or patient characteristics (Centers for Disease Control and Prevention [CDC], 2012). There are other major organizations that endorse testing such as, The United States Preventive Services Task Force (USPSTF) (2013) which recommends adults at high risk of hepatitis C infection should be screened and tested. Additionally, The American Association for the Study of Liver Disease, The American College of Gastroenterology and The American Academy of Family Physicians also recommend testing at risk populations for HCV (American Academy of Family Physicians, 2004; Dienstag & McHutchinson, 2006; Ghany, Strader, Thomas, & Seeff, 2009).

The increased HCP understanding of HCV epidemiology, screening, testing, prevention, and diagnosis of patients at risk for HCV infection was beneficial in this clinical setting. Health promotion and disease prevention are most effectively dealt with by HCP. The purpose of this project was to increase health care provider aptitude of HCV. The increased aptitude that providers obtained did support to improve not only their understanding of HCV, but potentially will improve screening rates which will increase disease identification, lead to early initiation of treatment, endorse disease prevention, and expand health promotion. The early identification and treatment will also help decrease future cost of health care to the patient and to the public at large (McGarry et al., 2012).

The educational intervention to increase HCP knowledge of HCV was addressed using an evidence-based practice question constructed using the elements of Population, Intervention, Comparison, and Outcome (Houser & Oman, 2011). The PICO (population, intervention,

comparison, and outcome) problem statement that served as the focus of this capstone project is:

(P) Health care providers (Medical Doctors (MD), Doctors of Osteopathic Medicine (DO), Advance Practice Registered Nurses (APRN), Physician Assistants (PA), Registered Nurses (RN), Psychologist (Psy-D), and Pharmacist (Pharm-D) at a primary care clinic (I)

Implementation of health care provider Hepatitis C Virus Education Needs Assessment

Questionnaire and Hepatitis C Virus Education Program and Intervention. (C) No prior

education needs assessment or formal education program. (O) Enhanced health care provider

knowledge about HCV. The PICO in question format is: For health care providers with a lack

of HCV knowledge, will implementing an evidence-based practice-education intervention

improve health care provider knowledge of hepatitis C as measured using a pretest-posttest

questionnaire.

Theoretical Foundation

Scientific research and practice require a framework (Zaccagnini & White, 2011, p. 13). Kurt Lewin's Theory of Planned Change (TPC) provides one of the theoretical frameworks for this project since it focuses on factors that influence people to change. One of Lewin's earliest accomplishments was the development of Force Field Analysis (FFA) which served as a framework for identifying and examining the factors or forces that influence a situation. The FFA specifies forces as either driving or restraining movement toward a goal (Lewin, 1943a). The FFA helps to identify why individuals, groups, and organizations act as they do and what forces need to be diminished or strengthened to bring on change. The FFA framework forms the foundation for Lewin's 3-stage TPC which is phrased as *Unfreeze, Change, and Freeze*.

The *Unfreeze* stage is about getting to the point of understanding that change is necessary. This can be done by weighing the benefits of change versus the consequences of not changing. This change can begin with a nurse leader conducting a gap analysis illustrating discrepancies between the desired and current practice (Shirey, 2013, p. 70). The gaps identified in practice should create a sense of urgency for a desire to change and a willingness to learn new information. This willingness to learn new knowledge leads to the *Change* stage which entails looking at change as a process rather than an event. This stage can be difficult because it involves uncertainty and fear about change (p.70). This fear of change can be mitigated by providing a detailed plan of action and engaging people to try out the proposed change (p.70). Once the proposed change is accepted and becomes the norm then, *Freezing* can happen.

As with any theory there are strengths and limitations involved, and they should be identified to ensure the theory is appropriate for the situation. The strengths of Lewin's TPC as identified by Shirey (2013) are that it's versatile, practical, simple to use, and easy to understand (p.70). The strength of the TPC work to the advantage of the project since it was used in a military environment where a top-down approach is favored. The limitations of the TPC are that it is too simplistic, is quaintly linear, and framed from a static perspective (p.70). Shirley (2013) advises that TPC is best used when change is planned, initiative is a top-down effort, and when there are stability and time to produce change (p.72).

This project is directed toward adult learners and as such requires an adult learning theory. The adult learning theory by Malcolm Knowles (Knowles, 1970) fit well in this project. Malcolm Knowles was an influential figure in the adult education field. He believed that adults learned differently than children and that there should be separate teaching strategies (Knowles,

1970). The adult teaching strategy of Andragogy is based on a humanistic conception of self-directed and autonomous learners and teachers as facilitators of learning. The six-core adult learning principles are: Learner's need to know, self-concept of the learner, prior experience of the learner, readiness to learn, orientation to learning, and motivation to learn. The core concepts along with the relevance to this project are detailed below in table 1.

Table 1 Theoretical Foundation-Malcolm Knowles

<i>Core Concepts</i>	<i>Relevance to this Project</i>
Need to Know	<ul style="list-style-type: none"> • Why: Policy, directed by CDC, Clinical Practice Guidelines. • What: Hepatitis C Educational Needs Assessment Questionnaire form complete.
Core Concept: Self-Concept	<ul style="list-style-type: none"> • Autonomous: Able to decide if the learning will change their practice. • Self-directed: Application to practice.
Core Concept: Prior Experience	<ul style="list-style-type: none"> • Resource: Adult learners are able to gain more in their own field due to prior experience. • Mental models: Situation and individual differences of learning.

Core Concept: Readiness to Learn	<ul style="list-style-type: none">• Life related: Arousal to the subject matter in proper timing makes for a better learning experience.• Developmental task: DNP presents the education intervention.
Core Concept: Orientation to Learn	<ul style="list-style-type: none">• Problem centered: Given the proper education and tools each HCP can learn how to identify and screen for HCV.• Contextual: Education was designed with scenarios to fit primary care setting.
Core Concept: Motivation to Learn	<ul style="list-style-type: none">• Intrinsic value: HCP will determine what personal value the training has for them, information for patients, and time out of the clinic.• Personal payoff: Performing well on the HCV-PPA Posttest.

Review of Evidence

Background of the Problem and Literature Selection

A literature review is conducted to evaluate the existing body of knowledge and to reveal inconsistencies and unanswered questions on the subject (Terry, 2012). The purpose of this literature review was to search for research on HCP learning needs and practice patterns related hepatitis C. The databases searched were PubMed, Cochrane and CINAHL along with databases from the Centers for Disease Control and Prevention (CDC) and the United States Preventive Services Task Force (USPSTF). Searches were completed using the keyword “hepatitis C” in combination with the following words, “primary care provider knowledge and hepatitis C”, “practice patterns of primary care providers and hepatitis C patients”, “hepatitis C identification”, “hepatitis C management”, and “military veterans and hepatitis C”. Inclusion criteria included primary source reports from original research that were published in peer-reviewed journals and articles published by appropriate national and international professional and government organizations that included the Centers for Disease Control and Prevention and the World Health Organization. Ideally no article older than 10 years were accepted, but there were five articles outside of the criteria that were deemed good quality and relevant for their findings in HCP’s knowledge and practice patterns. Exclusion criteria included duplicate articles across databases and articles with a focus on antiviral or experimental treatments. The initial search resulted in 799 English print articles which were reduced to 100 articles after removing duplicates and articles that did not meet inclusion criteria. The 100 selected articles were critically appraised for their content and if the articles contributed to the understanding of the problems which resulted in 41 articles. From these 41 articles, there were 24 used for this

capstone project. The articles used include three systematic reviews, 13 cohort studies, two qualitative and six consensus articles from government and professional organizations.

The literature revealed that HCP's are instrumental at identifying and testing those at high risk for HCV. This is key because over 80% of patients are mainly tested and diagnosed by primary care providers (Zickmund, Brown, & Bielefeldt, 2007, p. 2551). Unfortunately, the literature shows that HCP's lack knowledge about HCV including the natural course of the disease, risk factors, and whom to screen and test (Jorgensen, Lewis, & Liu, 2012, p. S57; IOM, 2010; Zickmund, Brown, & Bielefeldt, 2007). In a report by the IOM (2010), it was found that HCP's have "generally poor" knowledge of hepatitis including HCV and that more needs to be done to increase knowledge and awareness. An example of providers having generally poor knowledge of HCV was identified in a retrospective study that found 92% of patients with HCV risk factors were not screened for HCV by HCP (Almario, Vega, Trooskin, & Navarro, 2012, p. 163). This lack of familiarity is not unique within the United States as demonstrated by many international studies (Cox et al., 2011; D'Souza, Glynn, Alstead, Osonayo, & Foster, 2004; Joukar, Mansour-Ghanaei, Soati, & Meskinkhoda, 2012; McGowan et al., 2013, p. 12).

There are a number of studies worldwide indicating gaps in HCP knowledge in the areas of the natural course of the disease, transmission routes and familiarity with guidelines. In a global survey encompassing 29 countries only 40% of respondents believed health care providers have adequate knowledge of HCV treatment guidelines (McGowan et al., 2013, p. 12). In England, findings showed that HCP's are knowledgeable that injection drug use is a route of transmission for HCV, but were less knowledgeable of other routes of transmission (D'Souza, Glynn, Alstead, Osonayo, & Foster, 2004). Similar finds were reported in Canada where HCP's

had gaps in the natural course of the disease and transmission routes (Cox et al., 2011). In Iran, reports show HCPs with overall good knowledge, although as in previous reports, there was the lack of understanding of the routes of transmission. In addition, there was a lack of understanding in the efficacy of available HCV treatments (Joukar, Mansour-Ghanaei, Soati, & Meskinkhoda, 2012).

It is important to understand the current practice patterns of HCP in order to determine where increased education would have the most benefit. A number of studies have looked into the practice patterns of HCP and found HCPs are not routinely using standardized screening tools, not routinely testing those at risk, have poor understanding of the testing sequence for HCV, and are not routinely counseling patients to stop high-risk behaviors such as alcohol or illicit drugs (Almario et al., 2012; Clark, Yawn, Galliher, Temte, & Hickner, 2005; Fultz et al., 2003; Peksen et al., 2004; Shehab, Sonnad, & Lok, 2001; Shehab, Sonnad, Jeffries, Gunaratnum, & Lok, 1999). The evaluation of practice patterns is especially important since most patients with hepatitis C have nonspecific or no symptoms until liver disease is identified. This makes identifying, screening, testing and referring individuals extremely important.

In evaluating the practice patterns of HCPs in treating patients with HCV several studies analyzed the experience level of the health care provider, the ability of the providers to identify risk factors, their reasons for implementing HCV screening, and if proper health promotion and disease prevention strategies were implemented. The experience level of HCP was measured in a study which showed that a large majority (73%) have only seen fewer than five hepatitis C patients in one year (Shehab, Sonnad, Jeffries, Gunaratnum, & Lok, 1999, p. 379). This is concerning since the average HCP with a patient population of 2,000 could hypothetically have

36 patients infected with HCV on their panel (Clark et al., 2005, p. 647). The majority of providers in several studies were able to identify significant risk factors for HCV even though a high percentage still considered blood transfusions after 1992 as a major risk factor along with regarding casual household contact to be a significant risk factor (Peksen et al., 2004; Shehab, Sonnad, Jeffries, Gunaratnum, & Lok, 1999; Southern et al., 2011). In a report by Shehab, Sonnad and Lok (2001) it was found that the vast majority, greater than 90%, of providers correctly identified the most common risk factors of hepatitis C. However only 59% indicated they ask all patients about hepatitis C risk factors. The studies suggest that most providers are inexperienced in diagnosing HCV, and are not consistent in screening patients for HCV but may be generally knowledgeable of the major HCV risk factors risk.

Project Plan and Evaluation

Market & Risk Analysis

The market & risk analysis was performed as part of this project to identify the potential market along with identifying potential issues and risk ahead of time. The Pikes Peak Region has approximately 171,000 federal health care beneficiaries that the local MTF and its supporting clinics are responsible for. The target clinic for this project is responsible for 1,700 beneficiaries that meet the recommended testing cohort from years 1945-1965. Also, there are an unknown amount of beneficiaries that will require testing after being identified as high-risk for HCV. There is no major risk for this project.

Strengths, Weaknesses, Opportunities, and Threats (SWOT)

The SWOT is a structured planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in the project. This project has many strengths associated

with the educational intervention that increased HCP knowledge of HCV. The strength of this project is that best-practice HCV educational strategies were used that were based in part on information from the CDC. The intervention has other strengths that include low cost of implementation, relative ease of implementation, and the design can be employed in a timely manner. Moreover, the educational materials utilized are available and furnished from the CDC.

With the many strengths to this project, there is also some weaknesses that are inherent. Weaknesses inherent to this project are few but important to note. The main weakness to this project is the relatively small number of available clinic providers which are only 50. As this capstone is an evidence-based practice educational improvement project, the findings from this project cannot be generalized to outside this practice setting. Other weaknesses of this project will come from providers who do not view HCV education as valuable and do not take the HCV-ENAQ or HCV-PPA seriously. Similarly, there could be providers that do not view HCV as an urgent situation within the military community in light of the many other recommended or mandatory screenings already in place. Additional weaknesses include a lack of support by the hospital or clinic leadership and lack of training time on the schedule.

Opportunities for this project mainly revolve around the benefits that come from increased awareness of the disease. The opportunities for providers in the clinic include increased knowledge that can help reduce barriers to care, reduce stigma of the disease and raise awareness of HCV. At the institutional level, the increased knowledge may change policies that will require testing of those at risk. Hospital leadership may even recommend the project be implemented hospital-wide to all providers. As with any opportunity there are threats that can reduce the effectiveness of the project or delay its implementation. Threats for this project

mainly revolve around the cost of testing a large segment of the clinic population in light of recent budget restrictions and an overwhelming number of requirements from national agency's recommending screening and testing of other medical conditions. With future budget restrictions the idea to screen a large segment of the retired military will be scrutinized. With the large number of requirements on HCP by national agency for screening and testing patients the idea of having another requirement may not sit well. Other threats to this project relate to the small number of HCP that will participate. Ideally, all available HCP will be at the training but there is a real potential that some providers will be on vacation, sick, or assigned to other clinics which would reduce the number of available providers. Additional threats would include weather, which plays an important role in planning activities here in Colorado. There is a potential that a winter storm or other unforeseen events could cancel any nonessential activities such as this project. This would require a delay and rescheduling of training to another month to be determined. See table 2 below.

Table 2 SWOT

Strengths	Weaknesses
<ul style="list-style-type: none"> • Education is low cost • EBP is CDC approved • Education comes shortly after new recommendations 	<ul style="list-style-type: none"> • Small number of HCP • Education is not specific to military setting • Need to develop testing material
Opportunities	Threats
<ul style="list-style-type: none"> • Enhance providers knowledge of HCV • Change practice and policies • Improve patient outcomes 	<ul style="list-style-type: none"> • Budget cuts • Cost of increased testing • Large amount of policies • Weather

Driving and Restraining Forces

There are several driving forces that are making this project necessary. The CDC along with other national organizations have recommended testing of all baby boomers and those at risk for HCV (CDC, 2012). These new recommendations are a major driving force and need to be addressed through education. With new recommendations come a change in the way, HCP's handle the population at risk for HCV. The new recommendations are simple to implement and should not cause a major disruption in HCP's daily routine. The last driving force is the lack of understanding of HCV as stated in the review of the literature.

With every driving force, there are restraining forces that will hinder the implementation of this project. The implementation of the new guidelines will cost money and time that are in short supply. With the recent budget cuts, an increase in expenditures may cause some among administration to question the need for increased testing. Other restraining forces may come from HCP's who see this as yet another requirement that prevents them from spending quality time with their patients. Along with the concern about spending quality time with patients there maybe concerns about the increasing number of new requirements that are forced on HCP's. See table 3 for driving and restraining forces.

Table 3 Driving and Restraining Forces

Driving Forces	Restraining Forces
<ul style="list-style-type: none"> • New recommendations 	<ul style="list-style-type: none"> • Budget cuts

-
- | | |
|-----------------------------|-----------------------------------|
| • Lack of current protocols | • Less quality time with patients |
| • Lack of HCV understanding | • Information overload |
-

Need, Resources, and Sustainability

According to Zaccagnini and White (2011) the needs assessment serves to determine the extent to which the mission of the project is consistent with the needs of the target group. The need for this project is reflected in statements by the IOM. The IOM (2010) identified there is a lack of knowledge and awareness about chronic viral hepatitis on the part of the health care and social service providers. The IOM report also mentions that because of the lack of awareness of the high prevalence of HCV among those at risk that patients are not identified and properly referred (Institute of Medicine [IOM], 2010, p. 79). Presently in this health care center there are beliefs of gaps in knowledge and lack of awareness toward HCV and that a needs assessment coupled with an educational component will be beneficial.

The resources for this educational capstone are not only minimal but cost-effective. In today's cost-cutting environment, it is not only prudent but necessary to be able to achieve high-value training at a low cost. The hospital where this educational capstone was implemented belongs to the Federal Government and consequently is subject to sequestration which may result in decreased funding. This education needed material and human resources to accomplish the intent. The material items needed for this project involved reserving training time, space, and multimedia equipment along with paper, pens, folders and photocopying. Additionally, quick reference materials that are specific to HCV needed to be acquired for distribution to providers attending the education. In regards to human resources, we needed a trainer for approximately

90 minutes and an assistant to help administer the HCV-PPA along with helping gather and securing the testing material. Furthermore, the trainer needed to distribute and collect the HCV-ENAG in the weeks prior to the beginning the training. Fortunately, all the resources needed can be attained from the hospital's training department at a low cost. See table 4 for budget and resources.

Table 4 HCV Education Projected Cost

Budget

- Staff time out of the clinic for training = \$ 9,792 (16 primary care providers X 9 appointments missed each X average \$68 for each appointment)
 - Registered Nurses and clinical pharmacist were not included in the cost
- Presenter = 2 hour presentation and time spent developing project= \$500
- Support staff = \$200
- Statisticians \$200
- Paper and printing= \$200
- Training aids=\$200
- Lunch= \$100
- Potential Total=\$11,192.00

Resources

- Multimedia equipment = provided by facility
 - Room space = provided by facility
-
-

The morbidity and mortality caused by HCV affects an estimated 3.2 to 4.1 million people yearly with an estimated yearly cost of \$9 billion dollars to treat annually (CDC, 2012; Dartmouth, 2014). Subsequently, the sustainability of this project is extremely important to not only the patients of this hospital but to the Nation as a whole. It is the desire of all stakeholders to have this educational project not only be successful but lead to real and sustainable changes in practice. The DNP educated nurse is essential to the sustainability of this project and thus will require sustaining change at the local and organizational level. These efforts are supported by The American Association of Colleges of Nursing (AACN), *The Essentials of Doctoral Education for Advanced Nursing Practice*, which states, “DNP graduates must be proficient in quality improvement strategies and in creating and sustaining changes at the organizational and policy levels” (American Association of Colleges of Nursing [AACN], 2006, p. 10).

The sustainment of this project can occur in several ways. First, support for sustainment of this project will come from submitting the educational material to the hospital education department. The education department can place the material onto the intranet where it can be accessed for future training and reference. The second way to sustain this project is to provide a yearly educational in-service to HCP’s during National Hepatitis Month in May. The yearly educational opportunity will keep this project relevant to health care providers and to patients. The final way to sustain this project is to hold educational fairs in-conjunction with National Hepatitis Month targeted to patients and their families.

Stakeholders and Project Team

The stakeholders are key individuals who will be affected one way, or another by the project (Zaccagnini & White, 2011, p. 460). The stakeholders for this project include internal

stakeholders such as clinic providers, project team members, department directors, nurses, ancillary staff and patients. They also include external stakeholders such as regulatory agencies, interest groups, health advocacy organizations and families in the community. The main stakeholders that made this project work were the department directors who approved the project, the clinic health care providers that encouraged the project, and the project team members who initiated and promoted the project.

The project team includes the DNP student as team leader, Dr. Ernst as capstone chair, LTC Diana Heinz as the clinical mentor, and LTC (Dr) Mike Price as clinic chief. The team leader was responsible for the project design to include implementation, developing an educational program, and teaching the educational material. The capstone chair was the overarching guidance to the DNP student. The clinical advisor was the team leader and help navigate the required administrative hurdles. The clinic chief was the medical director for this project and ensured that educational material was within current guidelines.

Mission, Vision, and Goal

The mission of this project was to increase the knowledge and awareness of hepatitis C to HCP's, who serves a population at risk for disease. The goal was to design and implement an HCV-Educational Program to meet the knowledge needs of HCP's. HCP's are identified as vital in identifying HCV early in the disease process but lack adequate knowledge of the burden of disease, related risk factors, whom to screen, how to interpret test results and the clinical course of the disease. This gap in knowledge hinders screening and the initiation of further evaluation and testing of patients. The vision of this project was to have HCP prepared to become an integral part in the screening, testing and referral of patients at risk for HCV in order

to provide early detection and treatment for infected patients.

Project Objective

Objective 1: Complete the HCV Education Needs Assessment Questionnaire (HCV-ENAQ) by HCPs at MTF in Colorado by May 2014. The data obtained from this assessment will be used to understand the current HCV learning needs of HCPs. The HCV-ENAQ data is instrumental in designing the proper teaching materials from the University of Washington Hepatitis C Online Course website (The University of Washington, 2013) to fit the primary care and military setting. The outcome of a successful needs assessment is a better educational product and better service delivery to the learners.

Objective 2: Design and implement the EBP Educational Improvement Project for HCPs based on the University of Washington Hepatitis C Online Course with the date of implementation on 26 June 2014. Development of the EBP Educational Improvement Project drew heavily from the University of Washington Hepatitis C Online Course training module titled, “Screening and Diagnosis of Hepatitis C Infection” (University of Washington hepatitis C online course, 2013). It is anticipated that this will meet the learning needs of the clinic HCPs as identified on the HCV-ENAQ. The HCV-PPA consisted of questions taken with permission from the University of Washington Hepatitis C Online Course. The HCV-PPA consisted of five sections with five questions each.

Objective 3: Evaluate the effectiveness of the EBP Educational Improvement Project on provider HCV knowledge at MTF in Colorado using the HCV-PPA by the end of June 2014. The questions were based on the University of Washington Hepatitis C Online Course. Results

from the analysis of the data with recommendations will be presented to clinic administration.

See table 5 for projected timeline

Table 5 Project Timeline

Timeline EBP HCV Education	Objectives
<ul style="list-style-type: none"> • April 2014 • May 2014 • 5-16 May 2014 • 19-23 May 2014 • 26 May-8 June 2014 • 09-13 June 2014 • 26 June 2014 • 26-30 June 2014 	<ul style="list-style-type: none"> • Proposal is due to Dr.Ernst. • IRB application to Evans and Regis. • HCV-ENQA sent out to the health care providers. • Analyze HCV-ENQA and determine educational needs. • Preparing the presentation using the teaching plan and preparing the PowerPoint slides. • Dr. Ernst review and approval of slides—continue practicing lecture • HCV-Pretest-Posttest, along with an educational presentation. • Analyze the HCV-Pretest and Posttest data using SPSS.

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|-------------------------|--|
| • July 2014 | • Write the final paper. |
| • August-September 2014 | • Final paper and schedule capstone defense. |
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Logic Model

The evidence-based practice educational improvement project included a logic model. The logic model provided an easy reference framework for this project. The logic model outlined the projects resources, potential constraints, activities, outputs, short and long-term outcomes and impact. The logic model helped enhance the program planning, implementation, and dissemination activities. See Appendix I for the logic model.

Population Sampling Parameters

The target group for this evidence-based practice educational improvement project was primary health care providers at MTF in Colorado including Nurse Practitioners (NP), Registered Nurses (RN), Medical Doctors (MD), Doctors of Osteopathy (DO), Physician Assistants (PA), Clinical Pharmacist (Pharm-D) and Psychologist (Psy-D). Exclusion criteria for this sample are medical assistants and all support personnel that do not have the ability to order and interpret HCV testing for patients. It was estimated that up to 50 health care providers would participate in the project. The completion of a power analysis was not necessary due to the focus of this project. There was no direct compensation for participation in this project outside of this being completed during regular work hours. Participant recruitment took place during the clinics monthly CQI meetings.

Setting

The setting for this evidence-based practice educational improvement project was a Medical Treatment Facility (MTF) in Colorado. The MTF is a general medical and surgical hospital with 57-bed capacity. It is a Level III hospital that serves approximately 171,000 military beneficiaries in the Pikes Peak Region. The projects focus clinic has empaneled nearly 19,000 beneficiaries and on any given day sees around 400 patients. To service the empaneled beneficiaries there are 20 PCP, 15 registered nurses, 1 clinical pharmacist and 1 clinical psychologist, along with 20 medical assistants and 7 secretaries.

Methodology and Measurement

This project was an evidence-based practice quality improvement project that was sequenced as followed: a) completion of a formal educational needs assessment questionnaire with development of HCV education program for HCPs based on the HCV-Education Needs Assessment Questionnaire; b) provision of an educational program that consisted of a 30 minute HCV-PPA Pretest, a 90 minute education presentation, and followed by a 30 minute HCV-PPA Posttest and c) evaluation of the effectiveness of the education program with recommendations. The project was internal to the MTF family practice clinic and assisted the agency staff in improving knowledge on HCV care standards. The results of this project were not meant to generate new knowledge or be generalizable across settings but rather to address the specific project population at a specific time at the MTF. This project translated and applied the science of nursing to the greater health care field.

HCV Education Needs Assessment Questionnaire

The capstone project began with the administration of the HCV-ENAQ; a needs assessment of learner's current HCV knowledge. This pen and paper questionnaire was adapted with permission from the Hepatitis C Survey of Family Physicians (Clark et al., 2005). The instrument has seven sections and 20 questions that were adapted to fit the MTF in Colorado setting with instrument author permission. The sections covered in the HCV-ENAQ are: Hepatitis C in your practice, beliefs and attitudes about hepatitis C, testing for hepatitis C, therapy for hepatitis C, referral of patients with hepatitis C, comfort level with hepatitis C, and information about you and your clinical practice. The authors established content validity through an extensive literature review and thorough subject matter review from the CDC Division of Viral Hepatitis and two Physicians from the American Academy of Family Physicians (AAFP). There was no published information on the reliability of this instrument. See Appendix B for the HCV-ENAQ.

The HCV-ENAQ was explained by the project director during morning report where all providers were present. The information sheet and questionnaire were passed out with return instructions. The questionnaires were numbered for data purposes to determine how many were handed out and how many were returned. The HCV-ENAQ introduction letter encouraged participation and confidentiality for all responses. In morning report the project overview was explained to the project participants along with the anticipated timeframe for the education session.

HCV Education Program

The HCV-Educational Program is an evidence-based practice educational improvement project created using the University of Washington Hepatitis C Online Course modules (University of Washington, 2013). This online course was funded by a grant from the CDC to the University of Washington and permission to use the information for this capstone project was obtained. Based on the HCV-ENAQ findings, the teaching plan for the HCV-Educational Program was tailored to meet the needs of the HCPs. See Appendix E for the proposed teaching plan for this program. The teaching plan was solely based on module one of the University of Washington Hepatitis C Online Course, titled, “Screening and Diagnosis of Hepatitis C Infection” that has five embedded lessons. The five lessons, if taken individually would take each provider approximately two hours to view a PowerPoint presentation, view the video, read the supplemental information, and complete the knowledge checks and quizzes. For this project, the education was condensed into a short 10-minute video introduction, a streamlined slide set with 20 minutes of clinical vignettes with use of the clinical toolkit, and a verbal question and answer session. The total training time was reduced to 90 minutes of education with 30 minutes of Pretest and 30 minutes of Posttest time. The HCV-Educational Program and Pretest-Posttest time was two and a half hours. The training time does not include the HCV-ENAQ that was conducted prior to the education intervention and training time.

The HCV-Educational Program was scheduled during one of the planned Continuous Quality Improvement (CQI) monthly meeting days. The CQI meeting is regularly scheduled the fourth Thursday of every month for departments to present required Joint Commission training, present educational training and to meet military training requirements. The meeting began with

the clinic chief's monthly announcements which were then followed by introduction of the DNP student. The HCV-Educational Program began with a verbal announcement that the project was voluntary and that it is not required as part of employment at MTF in Colorado. The DNP student then distributes the HCV-PPA Pretest with information sheet attached. See Appendix D for the HCV-PPA and Appendix C for the information sheet. An information sheet was read along with instructions on how to fill out the assessment. All Pretests were completed and turned into the DNP student, who then placed them in an envelope marked as Pretest, prior to the start of the HCV-Educational Program.

The HCV-Educational Program was based on the designed teaching plan. The teaching plan incorporates five lessons. The five lessons are titled: a) HCV Epidemiology in the United States, b) Recommendations for Hepatitis C Screening, c) Hepatitis C Diagnostic Testing, d) Counseling for Prevention of HCV Acquisition and e) Transmission and Diagnosis of Acute HCV Infection. The 10-minute video introduced HCV Epidemiology in the United States and gave a good background on the scope of the HCV problem. The 60-minute PowerPoint slide presentation covered each behavior-learning objective listed on the teaching plan. The 20-minute clinical vignettes did assist the learners to analyze and identify clinical cases on how to utilize the CDC health professional tools for hepatitis C virus (HPT-HCV). The HPT-HCV covered multiple aspects of screening and diagnosing that will help the HCP navigate the complexity of the disease. The following HPT-HCV tools were used: The ABCs of Hepatitis Fact Sheet, Interpretation of Results of Tests for Hepatitis C Virus Infection and Further Actions, and Recommended Testing Sequence for Identifying Current Hepatitis C Virus Infection.

The HCV-PPA consisted of questions taken with permission from the University of Washington Hepatitis C Online Course. The HCV-PPA Posttest was administered immediately following the HCV-Educational Program. All participants were encouraged to stay, but it was voluntary. The Posttest took approximately 30-minutes to complete. The DNP student remained in the room during the completion of the tests for any questions. Participants returned their completed HCV-PPA Posttest to the DNP student who then places the individual documents in a manila envelope marked as Posttest. All test answers will remain anonymous and confidential, as no personal information was asked for on the assessment. There was no compensation for participating in the HCV-Educational Program.

Evaluation of HCV-Educational Program Effectiveness

The final step of the capstone project was to analyze the data and make recommendations to clinic administration. The HCV-PPA was measured using a dependent groups t-tests to determine the effectiveness of the HCV-Educational Program. The reporting of the descriptive statistics was important to determine the impact of the educational intervention and to determine if the intervention was successful. Analysis of the data was completed during the summer 2014 semester using SPSS statistical software package.

Human Subjects Protection

There is no formal Institution Review Board (IRB) at this MTF in Colorado, all projects not exempted by the local project officer are sent to Western Regional online through IRB.NET. If the project is deemed exempt, the local approving officer will issue an approval letter. This project was submitted to Regis University Human Subjects Review Board and approved under the exempt IRB category two. Category two states “Research involving the use of educational

tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observations of public behavior, unless confidentiality is not protected, and any exposure of the subjects' responses outside the research could place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation" (Regis University, 2013). The targeted group for this study consists of HCP's at MTF in Colorado, which is a primary care clinic in a military setting. The providers are not a vulnerable population and do not meet the criteria of protections of an underserved population. All participants in this project are adults and can opt to participate in the educational improvement project or opt out as it is not a condition of employment.

The highest professionalism was taken to ensure all appropriate human subject protections are followed. For example, the participants were verbally and in writing informed regarding the fact that the participation in the project is voluntary. Also this project has only minimal, if any, foreseen risks. See Appendix C for the information letter. Participants were assured that their participation in the project was voluntary and not required for employment. All participants were guaranteed anonymity and confidentiality of the data collected, and only the DNP Student will view the individual questionnaire results. No personal identification was on the questionnaires, and all results were reported in aggregate only. All project questionnaires will be kept protected for three years in the project director's locked file then destroyed as required by law.

Instrument Reliability and Validity

There were two instruments used in this project: The Hepatitis C Virus Education Needs Assessment Questionnaire (HCV-ENAQ) and the Hepatitis C Virus Pretest-Posttest Assessment

(HCV-PPA). HCV-ENAQ was adapted from the Hepatitis C Survey of Family Physicians developed by Clark, Yawn, Galliher, Temte & Hickner (2005). This instrument was originally developed to understand physician's beliefs, attitudes, knowledge, and clinical practice toward patients with hepatitis C. In order to meet the needs of this capstone project, the DNP student modified this instrument with the permission of Dr. Elizabeth Clark, one of the instrument developers. Credit will be given to the original instrument authors in this project or any published paper that results from this capstone project. The original survey was a 30-item multiple choice survey that was reduced to 20 questions to fit the target population for this project. The survey addresses three domains of HCV knowledge which are: Practice patterns, knowledge, and beliefs and attitudes. The authors established content validity through an extensive literature review and thorough subject matter review from the CDC Division of Viral Hepatitis and two Physicians from the American Academy of Family Physicians (AAFP) (Clark et al., 2005). The instrument was pilot tested using focus groups of family physicians during the March 2003 Convocation of the AAFP National Research Network and by 17 Wisconsin-based family physician and physician assistants (American Association of Family Physicians, 2014). No other information on instrument validity and reliability has been reported. The data collected from the HCV-ENAQ will assist in the education design. See Appendix B for the HCV-ENAQ. Results of the HCV-ENAQ were analyzed using descriptive statistics such as frequencies, percentages, and means.

The HCV-PPA instrument was developed by the DNP student based on the Quick Check questions found after each lesson on the Hepatitis C Online Educational Module labeled Screening and Diagnosis of Hepatitis C Infection, which was developed by the University of

Washington (2013). The Hepatitis C Online Course was developed using a grant from the Centers for Disease Control and Prevention. The University of Washington granted permission for the DNP student to utilize the quick check questions and Hepatitis C Online educational materials for this capstone project. There are 25 questions used on the HCV-PPA with 5 questions originating from each of the five modules. There was no published reliability or validity of the HCV-PPA tool. The HCV-PPA was analyzed after separating the 25 questions into its five components which had five questions each. The individual sections were divided into pretest-posttest columns and compared using the paired samples t-test. Additionally, an aggregate pretest-posttest column using all 25 questions was analyzed using the paired samples t-test.

Project Finding and Results

Objective One

The goal of objective one was to complete the HCV-ENQA and determine the learning needs of the health care providers. There were six physicians, nine nurse practitioners, six registered nurses, one physician assistant and one pharmacist that participated in the survey. There were 9 males and 17 females with an average age of 44 (min: 29 & max: 68) and the average years practicing was 12 (min: 1 & max: 34) see table 6. The majority (66%) of HCP's have at least one patient with HCV but only a small percentage (18.5%) have diagnosed a new patient in the last year. The HCP's were split on their beliefs of how big of a problem HCV was to society with 51.8% believing it was a problem and 48.1% either neutral or not believing it was a problem. The HCP's also believed that the role of primary care was to screen (89%), diagnose (92.6%) and refer for all management (70%); see figure 1. Their knowledge of risk factors

(85%) and knowing when to refer (81.4%) was high but their knowledge in diagnostic testing and community incidence and prevalence was only 60%. See figure 2.

Table 6 Demographic

Demographics	Mean	Range	SD	# (%)
Age	44	(29-68)	8.9	
Years in Practice	12	(1-34)	9.3	
Percent female				17 (63)
Physician				6 (22)
Nurse Practitioner				9 (33)
Physician Assistant				1 (4)
Registered Nurse				9 (33)
Pharmacy				4 (1)

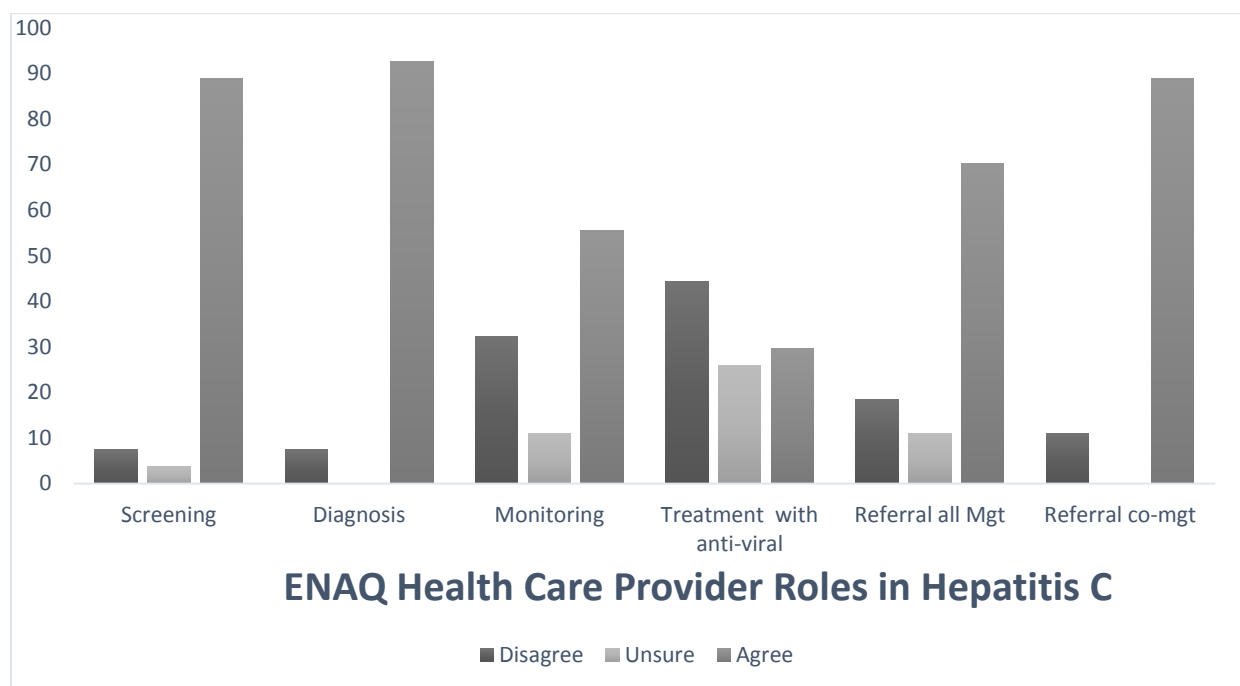


Figure 1. Health Care Provider Roles in Hepatitis C

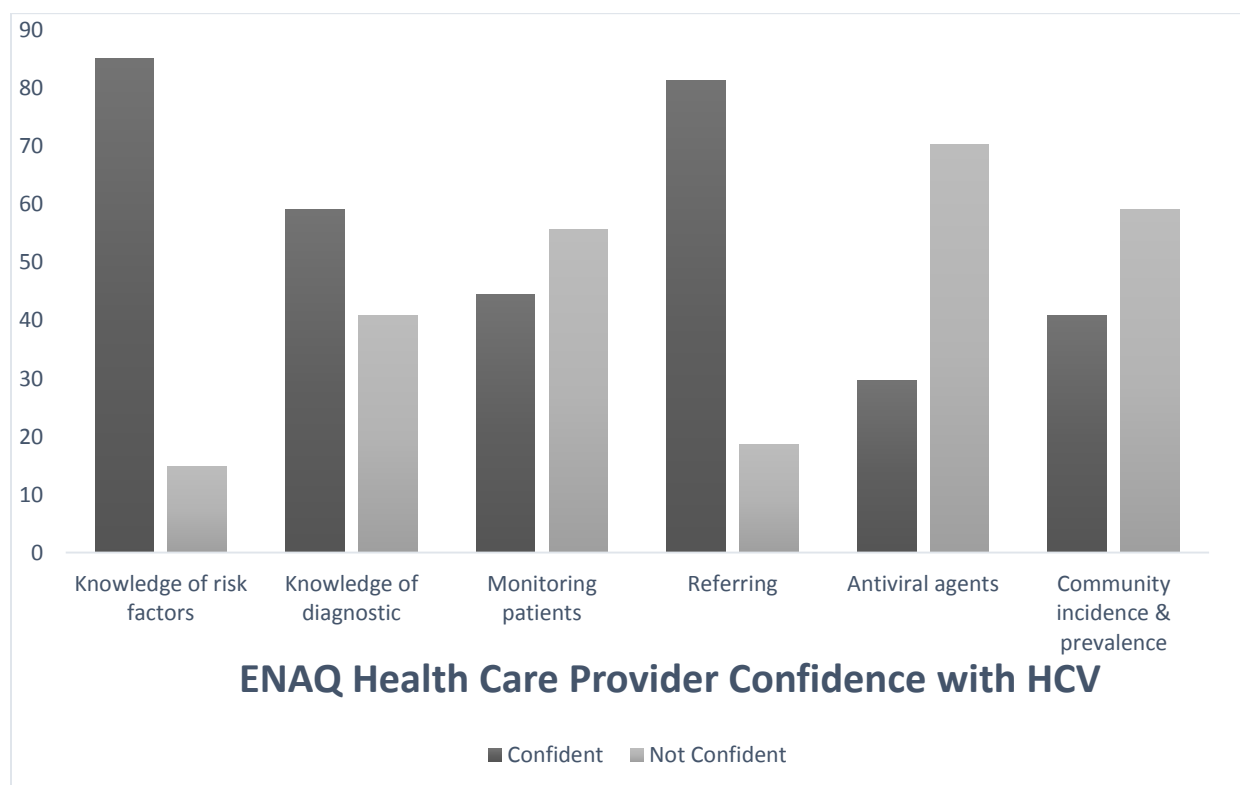


Figure 2. Health Care Provider Confidence

The screening approach of most HCP's (67%) was to test all high-risk patients and those with elevated liver functions test (67%) but only 15% will use a standardized history sheet and 37% would not test for HCV if requested. The majority (52%) would not use any publish material to help diagnose but 44% did report using CDC guidelines. The large majority of providers would test patients with risk factors such as blood transfusions prior to 1992 (89%), history of intravenous drug use (96%), and high risk sexual partners (93%) but not hemodialysis (52%) and prenatal (59%). The blood test used to screen for HCV was correctly identified by 70% but 37% would use liver functions test to screen for HCV. see table 7. After diagnoses, a majority of HCP's routinely offer counseling such as avoiding alcohol and acetaminophen along with offering further testing and vaccinations. See figure 3. If referral was indicated, 59% have never referred a patient and 33% would refer for further treatment or liver biopsy. There were several HCP's that have experienced barriers to referrals (44%) with such barriers including waiting too long to see a specialist (15%) or having to travel to far (7.4%).

Table 7 ENAQ: Hepatitis C Risk Factors and Screening by Health Care Providers

Screening approach for testing:	(#)	%
percent who use each.		
Standardized history sheet	4	(14.8)
All new patients	5	(18.5)
High-risk patients	18	(66.7)
All adults	2	(7.4)
Request testing	10	(37.0)
High LFT/ALT	18	(66.7)

Materials used in helping diagnose	(#)	%
Use no material	14	(51.9)
CDC guidelines	12	(44.4)
NIH consensus statement	1	(3.7)
MMWR recommendations	3	(11.1)
Testing by risk factor: percent of providers who would test for each risk factor.	(#)	%
Blood transfusion prior to 1992	24	(88.9)
Blood transfusion since 1992	19	(70.4)
History of IV drug use	26	(96.3)
Alcoholism	21	(77.8)
Tattoos	21	(77.8)
Sexual partners	25	(92.6)
Prenatal	16	(59.3)
Hemodialysis	14	(51.9)
Abnormal liver function tests	23	(85.2)
Hepatitis B	19	(70.4)
HIV positive	23	(85.2)
Blood test used for screening patients	(#)	%
Anti-HCV (antibody test)	19	(70.4)

RIBA	0	(0)
PCR-Qualitative	3	(11.1)
PCR-Quantitative	3	(11.1)
Viral load	1	(3.7)
LFT/ALT	10	(37.0)
Let lab chose	0	(0)
Send to a specialist	0	(0)

Table 8 Referral and Barriers of Hepatitis C Patients

Reasons for referral	(#)	%
Have not referred a patient	16	(59.3)
Elevated LFT's	7	(25.9)
To determine if therapy is indicated	9	(33.3)
Take care of them myself	0	(0)
Liver biopsy	9	(33.3)
If patient asks	4	(14.8)
Cirrhosis	5	(18.5)
Consideration of transplant	7	(25.9)
Barriers	(#)	%
Ever experienced barriers	12	(44.4)
Takes too long to see specialist	4	(14.8)

Insurance will not cover treatment	1	(3.7)
Lack of insurance	1	(3.7)
Patients have to far to travel	2	(7.4)
Specialist don't want to see patient with chemical dependency	1	(3.7)
Patients don't want to see specialist	2	(7.4)

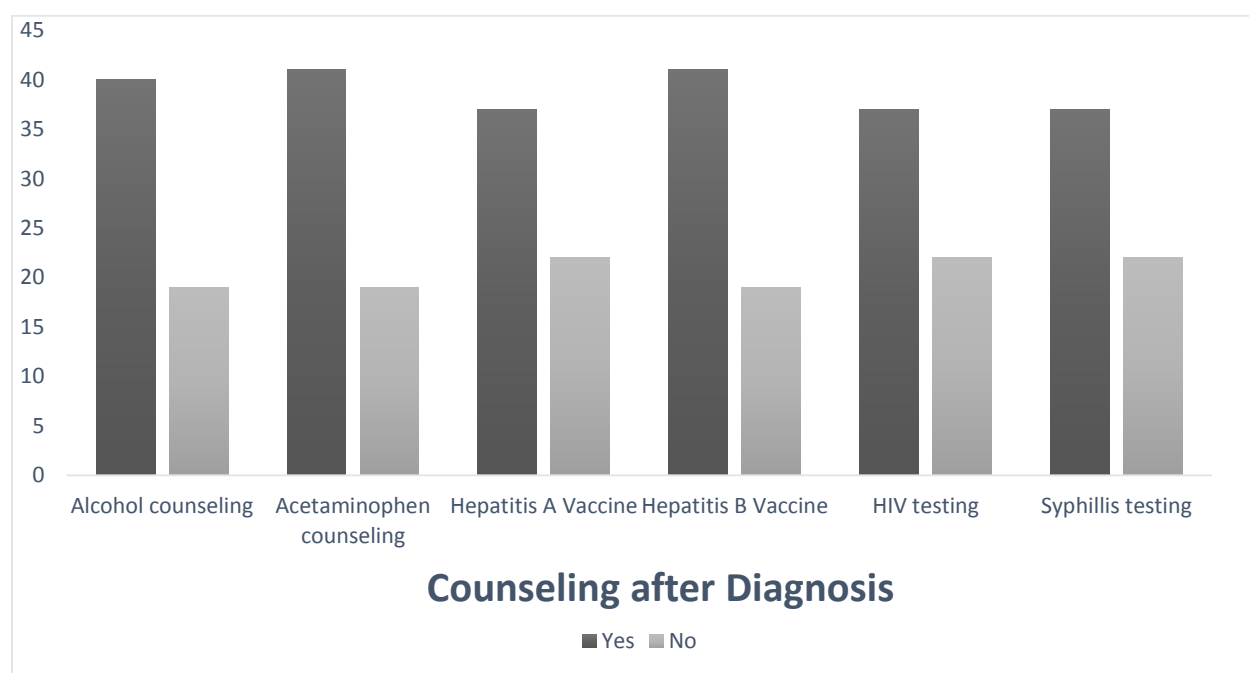


Figure 3. Counseling after Diagnosis

Objective Two

The goal of objective two was to design and implement the EBP Educational Improvement Project for HCP's through a teaching plan. The teaching plan was developed according to the needs of the HCP's as determined after analyzing the data from the ENAQ.

There are five lessons, each with a behavioral objective that met the learning needs of the HCP's. Lesson one behavioral objective was that participants will be able to explain HCV incidence and prevalence in the United States. Lesson two behavioral objective was HCP's will be able to list risk factors for acquiring HCV. Also, HCP's will be able to restate risk-based hepatitis C screening guidelines and identify what birth cohort year group applies to HCV mandatory testing. Lesson three behavioral objective was to have HCP's recognize HCV diagnostic tests, the sequence and interpretation of results and examine how to communicate results and coordinate referrals. Lesson four behavioral objective was to have HCP's describe counseling requirements for patients with HCV regarding sexual transmission, household contacts, mother-to-child transmission and injection drug use. Lesson five behavioral objective was to have HCP's be able to define acute HCV, recognize clinical features of acute HCV, and describe laboratory diagnosis as well as case definition of acute HCV.

Objective Three

The goal of objective three was to evaluate the effectiveness of the EBP Educational Improvement Project on provider HCV knowledge using the HCV-PPA. There were a total 45 people at the presentation but only 30 met criteria to fill out the HCV PPA. The 15 that did not meet criteria were not MD, DO, APRN, PA, RN, Psy-D, and Pharm-D. A paired-samples t-test was conducted to compare pretest-posttest assessment scores by lessons and by overall aggregate scores after an educational intervention to improve health care provider's knowledge of hepatitis C (See Figure 1 and Figure 2). The results for lesson one pretest were ($M=2.93$, $SD=.980$) and posttest ($M=4.10$, $SD=.885$) after lesson one; $t(29) = -5.88$, $p < .001$. The results for lesson two pretest were ($M=2.93$, $SD=1.08$) and posttest ($M=4.03$, $SD=.809$) after lesson two; $t(29) = -4.31$,

$p < .001$. The results for lesson three pretest were ($M=1.90$, $SD=.1.12$) and posttest ($M=2.96$, $SD=1.10$) after lesson three; $t(29) = -4.55$, $p < .001$. The results for lesson four pretest were ($M=2.60$, $SD=1.32$) and posttest ($M=4.46$, $SD=.860$) after lesson four; $t(29) = -8.35$, $p < .001$. The results for lesson five pretest were ($M=2.53$, $SD=.940$) and posttest ($M=3.50$, $SD=.1.01$) after lesson five; $t(29) = -3.82$, $p < .001$. There was a significant difference in the scores for the aggregate pretest ($M=12.90$, $SD=3.50$) and posttest ($M=20.00$, $SD=2.83$) after the educational intervention; $t(29) = 8.820$, $p < .001$. These results suggest that the educational intervention improved health care provider's knowledge of hepatitis C. With the results showing an increase in provider knowledge, a recommendation will be sent to the Hospital Command encouraging the wider implementation of this educational intervention.

Table 9 HCV-PPA Pretest-Posttest Results

Lessons Pre/Post	Mean	SD	t(df)	Sig
Lesson 1 Pre	2.93	.980		
Lesson 1 Post	4.10	.885	-5.88 (29)	$P < .001$
Lesson 2 Pre	2.93	1.08		
Lesson 2 Post	4.03	.809	-4.31 (29)	$P < .001$
Lesson 3 Pre	1.90	1.12		
Lesson 3 Post	2.96	1.10	-4.55 (29)	$P < .001$
Lesson 4 Pre	2.60	1.32		
Lesson 4 Post	4.46	.860	-8.35 (29)	$P < .001$

Lesson 5 Pre	2.53	.940		
Lesson 5 Post	3.50	1.01	-3.82 (29)	P=<.001
Aggregate Pre	12.90	3.50		
Aggregate Post	20.0	2.83	8.82 (29)	P=<.001

Limitations, Recommendations, and Implications for Practice

The study has several limitations related to the survey instrument, the targeted population and generalizability of the findings. The survey instrument used in this educational project was adopted and modified from a survey used to gather information from primary care physicians only. The modified survey instrument used at this MTF not only included physicians but also NP's, PA's, and RN's. The use of NP's and PA's as PCP's at this MTF made the inclusion of those specialties necessary since their duty position was similar to the primary care physicians. The use of RN's in this survey may have skewed some of the results since they are not PCP's. Nevertheless, their input was valuable in determining the overall knowledge of health care providers in general. In terms of the generalizability of the findings, the findings may not relate to non-military health care providers.

A recommendation for this project to be expanded to other clinics within the hospital and to satellite clinics was submitted to the Hospital Commander. Also, a recommendation to hold annually in May, a hepatitis awareness campaign directed toward health care providers and patients. Furthermore, the educational intervention presentation should be added to the hospitals share drive for viewing by all health care providers.

The improvement in knowledge demonstrated by the paired-sample t-test will address the IOM recommendations that health care providers become more educated about hepatitis C. The implications to practice are through improved understanding of hepatitis C the HCP's can increase screening rates that will lead to greater identification of infected patients. This will allow patients that are identified as infected to get the treatment they need to increase the chances of enjoying a better quality of life and stop the potential spread of the virus.

References

- Almario, C. V., Vega, M., Trooskin, S. B., & Navarro, V. J. (2012). Examining hepatitis C virus testing practices in primary care clinics. *Journal of Viral Hepatitis*, 19 (2), e163-e169.
Retrieved from www.medscape.com
- Alter, M. J., Kruszon-Moran, D., Nainan, O. V., McQuillan, G. M., Gao, F., Moyer, L. A., ... Margolis, H. S. (1999). The prevalence of hepatitis C virus infection in the United States, 1988 through 1994. *The New England Journal of Medicine*, 341, 556-562.
- American Academy of Family Physicians. (2004). *Clinical Preventive Services: Hepatitis*. Leawood, KS: American Academy of Family Physicians. Retrieved from <http://www.aafp.org/patient-care/clinical-recommendations/all/hepatitis.html>
- American Association of Colleges of Nursing. (2006). The essentials of doctoral education for advanced nursing practice. Retrieved from www.aacn.nche.edu/publications/position/dnpessentials.pdf
- Baker, T. (2008). Military veterans and hepatitis C. Retrieved from http://www.hepcchallenge.org/choices/pdf/Chapter_22_OL.pdf
- Burnes, B. (2004). Kurt Lewin and the planned approach to change: A re-appraisal. *Journal of Management Studies*, 41:6, 0022-2380.
- Centers for Disease Control and Prevention. (2010). Institute of Medicine (IOM) addresses prevention and control of viral hepatitis infections in the United States. Retrieved from www.cdc.gov/hepatitis/iomnews.htm
- Centers for Disease Control and Prevention. (2011). Hepatitis C information for health professionals. Retrieved from <http://www.cdc.gov/hepatitis/resources/healthprofessionaltools.htm>

- Centers for Disease Control and Prevention. (2012). Chronic hepatitis C: Why baby boomers should get tested. Retrieved from www.cdc.gov/knowmorehepatitis
- Clark, E. C., Yawn, B. P., Galliher, J. M., Temte, J. L., & Hickner, J. (2005). Hepatitis C identification and management by family physicians. *Family Medicine*, 37 (9), 644-649.
- Cox, J., Graves, L., Marks, E., Tremblay, C., Stephenson, R., Lambert-Lanning, A., & Steben, M. (2011). Knowledge, attitudes and behaviours associated with the provision of hepatitis C care by Canadian family physicians. *Journal of Viral Hepatology*, 18, 332-340.
- Department of Defense. (1999). *Hepatitis C virus infection among U.S. military personnel: An assessment of risks and screening strategies* [Issue brief]. Retrieved from Bloodbank website: <http://www.bloodbook.com/hep-vet.html>
- Dienstag, J. L., & McHutchinson, J. G. (2006). American Gastroenterological Association medical position statement on the management of hepatitis C. *Gastroenterology*, 130, 225-230.
- Dominitz, J. A., Boyko, E. J., Koepsell, T. D., Heagerty, P. J., Maynard, C., Sporleder, J. L., ... Shah, N. (2005). Elevated prevalence of hepatitis C infection in users of United States veteran's medical center. *Hepatology*, 41, 88-96.
- D'Souza, R. F., Glynn, M. J., Alstead, E., Osonayo, C., & Foster, G. R. (2004). Knowledge of chronic hepatitis C among East London primary care physicians following the department of health educational campaign. *QJ Med*, 97, 331-336.
- Fontana, R. J., & Kronfol, Z. (2004). The patient's perspective in hepatitis C. *Hepatology*, 39 (4), 903-905.
- Fultz, S. L., Justice, A. C., Butt, A. A., Rabeneck, L., Weissman, S., & Rodriguez-Barradas, M. (2003). Testing, referral, and treatment patterns for hepatitis C virus coinfection in a

- cohort of veterans with human immunodeficiency virus infection. *Clinical Infection Disease*, 36, 1039-1046.
- Ghany, M. G., Strader, D. B., Thomas, D. L., & Seeff, L. B. (2009). American Association for the Study of Liver Disease. Diagnosis, management, and treatment of hepatitis C: An update. *Hepatology*, 49 (4), 1335-74.
- Hepatitis C Online Course. (2013). <http://hepatitisc.uw.edu/index.php>
- Houser, J., & Oman, K. S. (2011). *Evidence-based practice: An implementation guide for healthcare organizations*. Sudbury, MA: Jones & Bartlett Learning.
- Human Subjects Review Board. Retrieved from <http://legacysite.regis.edu/regis.asp?sctn=ars&p1=agr&p2=irb>
- Institute of Medicine. (2010, April). *Hepatitis and Liver Cancer: Information for the health care providers* [Press release]. Retrieved from <http://www.iom.edu/~media/Files/Report%20Files/2010/Hepatitis-and-Liver-Cancer-A-National-Strategy-for-Prevention-and-Control-of-Hepatitis-B-and-C/Hepatitis%20and%20Liver%20Cancer%202010%20%20Report%20Brief%20for%20Providers.pdf>
- Institute of Medicine. (2010). *Hepatitis and liver cancer: A national strategy for prevention and control of hepatitis B and C* [Policy brief]. Retrieved from <http://www.iom.edu/Reports/2010/Hepatitis-and-Liver-Cancer-A-National-Strategy-for-Prevention-and-Control-of-Hepatitis-B-and-C.aspx>
- Jorgensen, C., Lewis, C., & Liu, J. (2012). An analysis of hepatitis C virus-related public inquiries from health professionals: 2009-2010. *Clin Infect Dis*, 55 Suppl 1, S54-7.

- Joukar, F., Mansour-Ghanaei, F., Soati, F., & Meskinkhoda, P. (2012). Knowledge levels and attitudes of health care professionals toward patients with hepatitis c infection. *World Journal of Gastroenterology*, 18, 2238-2244.
- Knowles, M. S. (1970). *The modern practice of adult education; andragogy versus pedagogy*. New York: Associated Press.
- Lewin, K. (1943a). *Psychological ecology*. D. Cartwright (Ed.). London: Social Science Paperbacks.
- McGarry, L. J., Pawar, V. S., Panchmatia, H. R., Rubin, J. L., Davis, G. L., Younossi, Z. M., ... Weinstein, M. C. (2012). Economic model of a birth cohort screening program for hepatitis C virus. *Hepatology*, 55 (5), 1344-55.
- McGowan, C. E., Monis, A., Bacon, B. R., Mallolas, J., Goncales, F., Goulis, I., ... Afdhal, N. (2013). A global view of hepatitis C: Physician knowledge, opinions, and perceived barriers to care. *Hepatology*, 57, 1325-1332.
- Peksen, Y., Canbaz, S., Leblebicioglu, H., Sunbul, M., Esen, S., & Sunter, A. (2004). Primary care physician's approach to diagnosis and treatment of hepatitis B and hepatitis C patients. *BMC Gastroenterology*, 4:3.
- Regis Human Subjects Review Board. (2013).
<http://legacysite.regis.edu/regis.asp?sctn=ars&p1=agr&p2=irb>
- Shehab, T. M., Sonnad, S. S., Jeffries, M., Gunaratnum, N., & Lok, A. S. (1999). Current practice patterns of primary care physicians in the management of patients with hepatitis C. *Hepatology*, 30, 794-800.

- Shehab, T. M., Sonnad, S. S., & Lok, A. S. (2001). Management of hepatitis C patients by primary care physicians in the USA: results of a national survey. *Journal of Viral Hepatitis*, 8, 377-383.
- Shirey, M. (2013). Lewin's Theory of Planned Change as a strategic resource. *Journal of Nursing Administration*, 43:2, 69-72.
- Sloan, K. L., Straits-Troster, K. A., Dominitz, J. A., & Kivlahan, D. R. (2004). Hepatitis C tested prevalence and comorbidities among veterans in the US Northwest. *Journal of Clinical Gastroenterology*, 38, 279-284.
- Southern, W. N., Drainoni, M. L., Smith, B. D., McKee, C. L., Gifford, A. L., & Litwin, A. H. (2011). Hepatitis C testing practices and prevalence in a high-risk urban ambulatory care setting. *Journal of Viral Hepatitis*, 18 (7), 474-81.
- Tenner, C., Herzog, K., Chaudhari, S., Bini, E., & Weinshel, E. (2012). Knowledge, attitudes and barriers regarding vaccination against hepatitis A and B in patients with chronic hepatitis C virus infection: a survey of family medicine and internal medicine physicians in the United States. *Internal Journal of Clinical Practice*, 66, 1009-1013.
- Terry, A. J. (2012). *Clinical research for the Doctor of Nursing Practice*. Sudbury, MA: Jones & Bartlett Learning.
- United States Preventive Services Task Force. (2013). *Screening for hepatitis C virus infection in adults: USPSTF recommendations statement* [Policy brief]. Retrieved from <http://www.uspreventiveservicestaskforce.org/uspstf12/hepc/hepcfinalrs.htm>
- University of Washington Hepatitis C Online Course website. (2013). <http://hepatitisc.uw.edu/index.php>

- Zaccagnini, M. E., & White, K. W. (2011). *The doctor of nursing practice essentials: A new model for advanced practice nursing*. Sudbury, MA: Jones & Bartlett.
- Zevin, B. (2007). Managing chronic hepatitis c in primary-care settings: More than antiviral therapy [Supplemental material]. *Public Health Reports*, 122, 78-82.
- Zickmund, S. L., Brown, K. E., & Bielefeldt, K. (2007). A systematic review of provider knowledge of hepatitis C: Is it enough for a complex disease? *Digestive Diseases and Sciences*, 52, 2550-2556.

Appendix A

Hepatitis C Education Needs Assessment Questionnaire Letter

Dear Iron Horse Clinic Providers:

We need to better understand current practice and education needs of healthcare providers regarding screening, diagnosis, and referrals of hepatitis C patients. To better understand our educational needs, you and your Clinic colleagues are being asked to complete a questionnaire on your understanding of hepatitis C. This information will be used to design an educational intervention focused on the basics of hepatitis C. The educational intervention may help all Clinic providers understand more about hepatitis C and how to better help their patients.

This project is in partial fulfillment of my Doctor of Nursing Practice Degree. Your assistance in completing this questionnaire collecting data about current hepatitis C knowledge to prepare an education presentation for our setting is greatly appreciated. Please do not look up answers, do not Google or ask others for assistance in completion of the questionnaire. Return your completed questionnaire in the envelope provided, seal the envelope, and returned, to CPT Rivers or Trish Rodabach in office #2403 located in Iron Horse Clinic, second floor of the Solider Family Building in Evans Army Hospital. All responses will be kept confidential in a secure computer for up to five years and destroyed as required by law.

This questionnaire will take you 10 minutes or less to complete. Nearly all responses are in a multiple choice format. All responses must be completed. If a section does not apply, please select the response that correlates to Not Applicable. Some Other questions have multiple answers that you can select. Please select all that apply. Prior to turning in the form, please check for completeness as this form will not count for data if there are any questions that are not filled out. The 20-item questionnaire is divided into seven sections for ease of data collection. The sections are Hepatitis C in Your Practice, Beliefs and Attitudes about Hepatitis C, Testing for Hepatitis C, Therapy of Hepatitis C, Referral of Hepatitis C, Comfort Level and Information about your practice.

Your participation in this project is strictly voluntary and does not impact your employment status, pay, time off or bonus. You are not being compensated in any way of time; money or equivalent to participate in this project and your job is not affected if you do not participate. There are no foreseeable risks involved in completing this questionnaire beyond those experienced in everyday life. Results from this questionnaire will be used to design an educational intervention for providers at Iron Horse Clinic. Thank you in advance for your sincere gift of time to complete this questionnaire and advance medical care in Iron Horse Clinic.

If you have questions, please contact CPT. S. Alex Rivers at 719-503-7222 (o) or 719-440-8859 (c) or scott.a.rivers.mail@mail.mil. For any questions regarding approval of this project please contact Dr. Diane Ernst, Ph.D., at Regis University, Loretto Heights School of Nursing, 303-964-5768 (o) or email at dernst@regis.edu. Thank you very much for your time and effort in this educational project.

Your time and efforts are appreciated.

Scott Alexander Rivers

Not a problem ☐ ☐ ☐ ☐ ☐ A major problem

4. Please indicate your level of agreement with each possible role of primary care in concern for people with hepatitis C, whether or not you currently care for any patients with hepatitis C

Mark only one oval per row.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
Screening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diagnosis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monitoring and follow-up	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Treatment with anti-viral therapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referral for all management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referral for consultation/co-mgmt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Testing for Hepatitis C

5. Which of the following describes how you identify patients to test for hepatitis C?

Check all that apply.

- ☐ I use a standardized history or risk sheet
- ☐ I ask all new patients about risk factors for hepatitis C
- ☐ I offer testing to all patients whom I believe to be high risk for hepatitis C
- ☐ I test all adult patients
- ☐ I test all adults that request testing
- ☐ I test all patients with high LFTs/ALT
- ☐ I ask patients about risk factors for hepatitis C

6. Please indicate the likelihood you would test for hepatitis C in patients with each of the following characteristics?

Mark only one oval per row.

	Very likely	Somewhat likely	Unlikely	Somewhat unlikely	Very unlikely
Patients w/blood transfusion prior to 1992	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients w/blood transfusion since 1992	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients with history of intravenous drug use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients with alcoholism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients with tattoos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexual partner of patients with hepatitis C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prenatal patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients on hemodialysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients with abnormal liver function tests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients with hepatitis B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients who are HIV positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. What blood test(s) do you use to SCREEN patients for hepatitis C

Check all that apply.

- ☐ I do not order blood tests to screen for hepatitis
- ☐ Anti-HCV (antibody test)
- ☐ RIBA
- ☐ PCR-qualitative
- ☐ PCR-quantitative
- ☐ Viral load
- ☐ LFT/ALT
- ☐ I let the lab choose
- ☐ I always send patients to a specialist for testing
- ☐ Other:

8. **Have you ever used any of the following materials to help you diagnose or manage patients with hepatitis C**

Check all that apply.

- ☐ None
- ☐ CDC Guidelines for Laboratory Testing and Results Reporting of Antibody to Hepatitis C Virus
- ☐ NIH Consensus Statement for the Management of Hepatitis C-2002
- ☐ MMWR Recommendation for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease
- ☐ Other: _____

Therapy for Hepatitis C

9. **Which of the following do you routinely offer to patients with hepatitis C? Please check "Yes" or "No" for each of the following. If you do not have patients with hepatitis C, please check that option below and skip to next question**

If you don't have patients with hepatitis C SKIP to next question

Mark only one oval per row.

	Yes	No
Counseling about alcohol avoidance	<input type="radio"/>	<input type="radio"/>
Counseling about acetaminophen avoidance	<input type="radio"/>	<input type="radio"/>
Hepatitis A vaccination/testing	<input type="radio"/>	<input type="radio"/>
Hepatitis B vaccination/testing	<input type="radio"/>	<input type="radio"/>
HIV testing	<input type="radio"/>	<input type="radio"/>
VDRL/ RPR	<input type="radio"/>	<input type="radio"/>

10. **Have you ever given antiviral therapy for hepatitis C?**

Mark only one oval.

- ☐ No
- ☐ Yes

11. What percent of patients do you think are "cured" by the current multi-drug therapy?

Mark only one oval.

- ☐ 90% or greater
- ☐ 70-89%
- ☐ 50-69%
- ☐ 30-49%
- ☐ 29% or less
- ☐ I don't know

12. In your opinion, how bothersome are the side effects of multi-drug treatment for hepatitis C

Mark only one oval.

- ☐ Not bothersome at all
- ☐ Somewhat bothersome
- ☐ Bothersome
- ☐ Very bothersome
- ☐ I do not know

Referral of Patients with Hepatitis C

13. When do you refer a patient to either a gastroenterologist or hepatologist for care or evaluation related to hepatitis C?

Check all that apply. If you have not referred patients with hepatitis C, please check that option below and skip to question 14

Check all that apply.

- ☐ I have not referred patients with hepatitis C ***SKIP to question 14
- ☐ Always when hepatitis C tests are negative
- ☐ When the liver function tests are elevated (greater than 2X upper limit of normal)
- ☐ To determine if therapy is indicated
- ☐ Never, I take care of them myself
- ☐ If a liver biopsy is needed
- ☐ If the patient asks
- ☐ For care of end stage liver disease (e.g. cirrhosis)
- ☐ For consideration of transplant
- ☐ Other:

14. What barriers have you experienced in referring patients to a specialist for hepatitis C care?

Check all that apply.

- ☐ None
- ☐ Does not apply
- ☐ Takes too long to see a specialist
- ☐ Insurance companies will not cover treatment
- ☐ Lack of insurance
- ☐ Patients have to travel too far
- ☐ Specialists don't want to see patients with chemical dependency problems
- ☐ Patients don't want to see a specialist
- ☐ Other: _____

15. About how often do you experience any barriers to making a referral to a specialist for hepatitis C?

Mark only one oval.

- ☐ Never
- ☐ Seldom
- ☐ Sometimes
- ☐ Often
- ☐ Always
- ☐ Does not apply

Comfort Level with Hepatitis C

16. On a scale of 1 to 5 where "1" means not confident and "5" means very confident, please circle your level of confidence for each of the following areas of hepatitis C
Mark only one oval per row.

	Not confident				Very confident
Your knowledge of risk factors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your knowledge of diagnostic tests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your knowledge of monitoring patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deciding when to refer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your ability to give antiviral agents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community incidence and prevalence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

About You and Your Clinical Practice

17. In what year were you born?

.....

18. What is your gender?

Mark only one oval.

- ☐ Male
☐ Female

19. How many years have you practiced in your specialty?

.....

20. Select your main job title below

Mark only one oval.

- ☐ Physician (MD or DO)
☐ Nurse Practitioner
☐ Physician Assistant
☐ Registered Nurse (RN)
☐ Clinical Pharmacist or Clinical Psychologist

Appendix C

Hepatitis C Virus Pretest-Posttest Assessment Introduction Letter

Dear Iron Horse Clinic Providers:

This is information on the continuation of the hepatitis C education project that I am completing as part of my Doctor of Nursing Practice degree at Regis University in Denver, Colorado. You may have completed the Hepatitis C Education Needs Assessment Questionnaire several weeks ago. The results from that questionnaire were used to design a hepatitis C education program of which you are attending today. This program is intended to meet the learning needs of clinic providers in the provision of hepatitis C prevention and treatment care.

As part of the education program today, you will be completing a pretest before the education program and a posttest after the program. These questionnaires will encompass five separate areas that will be covered during the educational program: HCV Epidemiology in the United States, Recommendations for Hepatitis C Screening, Hepatitis C Diagnostic Testing, Counseling for Prevention of HCV Acquisition and Transmission and Diagnosis of Acute HCV Infection. The education program will use PowerPoint® slides, lecture, videos, and case studies to cover all topics.

The pretest and posttest should take about 30 minutes of your time to complete. All questionnaire forms will have a code number, and no names will be placed on these forms. As your name will not appear on the questionnaires, all responses you make are strictly confidential. You will turn in the completed questionnaires to me after the program.

Your responses will be used to evaluate the effectiveness of the hepatitis C educational intervention. Information obtained on the questionnaires will be reported in the aggregate only. The final report will be provided to the Iron Horse Medical Clinic administration and staff on the effectiveness of the education program.

Refusal to complete the pretest and posttest will in NO way affect your employment status at Evans Army Community Hospital. I will not report back to anyone whether or not you attended the education program and/or participated in the questionnaires. There are no foreseeable risks involved in participating in this program beyond those experienced in everyday life.

If you have any questions about the questionnaires, please feel free to call me at 719-503-7222 or email at scott.a.rivers.mail@mail.mil, or you may call my Capstone Chair, Dr. Diane Ernst, Ph.D., at Regis University, Loretto Heights School of Nursing, 303-964-5768 (o) or email at dernst@regis.edu.

Your time and efforts are appreciated.

Scott Alexander Rivers

Appendix D

HCV Pretest-Posttest Assessment

Evans Army Community Hospital

Lesson 1 HCV Epidemiology in the US

1. In the United States, what is the estimated number of new hepatitis C infections that occurred in 2010?

Mark only one oval.

- ☐ 11,000
☐ 17,000
☐ 36,000
☐ 54,000

2. Based on NHANES data, what is the estimated number of persons living with chronic hepatitis C in the US?

Mark only one oval.

- ☐ 1,200,000
☐ 2,300,000
☐ 3,200,000
☐ 5,400,000

3. Among persons living with HCV in the United States, approximately what percentage were born during 1945 to 1965?

Mark only one oval.

- ☐ 30%
☐ 45%
☐ 60%
☐ 75%

4. Recent reports have described a new cohort of HCV-infected young injection-drug users in the US. Which one of the following has been identified as a common risk factor among persons in this group? *

Mark only one oval.

- ☐ Frequent use of ketamine
- ☐ Use of oral prescription opiates prior to using heroin
- ☐ Frequent use of crack cocaine
- ☐ Student exchange program trips to Thailand
- ☐ Travel to Mexico

5. Which one of the following statements is TRUE regarding annual HCV-related deaths in the US in recent years? *

Mark only one oval.

- ☐ The number of HCV-related deaths are approximately half the number of HIV-related deaths
- ☐ The number of HCV-related deaths exceeded HIV-related deaths
- ☐ The number of HCV-related deaths are approximately half the number of hepatitis B-related deaths
- ☐ The number of HCV-related deaths has remained stable at about 10,000 deaths per year
- ☐ The number of HCV-related deaths has steadily declined

Lesson 2 Recommendations for HCV Screening

6. Which one of the following most accurately describes the indication for routine hepatitis C testing in relation to injection drug use? *

Mark only one oval.

- ☐ Indicated if the person ever injected illegal drugs
- ☐ Indicated only if the person injected illegal drugs more than 10 times
- ☐ Indicated only if the person injected illegal drugs longer than 1 year
- ☐ Indicated only if the person injected illegal drugs longer than 3 years

7. In 1998, the CDC issued recommendations for risk-based HCV screening. Which one of the following medical conditions is considered an indication for routine HCV screening? *

Mark only one oval.

- ☐ Insulin-dependent diabetes mellitus
- ☐ Renal failure on chronic hemodialysis
- ☐ Chronic anemia
- ☐ History of hepatitis B infection

8. Which one of the following most accurately describes the 2012 CDC recommendation for birth cohort hepatitis C testing? *

Mark only one oval.

- ☐ Perform one-time hepatitis C testing for all persons 40 to 50 years of age
- ☐ Perform one-time hepatitis C testing for all persons 50 to 60 years of age
- ☐ Perform one time hepatitis C testing for all persons born during 1945 to 1965
- ☐ Perform one-time hepatitis C testing for all persons born during 1955 to 1975

9. As part of the CDC 2012 birth cohort hepatitis C testing recommendation, what additional measure is recommended by the CDC for all persons at the time they are identified as infected with hepatitis C virus? *

Mark only one oval.

- ☐ They should receive immediate referral for liver biopsy if it's likely they have been infected for longer than 10 years
- ☐ They should receive counseling on weight control to avoid development of fatty liver
- ☐ They should receive screening for marijuana use
- ☐ They should receive a brief screening for alcohol use and intervention as clinically indicated

10. What is the position of the American Association for the Study of Liver Disease (AASLD) regarding the CDC recommendation for birth cohort hepatitis C testing? *

Mark only one oval.

- ☐ The AASLD has endorsed the 2012 CDC recommendations for birth cohort hepatitis C testing
- ☐ The AASLD has taken a neutral position on the 2012 CDC recommendations for birth cohort hepatitis C testing
- ☐ The AASLD has formally rejected the 2012 CDC recommendations for birth cohort hepatitis C testing
- ☐ The AASLD does not approve of the 2012 CDC recommendations for birth cohort hepatitis C testing and the AASLD has issued their own new hepatitis C testing recommendation

Lesson 3 Hepatitis C Diagnostic Testing

11. Which one of the following best characterized the use of the 3rd generation hepatitis C enzyme immunoassay (EIA) test in the diagnostic evaluation for hepatitis C infection? *

Mark only one oval.

- ☐ Initial screening antibody test
- ☐ Confirmatory test for persons with an indeterminate HCV recombinant immunoblot (RIBA) screening test
- ☐ Confirmatory test for persons with a positive qualitative HCV RNA assay
- ☐ Confirmatory test for persons with a positive qualitative HCV RNA assay

12. A 51 year old woman comes into a clinic for a routine medical visit. She undergoes testing for HCV and has a positive HCV enzyme immunoassay (EIA) test. What would you recommend as the next step? *

Mark only one oval.

- ☐ Repeat the HCV EIA test
- ☐ Perform a HCV recombinant immunoblot assay (RIBA) test
- ☐ Perform a quantitative HCV RNA assay
- ☐ Refer her to a hepatitis C specialist

13. A 56 year old man who experimented with injection drugs in the 1970's undergoes testing for hepatitis C. He has not had any known exposures to hepatitis C since the 1970's. His HCV enzyme immunoassay (EIA) test is negative. What would you recommend for him at this point? *

Mark only one oval.

- ☐ Repeat the HCV EIA test every 6 months until 3 tests are negative
- ☐ Order a HCV recombinant immunoblot assay (RIBA)
- ☐ Order a HCV RNA test
- ☐ No further testing for HCV is indicated unless he has an exposure to HCV in the future

14. The CDC recommends that all persons confirmed with hepatitis C infection receive basic counseling related to their hepatitis infection. Which one of the following is included in the recommended post-test counseling messages for persons newly diagnosed with hepatitis C? *

Mark only one oval.

- ☐ Information on smoking cessation
- ☐ Weight management strategies for persons who are overweight or obese
- ☐ Instructions regarding influenza and pneumococcal immunizations
- ☐ Education on the importance of glucose control for those with diabetes

15. Which one of the following best describes the use of signal -to-cut-off ratio in hepatitis C testing? *

Mark only one oval.

- ☐ It combines results from the HCV enzyme immunoassay (EIA) and the radioimmunoblot assay (RIBA) and thus serves as a surrogate for HCV RNA testing
- ☐ It separates indeterminate from positive results on the radioimmunoblot assay (RIBA) test
- ☐ It categorizes HCV RNA positive results as weak, intermediate, or strong
- ☐ It can be obtained on HCV enzyme immunoassay (EIA) tests and may help predict whether the results is a true positive result

Lesson 4 Counseling for Prevention of HCV Acquisition and

Transmission

16. Which one of the following most accurately characterized the risk of transmission of hepatitis C virus from a heterosexual man to his long-term monogamous female partner? *

Mark only one oval.

- ☐ Less than 1% per year
- ☐ 2 to 5% per year
- ☐ 5 to 10% per year
- ☐ 10 to 15% per year

17. Among men who have sex with men, which one of the following has been identified as a risk factor related to acquisition of hepatitis C? *

Mark only one oval.

- ☐ Performing oral sex when the receptive partner has active gingival disease
- ☐ Insertive anal intercourse without the use of a condom
- ☐ Recent acquisition of chlamydia trachomatis infection
- ☐ Rough sex practices that may result in bleeding or damage to the genital mucosa

18. Approximately how long does hepatitis C virus survive outside the body on environmental surface, such as needles or syringes? *

Mark only one oval.

- ☐ Less than 30 minutes
- ☐ 1 to 2 hours
- ☐ 16 to 96 hours
- ☐ 10 to 14 days

19. Which one of the following measures would be most important to counsel for in an effort to prevent household transmission of HCV? *

Mark only one oval.

- ☐ Do not share eating utensils
- ☐ Do not share razors
- ☐ Do not mix clothes when washing laundry
- ☐ Do not use the same toilet

20. For a pregnant women with chronic hepatitis C infection, what is the likelihood she will transmit HCV to her baby? *

Mark only one oval.

- ☐ 3 to 5%
- ☐ 15 to 20%
- ☐ 25 to 30%
- ☐ 35 to 40%

Section 5 Diagnosis of Acute HCV Infection

21. What percentage of person with acute hepatitis C have a symptomatic illness? *

Mark only one oval.

- ☐ Less than 50%
- ☐ 60 to 70%
- ☐ 80 to 90%
- ☐ 90 to 95%

22. Which of the following best describes among persons who develop symptomatic acute hepatitis C infection? *

Mark only one oval.

- ☐ Dark urine, headache, and rash
- ☐ Fever, headache, and rash
- ☐ Jaundice, nausea, and influenza-like symptoms
- ☐ Headache, diarrhea, and diffuse joint pain

23. What is the "eclipse phase" of hepatitis C infection? *

Mark only one oval.

- ☐ The time from infection until the development of symptoms
- ☐ The time from infection until the development of detectable HCV antibodies using a commercially available assay
- ☐ The time from infection until the development of increase alanine aminotransferase levels
- ☐ The time from infection until the development of detectable HCV RNA using a commercially available assay

24. **After a person becomes infected with HCV, what is the typical sequence of laboratory findings? ***

Mark only one oval.

- ☐ Anti-HCV positive, then detectable HCV RNA, then increased aminotransferase levels
- ☐ Increased aminotransferase levels, then anti-HCV positive then detectable HCV RNA
- ☐ Detectable HCV RNA, then increased aminotransferase levels, then anti-HCV positive
- ☐ Increased aminotransferase levels, then detectable HCV, then anti-HCV positive

25. **In the CDC case definition of acute hepatitis C, what level of increased alanine aminotransferase is required as part of the clinical description? ***

Mark only one oval.

- ☐ Greater than 50 IU/L
- ☐ Greater than 100 IU/L
- ☐ Greater than 200 IU/L
- ☐ Greater than 400 IU/L

Appendix E

Teaching Plan

Content Outline	Resources	Behavioral Objectives	Guiding Theory	Methodology	Evaluation
1. Lesson 1, HCV Epidemiology in the United States 2. Lesson 2, Recommendations for Hepatitis C Screening 3. Lesson 3, Hepatitis C Diagnostic Testing 4. Lesson 4, Counseling for Prevention of HCV Acquisition and Transmission 5. Lesson 5, Diagnosis of Acute HCV Infection	Module 1. Screening and Diagnosis of Hepatitis C Infection. There are five lessons in module 1. The five lessons material will be evaluated using six behavioral learning objectives and the six core principals of Malcolm Knowles. Hepatitis C online Course http://hepatitisc.uw.edu/go/screening-diagnosis	1. The participant will be able to explain HCV incidence and prevalence in the United States. 2. By the end of the presentation the HCP's will be able to list risk factors for acquiring HCV. HCP's will be able to restate risk based hepatitis C screening guidelines and identify what birth cohort year group applies to HCV mandatory testing. 3. HCP's will be able to recognize HCV diagnostic tests, the sequence and interpretation of results and examine how to communicate results and coordinate referrals. 4. HCP's will be able to describe counseling requirements for patients with HCV regarding sexual transmission, household contacts, mother-to-child transmission and injection drug use. 5. HCP's will be able to define acute HCV, recognize clinical features of acute HCV, and describe laboratory diagnosis as well as case definition of acute HCV.	Malcolm Knowles: Six core principals of Andragogy focus on the ability of the facilitator to move the participant through the process of learning as it applies to their practice and HCV. <ol style="list-style-type: none"> 1. Need to know 2. Self-concept 3. Experience 4. Readiness to learn 5. Orientation to learn 6. Motivation to learn 	Video introduction 10 minutes Lecture, discussion Case studies with CDC toolkit handout 20 minutes. _____ Lecture 60 minutes slides, 10 minutes video introduction 20 minutes case studies and CDC toolkit. Total=90 min	Pretest administered prior to start of education presentation, 30 minutes. Information sheet attached and explained verbally. Posttest administered at end of education presentation, 30 minutes. Information sheet attached. Pretest/Posttest and education is 2.5 hours training time.

Appendix F

Setting IRB Approval and Permission Letter



DEPARTMENT OF THE ARMY
U.S. ARMY MEDICAL DEPARTMENT ACTIVITY
1650 Cochrane Circle
Fort Carson, Colorado 80913-4604

December 16, 2013

MEMORANDUM FOR: Regis University Institutional Review Board (IRB)

To: Regis University IRB:

Scott A. Rivers, who is a Doctoral Candidate at Regis University, has presented an educational project for consideration of exempt status per 45CFR46.101.b. To my understanding, the goal of the educational project will be to improve hepatitis C knowledge for healthcare providers. At this time, Evans Army Community Hospital (EACH) does not have a formal IRB board and as such sends all projects that do not meet criteria for exempt status to Western Regional through IRB.Net. Western Regional is the higher headquarters of EACH who have final authority for nonexempt projects. Projects that do meet exempt status can be approved by local authority if all criteria are met for such status.

As the local authority for such approvals, I have reviewed the proposed project and find it meets qualification for exempt status. This letter will serve as approval for Scott A. Rivers to conduct the proposed educational project with the staff of Iron Horse Family Medical Clinic. Any concerns or questions can be directed to the undersigned.

Sincerely;

A handwritten signature in black ink that reads "Robert C. Price, MD".

ROBERT C. PRICE, MD
LTC, MC, FS, DMO
OIC
Iron Horse Family Medicine Clinic
Evans Army Community Hospital
Office- 719-526-5070
Cell - 719-505-3704
Pager - 719-261-1477

Appendix G

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)**HUMAN RESEARCH CURRICULUM COMPLETION REPORT**

Printed on 11/11/2013

LEARNER Scott Alexander Reyes Rivers (ID: 3166377)
DEPARTMENT Nursing
EMAIL srivers@regis.edu
INSTITUTION Regis University
EXPIRATION DATE 10/21/2015
SOCIAL BEHAVIORAL RESEARCH INVESTIGATORS AND KEY PERSONNEL

COURSE/STAGE: Refresher Course/2

PASSED ON: 10/21/2012

REFERENCE ID 9021267

REQUIRED MODULES	DATE COMPLETED
Biomed Refresher 1 - Instructions	10/21/12
SBE Refresher 1 – History and Ethical Principles	10/21/12
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects	10/21/12
SBE Refresher 1 – Informed Consent	10/21/12
SBE Refresher 1 – Research with Prisoners	10/21/12
SBE Refresher 1 – Research in Educational Settings	10/21/12
SBE Refresher 1 – Instructions	10/21/12

Paul Braunschweiger Ph.D.
 Professor, University of Miami
 Director Office of Research Education
 CITI Program Course Coordinator

Collaborative Institutional
 Training Initiative
 at the University of Miami

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

HUMAN RESEARCH CURRICULUM COMPLETION REPORT

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DEPARTMENT Nursing
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SBE Refresher 1 – Research with Prisoners	10/21/12
SBE Refresher 1 – Research in Educational Settings	10/21/12
SBE Refresher 1 – Instructions	10/21/12

Paul Braunschweiger Ph.D.
 Professor, University of Miami
 Director Office of Research Education
 CITI Program Course Coordinator

Collaborative Institutional
 Training Initiative
 at the University of Miami

Appendix H

Permission to Use Survey

Email from Hepatitis C Online Support Team:

Date: Wed, 20 Nov 2013 09:56:13 -0800

Subject: Re: Request permission to utilize Module 1 for Capstone Project

From: hepc@uw.edu

To: scs0407@msn.com

Thank you for your email, and for reaching out. We encourage creative uses of the Hepatitis C Online and wish you well with your project. As a public resource for the public good, the Hepatitis C Online course is available for use in many different types' projects, including projects like yours. You should feel free to use the site and its resources.

Best wishes,

Hepatitis C Online Support Team.

Email from Dr. Elizabeth Clark:

From: clarkeec@rwjms.rutgers.edu

To: scs0407@msn.com

Date: Thu, 3 Oct 2013 15:00:50 -0400

Subject: RE: Request permission to replicate your study and survey for HCV

Hi,

I am sorry to take so long to get back to you. Yes, it is fine if you use our survey tool. I will try to send that to you later today.

My only request is that you reference the article you mentioned below, which you were probably planning to do anyway. Best of luck with your research.

Warm regards,

Elizabeth

Elizabeth C. Clark, MD MPH

Assistant Professor

Family Medicine and Community Health

Robert Wood Johnson Medical School

1 World's Fair Drive Somerset,

NJ 08873

732-986-2706 (cell) 732-743-3239x3 (main)

clarkec@rutgers.edu (new email as of 7/1/2013)



Appendix I

**Logic Model Hepatitis C Healthcare Provider EBP
Education Intervention**
Scott Alexander Rivers

**Benchmark: Improved Knowledge Scores Pre/Post-
test**

RESOURCES INPUTS	POTENTIAL CONSTRAINTS	ACTIVITIES	OUTPUTS	SHORT & LONG-TERM OUTCOMES	IMPACT
<i>In order to accomplish our set of activities we will need the following:</i>	<i>Potential constraints to the proposed project</i>	<i>In order to address our problem or asset we will accomplish the following activities:</i>	<i>We expect that once accomplished these activities will produce the following evidence of service delivery:</i>	<i>We expect that if accomplished these activities will lead to the following changes in 1-3 then 4-6 years:</i>	<i>We expect that if accomplished these activities will lead to the following changes in 7-10 years:</i>
<ul style="list-style-type: none"> -Clinic staff HCPs willing to participate in the Needs Assessment and training time designated for one Continuous Quality Improvement session -Computer and overhead capability to present EBP HCV slide deck -Organization support from Hospital Commander to Clinic Chief -Hospital and Regis IRB approval -Author of Needs Assessment approval to utilize tool -Complete Needs Assessment and collect data -Design HCV EBP education -Design PCP knowledge measurement tool for HCV 	<ul style="list-style-type: none"> -The survey is self-report level of knowledge -Small number of clinic providers -Organization culture of perceived wellness among beneficiaries -Policy is not in place to mandate HCV testing for active duty or retirement testing prior to service exit as with HIV -HCV is perceived as a chronic specialty care health issue, not primary care issue -PCPs lack time to appropriately screen for HCV -Education on HCV is lacking in primary care -Budget cuts may prevent some PCPs from ordering expensive HCV tests 	<ul style="list-style-type: none"> -Presentation to all stakeholders on HCV project November 12th 2013. -Complete the HCV Needs Assessment on Iron Horse clinic by January 2014. -Design and implement HCV EBP education for HCPs based on the CDC online materials for health professionals and present by March 2014. -Evaluate the effectiveness of the education program on HCPs HCV knowledge using an author designed measurement tool by July 2014. -Reserve CQI presentation time for June 2014. 	<ul style="list-style-type: none"> -Goal: To implement an effective education program that facilitates the ability to provide HCV care. -Increased knowledge of HCV guidelines from pre to post test scores. -100% HEP A&B vaccination to all HCV + clients -Increase # of patients screened per CDC guidelines as evidence by chart review -Improved attitudes of providers toward patients with HCV as evidence by self-report on HCV questionnaire 	<p>SHORT TERM:</p> <ul style="list-style-type: none"> -Train >90% of healthcare providers assigned regarding HCV guidelines by June 2014 -Report all HCV + data to community health nurse for tracking and reporting at time of diagnosis and contact patient for counseling and referral for further treatment. -Sustain EBP HCV education for primary care providers slide deck online by July 2014. <p>LONG TERM:</p> <ul style="list-style-type: none"> -Change in policy for military retirees to receive HCV test prior to service exit by 2016. -Change in providers' attitude about HCV by 2016. -Education 	<ul style="list-style-type: none"> -Known HCV status for 60% (VA Benchmark) of enrolled target population by 2019 -Reduction in Liver Transplant VA list by 30% by 2019 -Reduction in VA and Tricare enrolled retirees hospital admissions of decompensated Liver cirrhosis by 20% by 2019 -Reduction in Liver CA cases reported by VA by 30% by 2019 -Reduction in HCV related missed work days, illness and mortality as reported via death certificate by VA by 50% by 2019 -Improved End of Life Care as reported by VA Hospice referrals