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Improving Hepatitis C Virus Screening Through Bundle Interventions

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Eastern Kentucky University

College of Health Sciences

School of Nursing

Doctor of Nursing Practice Program

DNP Project Final Report

Improving Hepatitis C Virus Screening

Through Bundle Interventions

DNP Student: Jennifer West

Date: May 2, 2023



DOCTOR OF NURSING PRACTICE

The DNP Project Final Report is submitted in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice (DNP) at Eastern Kentucky University (EKU).

Student Acknowledgement

"I assert that the content of this DNP Project is my original work. Proper citation, credit, and permissions have been obtained and/or given to all external sources. I retain the right to ownership of my work. I further retain the right to use the work in future publications (i.e. articles, books...) all or any part of my work. "EKU DNP Student: Jennifer West

Signature:

A handwritten signature in cursive script that reads "Jennifer West".

Date: May 9, 2023

Review & Approval of DNP Project Final Report

The DNP Project Final Report has been reviewed and approved by the DNP Project Team, which includes the DNP Project Chair and the DNP Project Team Member(s). The DNP Project meets the satisfactory requirements for the DNP Project Final Report outlined in the EKU DNP Project Guidelines. The EKU DNP Project Guidelines are based on best practices outlined by the

American Association of Colleges of Nursing (AACN) and external evidence-based sources. The DNP Committee develops, maintains, and monitors these standards on behalf of the Department of School of Nursing at Eastern Kentucky University.

List of DNP Team Members for this Project:

Dr. Melanie Johnson Chair and Dr. Molly Bradshaw-O'Neal DNP Team Member

Acknowledgements: This Project would not have been accomplished with the support and encouragement by my Capstone project committee: Dr. Melanie Johnson (Chair) and Dr. Bradshaw-O'Neal thank you for your friendship, support, and patience throughout this program, truly without you both I would have never succeeded. The DNP faculty at Eastern Kentucky University, my work Colleagues and Family support and daily encouragement.

Title of DNP Project: Improving Hepatitis C Screening through Bundle Interventions.

Student Name & Full Credentials: Jennifer West APRN, MSN

Abstract

Hepatitis C (HCV) is estimated to impact 57,500 people in the US and is a leading infectious disease worldwide. The purpose of this DNP Project is to increase provider confidence in screening, early detection rates and ultimately timely treatment for patients at risk for HCV served within a rural Federal Qualified Health center (FQHC).

Interventions for this project included bundle steps consisting of provider and staff training of Hepatitis C guidelines for screening, use of an Electronic Medical Records (EMR) HCV flowsheet and lab template, revision of preventative health form, and self-efficacy survey to evaluate provider and nursing confidence in HCV screening and care. Paired t-tests were conducted to evaluate the impact on bundle interventions on care providers and staff overall knowledge, confidence and referral practices among providers caring for patients at risk for HCV. The project data analysis reflects an extreme statistically significant difference between both pre and post survey variables $t(14) = 5.152$ $p = 0.0001$, 95% CI (-10.39, -4.28). Pre intervention self-efficacy score (n=15, with mean value 20.133) and Post scores (n=15, with mean value 27.47). Findings from the project reflect the importance of staff and provider training and the use of effective strategies to importance HCV screening uptake and referrals.

Keywords: Hepatitis C virus (HCV), screening, bundle interventions, healthcare providers.

Improving Hepatitis C Virus Screening
Through Bundle Interventions

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By

Jennifer West DNP student

School of Nursing, Eastern Kentucky University

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Dedication

First my Husband Ted, children Tyler, Brandon, Parker, Ashley, Winnie and Grandson Carter they have been the supporting factor in everything I have accomplished so far in life with their love and support I could not have completed this incredible journey in Academia and Life to them I owe it all. My parents Shirley and Columbus Heath and my older Brother Columbus E. Heath Jr. who are no longer with me physically but always pushed me to do better, encouraged me to follow my dreams and supported me every step of the way. I miss you all daily and know that you are a part of this accomplishment.

Jennifer West, MSN, APRN

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Improving Hepatitis C Virus Screening Through Bundle Interventions

Hepatitis C (HCV) continues to be a disease of prevention if caught early in its course. According to the Centers for Disease Control and Prevention (CDC), an estimated 2.4 million living with hepatitis C (2022). However, CDC acknowledges those cases are underestimated since most are asymptomatic and have never been screened for this disease. Young adults between the ages of 20–29 now account for higher rates than average at 3.1 per 100,000 of all new cases. Primary care clinics, especially those in rural communities, may face obstacles to screening and treatment for HCV. The condition is overshadowed by other chronic illnesses. Providers may lack knowledge on the condition, and resources/access to care can be scarce, especially for those located in rural communities. The goal of this project was to improve screening rates, referral, and treatment of hepatitis C in a Federally Qualified Health Center (FQHC). This required improving provider knowledge, confidence in HCV screening and self-efficacy while providing strategic support.

Background and Significance

Problem Identification

The incidence of HCV is on the rise. Those at risk include patients with past or current intravenous drug use, Human Immunodeficiency Virus (HIV) infection, hemodialysis, history of blood transfusion before 1987 or organ transplantation prior to 1992 as well as children born to HCV positive mothers (CDC, 2022).

According to the U.S. Preventive Services Task Force (2020), the incidences of both acute and chronic HCV continue to be on the rise. Infection from HCV is associated with more deaths than the top 60 other reported infectious diseases combined, including HIV. In a 7-year span from 2010-2017 there was a 3.8-fold increase in acute hepatitis C

in young adults between 20–39 years of age. Kentucky’s incidence rates of acute HCV infection were 1.5 cases per 100,000 in 2009 and rose to 5.1 cases per 100,000 in 2013: an overall increase of 240% (Kentucky Department for Public Health, 2022).

Consequences associated with HCV infection include transmissibility, liver cirrhosis, hepatocellular carcinoma, and death.

Consequences of Problem

According to the CDC (2022) for every 100 people infected with HCV, approximately 5–25 will develop cirrhosis within 10–20 years. Among those individuals there is a 1–4% annual risk of developing hepatocellular carcinoma (HCC) and an overall 3–6% annual risk of hepatic decompensation. Death rates in the year following development of HCC range from 15–20% (CDC, 2022). Placing this into perspective, in 2018 over 15,000 deaths were attributed to HCV infection (CDC, 2022).

Significance

Currently, a general lack of screening for HCV in a FQHC has been attributed to various reasons. A lack of provider knowledge on screening guidelines has been identified as the largest contributing factor (Geboy, 2019). Requests for screening by high-risk patients and elevated liver enzymes during routine evaluations prompt providers to recommend screening during patient encounters.

Guidelines and recommendations are in place to ensure that populations are screened, identified, and offered treatment for HCV. The CDC and the U.S. Preventive Services Task Force recommend screening all patients born between 1945 and 1965 for hepatitis.

Universal screening, which consists of at least one lifetime screening for those 18 years old or older as well as for pregnant women, has recently been recommended by the CDC and the American Association for the Study of Liver Diseases (AASLD). There are exceptions to omit screening where the prevalence of HCV infection (HCV RNA positivity) is < 0.1%. One-time screening regardless of age for HIV-positive individuals, intravenous drug users, patients with persistently elevated alanine aminotransferase (ALT) levels, hemodialysis patients, children born to HCV-positive mothers, health care workers, and emergency responders is also recommended. Routine annual screening for those at elevated risk for contraction of HCV and individuals requesting testing without disclosing history is recommended. If recommended screening and linkage to care by proactive providers occur early, a sustained virologic response (SVR) with treatment instituted and cure rates up to 99% (and 95% for retreatment) can be obtained (Feirer & Wyles, 2020). A systematic review and meta-analysis by the World Health Organization (WHO) in 2017 found that treatment of HCV infection and an SVR led to reduction of liver-related mortality and HCC as well as an overall reduction in all causes of mortality related to HCV infection. Advancement of new medications called direct acting antivirals (DAAs), particularly pan-genotypic DAAs that target specific stages of the viral replication cycle of HCV and cover all genotypes, have proven effective and curative in patients with hepatitis and have simplified the treatment regimen for providers.

Impact on Health care system

Hepatitis C infection's impact on the healthcare system places strains within hospital settings and the rural population. According to the CDC (2022), Hepatitis C is the leading cause of cirrhosis and liver cancer. The clinical consequences include decompensated liver disease, Cirrhosis and HCC. Each year, about 1.5 million new infections and 400,000 HCV-related deaths are reported worldwide.

Financial impact associated with HCV imposes substantial economic burdens, with direct and indirect costs estimated at more than \$10 billion (about \$31 per person in the US) annually in the United State (Majethia, et.al, 2021).

HCV is affecting rural communities disproportionately and has both a health and financial impact. Walters, et. al (2022) discusses outbreaks that have disproportionately affected rural communities, disparities in social determinants, medical care, and structural barriers have given rise to clusters of HCV that is fueled by injection drug use, widespread nonmedical use of opioids and stimulants. Geographic distance for harm reduction services, transportation barriers, decrease treatment accessibility services, fears of being stigmatized and lack of knowledge providers in rural areas are factors that influence HCV detection and treatment in rural communities (Walters et. al 2022).

Primary care clinics, particularly those in rural areas, encounter patients daily at considerable risk for viral hepatitis, especially hepatitis C as high-risk behavior is observed throughout these populations.

However, lack of available resources and knowledge related to hepatitis C screening leave providers struggling to control and treat basic chronic disease such as diabetes, hypertension, and chronic obstructive pulmonary disease (COPD) often finding

liver diseases or elevated liver enzymes only after testing for control of other disease processes. According to a study conducted by Geboy et al. (2019), testing practices of primary care providers (PCPs) revealed limited adherence, with screening rates for eligible patients ranging from 4.3–39.7%. The authors concluded that factors contributing to low screening rates include non-reporting by patients of current or historical risk, perceived irrelevance of risk factor ascertainment during primary care visits, and skepticism regarding the overall benefits outlined in the guidelines.

Evidence-Based Intervention

The purpose of this DNP improvement project sought to evaluate providers and staff confidence levels on HCV screening, re-educate providers on guidelines pertaining to screening, referral, and support providers by executing interventions and strategies that would ease the screening process. Strategies for support included a bundled approach that highlights use of provider education, reorganization of current preventative health form/HCV template and newly designed laboratory tab to build confidence and self-efficacy for providers with the screening and treatment of HCV.

The goal of this project was to improve provider knowledge of HCV screening guidelines, overall screening rates, referral, and treatment of hepatitis C in a Federally Qualified Health Center (FQHC).

Step 1. Educational In-service

Re-education of providers and clinic staff was conducted in 2-separate day in-services which included current recommendations for screening. This included evaluation of patient history of one-time screening for Hepatitis C, high risk patients, and patients over 18 years of age. The aim was to increase screening rates by re-education of staff and providers of HCV screening recommendations. Participant self-efficacy surveys were

also disturbed for baseline self-efficacy scores. The aim evaluation of baseline self-efficacy scores that identified barriers to screening, knowledge, and confidence levels.

Step 2. EMR Preventative Health and Lab tabs

Discussion of use of existing EMR preventative health label specific screening to assist providers with positive cases for from screening to treatment. Providers and staff were also instructed on new lab tabs for screening, positive cases and the use of ICD-10 code. The overall aim was to make screening easier, quicker, and more accessible.

Step 3. Reformulation of Triage form

Reformulation an already established preventative health screening form (PHF) that will prompt and encourage the use of an already established template in EMR for HCV screening. Restructure current paper lab slips for both HCV screening and treatment with ICD-10 code Z11.59 (encounter for screening for viral diseases) or Z72.89 (high risk HCV) for both screening and positive cases.

Literature Review

A review of the literature was conducted to answer the question “Among providers, can interventions (specifically EMR HCV specific lab and screening form prompting, use of established templates, and brief educational course increase hepatitis C screening rates at a primary care clinic by enhancing linkage to treatment and care within 4 months?” (Appendix B). Keyword searches were completed in CINAHL Complete, Cochrane Database of Systematic Reviews, PubMed, and MEDLINE using the following keywords: “interventions,” “screening,” “screening interventions,” “viral hepatitis,” “Hepatitis C,” “linkages to care,” “chronic disease,” “Infectious diseases,” and “providers.” There were 1,024 studies found; results were narrowed further by limiting to full-text, peer-reviewed publications written in English and published within the last 5

years which resulted in 10 studies relevant, one case study, 1 quality improvement project and 1 study greater than 5 years no grey literature. All evidence was appraised using the Melnyk-Fineout Overholt Rapid Critical Appraisal Forms.

Relevant Studies

Ortiz et al. (2020)

This systemic review of effectiveness of interventions for hepatitis B and C vaccination, screening and health promotion and linkage to care within higher income countries evaluated seven descriptive studies and three randomized control trials. Quality of selected publications were evaluated in three domains that included randomized controlled, non-randomized and descriptive studies. Three electronic databases (PubMed, CINHAL, and Embase) and grey literature were reviewed with 37 studies reviewed.

The review consisted of groups of immigrants with ages ranging between 46 and 55 years. Increased testing and vaccination were noted in participants that attended a church-based educational program, with 6-month follow up rates of 58.5–95.5% for these patients as compared to the control group range of 38–39.8%. Linkage to care was also enhanced by community outreach screening, linking seropositive participants to providers that offered treatment. The review identifies lack of knowledge among primary health care providers (HCPs) regarding specific population risks and viral hepatitis screening; it concludes with concurrent strategies that could be tailored to the specific population and increase screening rates, vaccination efforts, and treatment.

This systematic review identifies a need to educate and re-familiarize providers regarding hepatitis C screening, focusing on screening guidelines and linkage to care.

Aspinall et al. (2015)

This review and meta-analysis provide, for the first time, quantitative assessment of the effectiveness of targeted HCV testing and interventions. The review concludes with recommendations that testing should be targeted at and offered to high-risk HCV populations and those who have a history of high-risk behaviors. This review examines targeted testing interventions compared to no interventions. Databases accessed included Medline, Embase, LILACS, NHS economic Evaluations, Health Technology Assessments, DARE, Cochrane Library, and the European Network of Health economic evaluation. Over 10,000 citations were found; additional review was conducted by primary, secondary, and tertiary reviewers to narrow the studies by specific verbiage, interventions, and outcomes. Study types reviewed included randomized, controlled trials (RCTs) versus non-RCTs, inclusion–exclusion studies, estimations of eligible populations, and estimations of HCV prevalence.

Data synthesis occurred using meta-analysis with subgroups “practitioner-based targeted test” groups versus “media/information based targeted testing” as well as individuals known to be people with injected drug use (PWID) versus testing targeted at groups at increased risk for being PWID. Findings in this systematic review demonstrated increased HCV testing in the group in which interventions were implemented as compared to the group without interventions.

Lofters et al. (2021)

This clustered, randomized trial tested the BETTER HEALTH intervention that was designed as an integrated approach to chronic disease. The screening and prevention of chronic disease in primary care had been effective in a previous randomized trial. This trial consisted of 126 participants (60 in an immediate arm, 66 in a wait-list arm), 125 of whom were included in analysis. This RCT (Random Controlled Trial) targeted patients between the ages of 40 and 65 years by evaluating their risk of chronic disease and evaluating their current participation in evidence-based prevention and screening actions. The practitioner was a nonphysician health professional and the study was conducted in a public health unit in Ontario, Canada.

Intervention included training of three public health nurses to be prevention practitioners to educate patients on chronic disease processes and recommendations for screening. Limitations of the study included lack of engagement between PCPs and enrolled participants, poor recall, self-reporting, or underreporting undesirable actions.

The trial conclusion identified the benefits of prevention practitioners, importance of interventions using evidence-based prevention, and screening actions.

Hojat et al. (2020)

The non-randomized trial was conducted from November 2016 to March 2017 and included patients who were due for HCV screening, had made at least one primary care office visit in one of three primary care clinics in Cleveland, Ohio, and were enrolled in the healthcare system's tethered personal health record (tPHR). Participants included providers who would receive HCV screening reminders during face-to-face visits and passive HCV screening notification per EMR.

Patients assigned to the intervention group received care which included HCV antibody tests and customized messages sent through their tPHR inviting them to go directly to a diagnostic laboratory for HCV screening. The findings suggest a direct patient approach can lead to higher screening rates while decreasing work for providers and staff. Health tools embedded in EHRs (Electronic Health Record) such as these will be essential for healthcare systems to adopt as pay-for-performance models of care become increasingly important. The trial identifies the need for embedded reminders within EMR for providers and face-to-face patient education to increase hepatitis C screening rates.

Pinto et al. (2020)

This qualitative study examined interprofessional collaboration efforts to improve linkages to primary care that studied specifically HIV care. The evaluation of HIV testing and its direct link to primary care were measured at baseline, 12 months, and 24 months. Examination of primary care providers who have screened for HIV in the past 6 months and their referral for treatment. Data analysis included 34 agencies with 245 providers completing all surveys at all three time points.

The study findings showed that providers who received training up to 2 years before completing the survey made more linkages to HIV care than providers who never received training (OR = 2.64, 95% CI = 1.12–6.23). Provider-domain-specific factors such as age, ethnicity, and formal HIV training as well as interprofessional collaboration factors were associated with increased frequency of testing and primary care linkage.

This study demonstrates that increased screening rates are associated with

the recently updated clinical information that would occur from re-education regarding hepatitis C screening guidelines.

Yakovenko et al. (2019)

This qualitative study examined primary care providers' perceptions and experiences of implementing HCV testing. This 2014 screening policy adopted by the Department of Veterans Affairs for those born between 1945–1965. The design and implementation of QI intervention was studied to evaluate PCP experiences with HCV “birth cohort” testing. The study used stratified and purposeful that consisted of semi structured interviews of 22 PCP located in six different states. The interviews consisted of beliefs of birth-cohort testing, testing guidelines, influence in testing, barriers, levels of priority of HCV testing, and linkage to specialty care.

It was concluded that multiple factors are associated with or influence provider decisions to apply new birth-cohort testing guidelines, with PCPs often interested in testing, diagnosing, and linking patients to specialists but requiring prompting and support to do so.

Tofghi et al. (2020)

This qualitative study was conducted among young adults admitted for inpatient detoxification for opioid use disorder in New York city 23 patients were assessed for perceived barriers and facilitators associated with HCV infection, including prevention, screening, treatment, and experiences with their PCP. The small study found that major gaps persist in HCV testing services, knowledge regarding disease, and harm reduction strategies. Data were analyzed using content analysis and a grounded theory approach. A consistent comparison method was performed by the study team to return collected data

until reaching a saturation point, at which they were unable to elicit any further themes from the data.

The consensus of the study demonstrated experiences with HCV screening the identified frustration with follow-up after positive HCV screening and treatment availability. Benign feelings about HCV were a common reflection stated by both patients and physicians and would potentially defer treatment for HCV and delay testing. Perceptions by patients who were asymptomatic were that because symptoms were not present, the need for treatment or follow-up was diminished. This study reinforces the importance of education and guideline refresher sessions for providers as well as patient education regarding testing, asymptomatic disease courses, and treatment availability.

Geboy et al. (2019)

A retrospect Cohort study examining electronic health record and screening for HCV in a large integrated healthcare system. In this study, patients who had at least one primary care visit qualified for the study. Patients who met the birth cohort criteria would receive Clinical Decision Support (CDS) prompt to assist in early screening located in the EMR.

Eligible patients who had at least one primary care visit in the timeframe and were seen at a primary care outpatient facility starting July 1, 2015, qualified for the study. Data were reported through EHRs from July 2015 through December 2016. The CDS prompt was launched during this timeframe with specific criteria. Evaluation of the HCV sequence for care-descriptive statistics was used to determine the proportion of patients

achieving each step of the cascade. The proportions of patients entering each step of the care sequence were compared between national and current regional samples.

After chart abstraction was conducted there were 389 patients identified who met inclusion criteria. The study findings suggest barriers at every step of the HCV cascade, with a greater proportion of patients having difficulty with infection confirmation, liver staging, and prescription. The study suggests that patients who are older and have limited provider training regarding the importance of age-based screening may experience reduced efficiency in achievement of SVR.

This study suggested increased efforts to decrease disparities among rural patients serviced by FQHC, including improving funding for patients to receive these essential services; educating providers, and implementation of population-based care delivery strategies to monitor patient progress from HCV screening to achievement of SVR. Important findings from the study include barriers that are associated within FQHCs, which commonly provide services to rural communities including hepatitis C confirmation that can significantly impact the HCV cascade to treatment.

The study also suggests that promoting provider uptake with hepatitis C screening, particularly within rural communities, will expedite the process of detection, treatment, and cure.

Hachey et al. (2020)

Case study hepatitis C treatment Cascade in a federally qualified health center involved describing and evaluating the HCV treatment cascade in a FQHC. This QI project evaluates barriers that can be real or perceived in HCV treatment and screening. The patient cohort included patients seen by a PCP between January 2013 and June 2016. Data from 2014 those patients who were aware of infection and those who had access to care were significantly greater than the regional average at 86%. Findings suggest that there are barriers to every part of the care cascade. The study further suggests that focus should be placed on increasing efforts to improve rates of HCV confirmation, liver staging, and prescription.

Like Geboy et al. (2019), this case study that involved a QI project primary focus was implementation of hepatitis C screening to impact HCV cascade from screening to treatment of hepatitis C.

Layman et al. (2020)

This QI project interviewed all attending and on call physicians at New York Methodist Hospital, Brooklyn, where the majority (42%) reported that they did not know or were not aware of hepatitis C guidelines or were forgetful in ordering testing. The Plan-Do-Study-Act (PDSA) model which is a model that for implementation of a project to completion was used to implement interventions to increase screening. Birth cohort was used to distinguish patients in the EMR system that met criteria. Eligible patients were flagged within the EMR system; offering testing or never offered testing would be dependent on the response by the provider and their responses will dictate the following

steps within the system. This intervention maximized the measurement of HCV testing for all patients that qualified.

Successful implementation of EMR intervention after multiple PDSA cycles enhanced provider screening for HCV in patients, producing the outcome of reduction in development of late complications of HCV.

This QI project demonstrates an improvement of HCV screening rates if providers are prompted with an embedded EMR prompt, thus enhancing early detection and follow-up for treatment.

Ghany et al. (2019)

The American association for the study of liver diseases (AASLD) and the Infectious Diseases Society of America initiated the HCV Guidance Project guidelines in 2019. Recommendations within this project are guidelines for screening, evaluation, and treatment for hepatitis C. The panel guidance and recommendations support the goals of the National Academies of Science, Engineering, and Medicine and the WHO to move from control to eventual elimination of hepatitis C.

The panel guidance supports universal and risk-based screenings that include.

1. One-time, routine, opt-out HCV screening is recommended for all individuals aged 18 years or older.
2. One-time HCV testing should be performed for all persons younger than 18 years old with behaviors, exposures, or conditions or circumstances associated with an increased risk of HCV infection.

3. Periodic repeat HCV testing should be offered to all persons with behaviors, exposures, conditions, or circumstances associated with an increased risk of HCV exposure.
4. Annual HCV testing are recommended for all persons who inject drugs and for men with HIV infection who have unprotected sex with men.

Initial testing and follow-up care recommendations include HCV antibody testing. In addition, reflex HCV RNA PCR testing is recommended for initial HCV screening. Among persons with a negative HCV-antibody test who were exposed to HCV within the prior 6 months, HCV RNA or follow-up HCV antibody testing 6 months or longer after exposure is recommended. HCV RNA testing can also be considered for immunocompromised persons. Among persons at risk for reinfection after previous spontaneous or treatment-related viral clearance, repeat HCV RNA testing is recommended because a positive HCV antibody test is expected. Persons found to have a positive HCV antibody test and negative results for HCV RNA by PCR should be informed that they do not have evidence of current (active) HCV infection but are not protected from reinfection.

Quantitative HCV RNA testing is recommended prior to initiation of antiviral therapy to document the baseline level of viremia or viral load; HCV genotype testing may be considered for those for whom it may alter treatment. Persons with current HCV infection should receive education and interventions aimed at reducing liver disease progression and preventing HCV transmission. Counseling on abstinence from alcohol and, when appropriate, interventions to facilitate cessation of alcohol consumption should be advised for all persons with HCV infection. Education regarding how to prevent HCV transmission to others should be provided to all persons with HCV infection. In addition,

evaluation for advanced fibrosis using noninvasive markers and liver biopsy, if indicated, is recommended for all persons with HCV infection to facilitate appropriate decisions regarding treatment.

Additional testing for cirrhosis management, such as HCC screening and evaluation of other conditions that may accelerate liver decompensation, is also recommended. Finally, the guidelines recommend antiviral treatment for all adults with acute or chronic HCV infection, except for those with a short life expectancy who cannot be helped by HCV therapy, liver transplantation, or another directed therapy.

Synthesis of Literature

In synthesizing the literature, common themes include lack of screening and identification of HCV, provider awareness of condition, patient education, and linkage to care. Lack of hepatitis C screening and testing, such as that found by the systemic review of Ortiz et al. (2017) and the study of Hojat et al. (2019), is a common occurrence. Multiple reviews also indicate that lack of knowledge by providers, length of time since education regarding hepatitis C, and benign feelings regarding HCV or asymptomatic patient presentation are commonly associated with failure to screen patients within guidelines. Applying the use of EHR HCV template and guideline-specific reminders to providers on recommendations for screening as discussed in both Layman et al. and Hojat et al. studies increase screening rates. Studies conducted by Tofighi et al. (2020) and Yakovenko et al. (2019) demonstrated re-education or refreshing of providers regarding hepatitis C guidelines are valid observations to increase screening rates. The better health model review from Lofters et al. (2021) Targeting preventative health nurses and training on screening guidelines also combines other QI models that give credence to the value of education and re-training of nurses and providers in increasing screening rates.

This review of 10 articles supports the bundling of interventions that prove efficacious in increasing screening for hepatitis C. Including provider re-education regarding guidelines associated with hepatitis C, embedded laboratory tabs reminders in EMR, encourage use of preventative HCV flowsheet and triage templates that will increase HCV screening rates and early detection (Appendix A).

Theoretical Framework

The Health Belief model (HBM) created by social psychologists Rosenstock, Hochbaum, Kegeles, and Leventhal proposes that a person's health-related behavior depends on their perception of four critical areas: the severity of a potential illness, the person's susceptibility to that illness, the benefits of taking a preventive action, and the barriers to taking that action. The components within this model were applied in this project to examine providers and patients during a bundled intervention approach from hepatitis C screening to treatment.

Applying the HBM includes assessing and acknowledging providers perceptions of hepatitis C, its risk to acute and chronic health outcomes, and screening barriers. The perception by providers regarding susceptibility to disease and long-term health consequences, patient's high-risk susceptibility for HCV including contraction and transmission, benefits perceived by both to early detection and treatment options, real or imagined barriers to screening for HCV. Cues to action to increase/improve overall clinic screening rates, detection, and link to care. Finally, providing clinic staff with information to enhance self-efficacy to screening and lab specific testing. (Appendix C) illustrates the application of HBM for this project.

Organizational Description Setting

The project was conducted at an FQHC located in Southeastern Kentucky, Whitley City. This clinic provides sliding fee services for clinic visits, laboratory tests, and interventions associated with primary care and acute care conditions.

This doctoral project was designed to increase screening rates, early detection, and treatment for hepatitis C within a rural primary care setting through education of providers regarding HCV guidelines, use of existing template for HCV, provider-guided laboratory tab and reformulated triage flowsheet to enhance early identification of HCV and provider ease in appropriate laboratory testing which will increase screening rates and linkage to treatment. First Choice immediate Care Mc Creary (FCICM) an FQHC (formerly known as Whitley Family Medical center) whose mission is to increase access to comprehensive health care including preventative health care and to reduce health disparities to the medically underserved.

Congruence of Project to the Organization's Goals and Mission

Relevant policy

First Choice immediate Care McCreary is a FQHC that promotes disease prevention, screening, and early detection. This project aligned with their health policy and following CDC guidelines and USPTF guidelines on Hepatitis C screening and detection.

Description of Stakeholders

Stakeholders included Cumberland family medical organization, providers, nursing staff, patients, and FCICM Whitley City, Kentucky.

Organizational Assessment

Intervention Group

The intervention group included physicians, nurse practitioners, physician assistants, registered nurses, licensed practical nurses, medical laboratory technicians, and Certified Medical assistants.

Impact on Population

The direct impact population included providers, nurses, and staff employed at a Southeastern Kentucky FQHC Immediate care facility and patients within the community.

Mission

This Quality improvement (QI) project readily aligns with the clinic's mission of providing screening, early detection and treatment of diseases that adversely affect directly and indirectly the rural communities it serves by supporting and educating providers and clinic staff on screening guidelines.

Statement of Mutual Agreement

A statement of mutual agreement was completed to describe this DNP project for the purpose of the project the nature of the agreement for the Doctor of Nursing Practice (DNP) Project and signed between Jennifer West DNP student and Cumberland Family Medical/First Choice Immediate care McCreary formerly known as Whitley Family

Medical center. Improving Hepatitis C Virus Screening Through Bundle Interventions. Organization Whitley Family Medical center (Appendix E).

Methodology

The DNP project was a QI initiative utilizing a mixed methods approach and pre-test/post-test design. The primary outcome of this project was to increase screening rates for hepatitis C and increase provider and staff confidence in screening guidelines for HCV at a FQHC. Interventions included 1) provider education on hepatitis C screening with in-clinic power point presentation, 2) increased provider knowledge and confidence levels of screening guidelines, 3) Updated preventative health form to list HCV screening, and 4) introduction of new lab tab in EMR for hepatitis C screening.

Aims

The overall aim of this project was to increase screening rates and provider/staff confidence in screening for HCV for those at risk. To achieve the aim, the following objectives were introduced: Reformulation of triage screening form, organization of lab specific HCV tab, and educational in-service for staff on hepatitis C.

Objectives

Objective 1. Training of 70% of providers on the new screening protocol will occur with in-clinic educational power point.

Objective 2. Participation of 100 % of Providers demographic data collection, assessment of their knowledge before and after education, and confidence using the new EMR HCV screening, laboratory, and medical treatment referral tabs.

Objective 3. Assess utilization of the protocol including use of reformulated preventative health triage form and new Hepatitis C screening lab menu by completing chart audits that will include baseline HCV screening in EMR and LabCorp orders for screening.

Objective 4. Increase HCV screening, detection, and referral rates in clinics by 50%.

Procedure

IRB (Institutional Review Board) Approval

Upon deferral by the partner organization, an application for expedited IRB approval was submitted to Eastern Kentucky University's (EKU's) Institutional Review Board (IRB) with approval November 30,2022.

Measures and Instruments

Distribution of self-efficacy surveys using a 5-point Likert scale ranging from 1- 5 was used during the first week of this project with evaluation of results used to determine participants knowledge of HCV screening to referrals. Calculations using ranges from never, sometimes, usually, almost always, and always with lower scores indicating less self confidence in HCV care and screening. An Educational program was provided to providers, nursing, and clinic staff on screening guidelines for HCV and new EMR additions occurred on two separate days to accommodate all staff that participated. Additionally, reinforcement to utilize existing EMR preventative health HCV screening tab and use of triage form during start of encounters. Collaboration with computer services department on construction of a user-friendly laboratory tab specific for both screening and advance option for those with positive tests. Finally, the reformation of an existing HCV preventative care template for easier use by provider was promoted and demonstrated throughout patient triage.

Impact Population

Rural populations and PCPs were directly impacted. Population directly impacted during this QI project included Physicians, Physician Assistant, Nurse Practitioners, Licensed Practical nurses, Medical Lab technician and medical assistants. The clinic where the intervention took place was an FQHC that delivers primary, acute, and urgent care. Providers, Nursing, and triage staff working within a rural primary care setting where screening, detection and treatment for Hepatitis C remains low.

Implementation Framework

The PDSA model developed by Walter Shewart in the 1920s based on Dr. Deming's Improvement Model will be used for this DNP project. The PDSA model is a widely used cyclic healthcare delivery and improvement approach that involves four key components that include Plan, Do, Study and Act. Originally based on repeated small trials, consideration is taken on what has been learned, improvement, and retrial of the improvement (Melnyk & Fineout-Overholt, 2019).

The process began with the Plan cycle, which involved identifying a purpose and goal for a problem, or project. The Do cycle implemented the interventions of project. Next, the Study cycle involved testing the validity of the plan for any obstacles, improvements, or problems and areas for improvement. The last step, the Act, closed the cycle and involved integrating the learning of the entire process, adjusting goals, changing theory or methods, and reformulation.

The Plan phase of this DNP project included the development of a bundle approach, including clinician-targeted survey entailing perceived barriers to screening for hepatitis C. An evaluation of current screening rates for hepatitis C which occurred by

reviewing screening HCV lab orders and current use of preventative health HCV screening in EMR within the last 6 months. The development of an in-clinic educational presentation that targeted current HCV screening guidelines and specific patient populations at risk for hepatitis C. (Appendix D). Discussion and instruction were given to providers and clinic staff of HCV screening tools within the current EMR and triage intake form. Coordination occurred with Information Technology (IT) in the development of clinic specific laboratory tabs for primary HCV screening and lab specific testing for positive tests.

The Do stage of the PDSA model occurred through implementation of education of providers that target findings revealed survey results addressing causes of poor screening or uptake of hepatitis screening criteria. Encouraged the use by providers of current EMR hepatitis C preventative care template and triage form in office reminders.

The Study stage examined effects on screening rates of patients that were seen within the first 4 weeks that meet criteria, adherence to screening by providers and perception of EMR modifications after education. Evaluation of increase lab screening uptake occurred by running lab reports specific for HCV and HCV ICD-10 codes. Finally, evaluation of interventions was assessed in the enhanced or adjusted EMR modifications and provider self-efficacy post staff education. Alterations occurred based on provider feedback, perceived flow of new lab and HCV templates. Adjustments were made due to recent changes in clinic site and the lack of IT services and computer services that hinder the launch of lab tabs that occurred during the first 2 weeks of this QI project.

Recruitment

Recruitment for this project involved in person presentation on January 27, 2023 and Monday January 30, 2023 that included in-clinic flyer (Appendix G) information specific to project details and Hepatitis C screening posters throughout patient waiting areas, nurses' station, and patient rooms. Participation was voluntary with inclusion criteria being health care providers including physicians, physician assistants, nurse practitioners, nurses (LPN and RN), certified medical assistants, and triage staff.

After participant consent (Appendix F) was obtained both education and training were conducted and included providers, nurses, and direct clinic staff within the rural FQHC (N = 15). After consent and training was conducted data was collected after 6 weeks. The principal investigator delivered clinic surveys and consents one week prior to in-clinic presentation and launching of EMR interventions. The in-clinic presentation included explanations on completing the training of HCV guidelines and screening, self-efficacy surveys and completion of project consents. There was minimal risk to participants, nor was there any penalty for any staff that chose not to participate in the surveys (Appendix I). Excluded participants will be those without direct patient contact and office or clerical staff.

Data collection at project completion after 6 weeks included, post self-efficacy questionnaire scoring, demographic analysis, EMR preventative health and Lab tab use statistics and calculation of Triage form use by providers and staff.

Data collection and analysis

There were multiple outcomes measured through this DNP project. The major outcome measured will be the increase in overall screening rates of hepatitis C within this rural clinic, increased provider, and patient knowledge of screening guidelines.

Demographics survey and collection

Data collection for descriptive demographics involved using paper demographic surveys delivered to all participants during pre-intervention educational in-services.

Provider demographics and length of time in position at the FQHC were collected.

Self-Efficacy questionnaire and collection

Data collection started with a baseline evaluation of current hepatitis C screening the numbers of HCV screening between December 2022 through March 2023.

Calculations regarding baseline and 6-week post bundle interventions included changes in self-efficacy scores, laboratory screening rates, and use of existing HCV template and current Triage form.

A five-point Likert Scale was utilized to evaluate changes in participants knowledge and confidence with HCV screening and referrals pre and post bundle intervention based on a scale ranking (5 = strongly agree, 4 = agree, 3 = not sure, 2 = disagree, and 1 = strongly disagree). HCPs will be presented with “I Know current HCV screening guidelines,” “I feel comfortable screening for HCV,” “I feel comfortable treating patients with HCV,” “I feel comfortable referring patients with HCV treatment,” and “I feel my overall knowledge on HCV is strong” (Appendix I).

Triage form and Laboratory tab collection data

Assessment of reformulated preventative health triage form and new Hepatitis C screening lab menu that was conducted by evaluation of charts and lab order entries had also exceeded predicted goal from baseline HCV screening.

Results

Demographic Analysis results

Using Microsoft® Excel data analysis program for statistical analysis demographic information was entered and number of participants with results as follows. Table 1 below summarizes participants demographic variables, time on job, and self-report of daily time spent in contact with patients who may be at risk for HCV. The Majority were female (n= 12, 80%) nursing/Advance Practice nurses (n= 12, 80%), age 25-35 years (n=7, 46.7%) the time on job was over 10 years (n = 8, 53.3%), and participants estimated that over 90% of daily encounters in practice were at risk for HCV (Appendix J).

Self-Efficacy data analysis results

The Microsoft® Excel data analysis program with the statistical analysis tools (STA) was used to assess and analyze pre-test, and post-test data using the measure of central tendency. Data analysis using paired *t-test* was conducted to evaluate mean difference in pre and post HCV bundle interventions self-efficacy scores Table 1.

Table 1

t-test for mean difference pre and post intervention

	<i>n</i>	<i>Mean value</i>	<i>Standard deviation</i>	<i>St. Error of the mean</i>
<i>Pre-self-efficacy</i>	15	20.133	5.69	1.704
<i>Post self-efficacy</i>	15	27.47	3.50	0.90

Pre and Post data collection demonstrates an extreme statistically significant

difference between both pre and post survey variables $t(14) = 5.152$ $p = 0.0001$, 95% CI (-10.39, -4.28). Pre intervention self-efficacy score (n=15, with mean value 20.133) and

Post scores (n=15, with mean value 27.47) with a Pearson correlation of 0.6078

demonstrated overall increase in all 6 subsets of Self efficacy questionnaire. Providers

and clinic staff reported an increase in all questions of the Self Efficacy scale post

education and introduction of lab tabs, EMR reminder and Revised HCV triage form. The

greatest increase in the subset scores occurred in the item related to comfort in screening

guidelines. The smallest increase in subset scores occurred in items related to provider

comfort in treated HCV.

Triage form and laboratory tab data analysis results

Table 2 Describes both pre and post project use of specific laboratory screening tabs, use of existing HCV template and use of past versus revised triage forms of all

patients that were eligible for screening or at elevated risk. Using Microsoft® Excel to

evaluate baseline and post intervention use by providers and clinic staff of project

screening aides demonstrated obvious increases from baseline-6weeks.

Table 2

Lab, EMR and Triage form usage

<i>Intervention</i>	<i>N</i>	<i>Baseline</i>	<i>6 weeks</i>
<i>New HCV lab tab use</i>	<i>n=48</i>	31.25%	68.75%
<i>EMR HCV template use</i>	<i>n=18</i>	16.6%	83.33%
<i>Revised triage form use</i>	<i>n=91</i>	3.29%	96.70%

The increase in both visual and direct EMR prompts associated with educational in-service of both providers and clinic staff demonstrated increased use of assistive interventions that enhanced overall increase in HCV screening rates. Laboratory tabs that are pre-set and specific and paper triage form revised with HCV screening were more instrumental in the overall increase in screening rates from baseline and at 6 weeks. Embedded EMR templates were used more than at baseline but continued to remain randomly used by staff in comparison to the other interventions to ease the screening process.

Objectives set pre-project were met throughout project implementation, including provider participation on the new screening protocol that occurred with in-clinic educational power point. Provider and clinic staff demographic data was collected by all consenting participants. Self-efficacy assessments were conducted pre and post project by all participants and EMR HCV screening, laboratory, and use of medical treatment tabs by providers exceeded pre-intervention goals.

Plan Storage and Security of Data

Data was accessible only by the primary investigator, the project chair, and the faculty member. Security of data was maintained in the primary investigator's office at a

rural FQHC in Kentucky and will be submitted for storage in the office of Dr. Johnson, project chair at Eastern Kentucky University. Data will be destroyed after three years.

Anticipated Implementation Barriers/Facilitators

Barriers included slow provider uptake in screening guidelines, change in clinic hours with staggering schedules that included offering in-clinic education on various days, time constraints of project implementation, recent clinic relocation of clinic, and change in laboratory contracts.

Timeline

The project began following IRB (Institutional Review Board) approval with recruitment, consent, and pre-interventions training for participants on January 27 and February 4, 2023. Data was collected each week from February 13, 2023. Post-intervention data was collected after the project's completion on March 6, 2023, with final analysis of project results on March 20, 2023 (Appendix L).

Resources

The primary resources for this project included photocopies of screening information for providers during clinic presentations and PowerPoint presentation. Formulation of HCV-preventative templates and flowsheets that are already established within the current EHR (Electronic Health Record) were updated and reorganized to expand their usability, specifically targeting DNP project goals.

Budget

There was no cost for reorganization or formulation of HCV templates and flowsheets. Additionally, no costs related to surveys, participation consent, and in-clinic

presentation are anticipated. Posters placed in the clinic area were donated by a local health department serving the areas surrounding the FQHC.

SWOT analysis was conducted to determine value versus obstacles predicted for this project. (Appendix H).

Discussion

Implications for clinical practice are several following the conclusion and results of this DNP project which included greater knowledge of hepatitis C guidelines for providers and marked increase in improvement of screening and detection of those patients eligible for screening. Increase overall use of HCV preventative template to HCV and revision of triage form all were instrumental in increasing screening rates within the clinic. Understanding potential provider and staff barriers, apprehensions or reluctance in screening patients for HCV needs to be the first obstacle to overcome. Overall enhancement of knowledge of HCV and early screening of patients will improve the detection of HCV and prompt treatment that will equate to disease eradication.

Clinical Practice

The institution of providing quick educational refresher courses, bundle interventions that include either “hands on” triage forms, laboratory specific tabs that are connected to appropriate ICD 10 codes and/or EMR embedded flow sheets that are HCV specific will assist rural clinic staff and providers in remaining vigilant in early HCV screening. Recognition and screening of disease states that have become secondary to other conditions are invaluable additives in clinic practice for both patients, providers, and the rural community at large.

Based on results and findings of this project, the future follow-up dissemination of these findings to be shared with Organizational FQHC, Kentucky Rural Health association and National Rural Health Association.

Application of easy-to-follow steps or interventions has been proven within this project to increase overall screening and detections rates of Hepatitis C. Increasing provider and nurses' confidence levels to screening guidelines or disease states has been clearly demonstrated in this QI project to substantially increase overall HCV screening rates within a short period. Based on these findings in this project both HCV screening rates increased with increased Provider Knowledge and Confidence scores.

Education

Development of educational materials that direct guidance for HCV screening and detection were increased in this project with provider and staff confidence levels guidelines, and screening were imperative to its success. Quick and simple educational updates were essential in increasing overall confidence, perceived barriers, and increased screening rates that both providers and staff felt were hampering screening.

Future scholarship

This project offers interventions that are quick, easy to use and low cost for clinic operations. Examining already existing but rarely utilized EMR flowsheets, clinic triage forms, provider and clinic staff perceptions and current knowledge on HCV and other conditions just as important can become sustainable, repetitive, and routinely utilized in rural clinical practice. The foundation of this project was increasing HCV screening rates in a rural FQHC and has shown various interventions that examine barriers to screening and offers interventions to support clinic staff. Future conduction of a longitudinal study with large sample size would be beneficial in overall success of effective HCV screening

that could include measurements of early treatment after detection. Findings of this project will be shared with Kentucky Rural Health Association and the National Rural Health Association. Project interventions were disseminated to all FQHC in Cumberland Family Organization.

Conclusion

The evaluation of provider knowledge and their level of understanding and confidence in screening for HCV are imperative to understand and coordinate interventions that will increase screening and detection in a rural clinic. This DNP QI project demonstrated that understanding providers and nurses' confidence levels on screening, detection and treatment at the beginning will assist in cultivating interventions readily available, easy to use and economical. Offering coordination of providers, nurses and interventions used to assist with HCV screening is essential in the overall increase in screening rates and confidence scores. This project demonstrates that increase in screening rates within a rural clinic setting can be easily achieved with simple, easy to follow interventions and staff participation.

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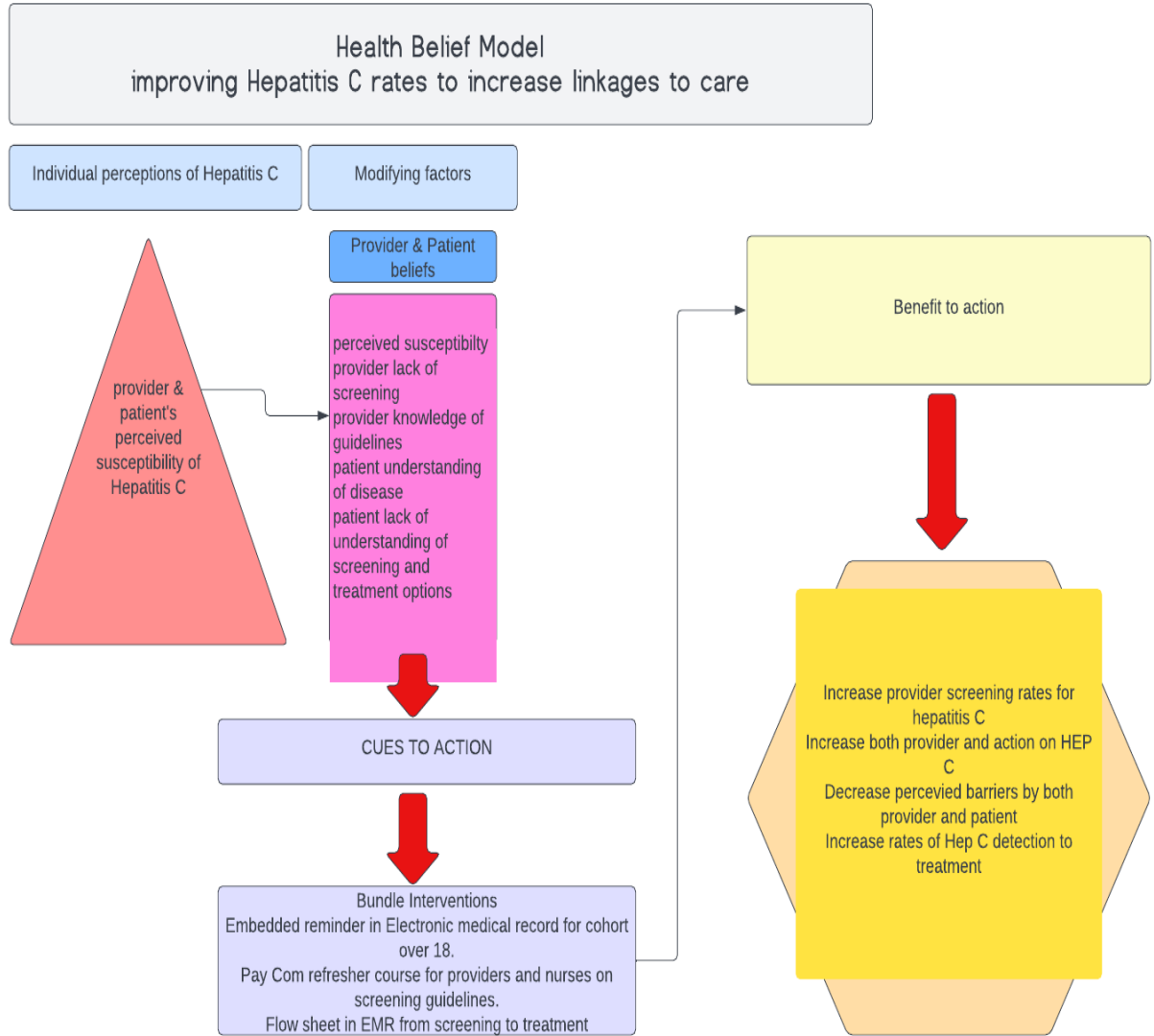
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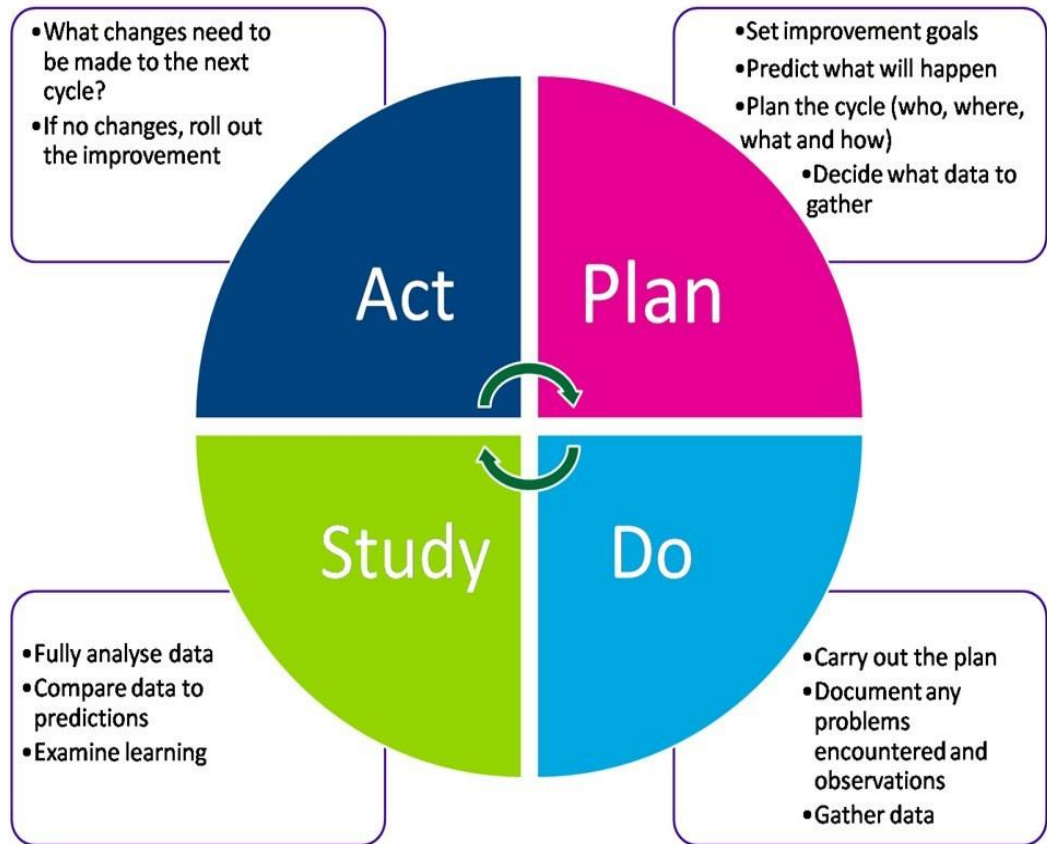
II Well- desig- ned RCTs w/o rando- mizat- ion											
III Well- desig- ned RCTs w/o rando- mizat- ion							x				
IV Case contr- ol/co- hort						x					
V Syste- mic/q- ualita- tive studi- es											
VI Singl- e qualit- ative					x					x	
VII Repo- rts/ex- pert com- mitte- es							x	x			x

Appendix C

Health Belief Model



Appendix D
Plan-Do-Study-Act



Appendix E

Statement of Mutual agreement

The purpose of this document is to describe the nature of the agreement for the Doctor of Nursing Practice (DNP) Project between Jennifer West DNP student and Cumberland Family Medical/Whitley Family Medical center. Improving Hepatitis C Virus Screening Through Bundle Interventions. Organization Whitley Family Medical center and contact Dr. Rachel Holeman. Contact information address 19 Medical Loop, Suite 3, Whitley City, Ky 42635, contact phone 1-606-376-5391. The problem identified within a rural FQHC include poor HCV screening rates and detection. Proposed Interventions will include Development of in clinic educational presentation that targets current HCV screening guidelines and specific patient populations at risk for hepatitis C, Discuss and encourage use by providers and clinic staff of existing HCV screening tool with in the current EMR and triage intake form and coordinate with Information Technology (IT) to develop clinic specific laboratory tabs for primary HCV screening and lab specific testing for positive tests.

Outcomes assessed include an increase in provider screening rates, increase detection of patients eligible and increase provider confidence in screening, detection, and treatment. The intervention process includes a pre-questionnaire and survey for providers on current hepatitis C screening practice and guidelines. Education in-service on HCV guidelines for screening and information on use of current HCV screening menu in EMR, reorganization of current preventative health form to include Hepatitis C screening, and development of lab two-step lab order for screening and further evaluation of patients who are positive. Jennifer West will be primary investigator in designing and implementation of projects and interventions. Pre and Post meetings will be conducted with Dr. Holeman, preceptor and clinic staff to evaluate process and changes as warranted. Data access will be limited to Jennifer West, Dr. Holeman, and Dr. Melanie

Johnson (EKU chairperson) as needed with data secured within Cumberland Family/Whitley Family medical Center. Ownership for project details and dissemination will be Jennifer West and currently no plans on publication.

Appendix F

Consent/Waiver

Consent to Participate in a Doctorate Nursing Project

Improving Hepatitis C Screening Rates through Bundle interventions

You are being invited to participate in a Doctorate Nurse Project. This document includes important information you should know about the study. Before providing your consent to participate, please read this entire document and ask any questions you have.

Do I have to participate?

If you decide to take part in this DNP project, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you chose not to volunteer. You can stop at any time during the study and keep the benefits and rights you had before volunteering. If you decide to participate, you will be one of about 200 people in the study.

What is the purpose of the study?

The purpose of the DNP project is to evaluate Hepatitis C screening rates in rural clinics. This study will evaluate providers, nurses and direct health care workers' knowledge of Hepatitis C screening guidelines, current local practice for screening and barriers to early screening and treatment.

Where is the study going to take place and how long will it last?

The DNP project procedures will be conducted at Whitley Family Medical Center and Promise Community Center. The DNP project will be conducted during normal

business hours 8 am to 4 pm Monday through Friday. The online and in person survey will take approximately 15 minutes, there will be a pre-survey and a post survey.

What will I be asked to do?

As a Participant you will be asked a series of short answer questions which will be multiple choice, yes/no and rating before and after the introduction of interventions. Since the survey will be directed at various levels of education and direct patient contact you may be assigned groups according to your direct patient care/exposure.

Are there reasons why I should not take part in this study?

If you are not in direct patient care, contact or under 18 years of age.

What are the possible risks and discomforts?

To the Best of our knowledge, the things you will be doing or asked to have no risk of harm or discomfort then you would experience in everyday life.

Although we have made every effort to minimize this, you may find some questions we ask you (or some procedures we ask you to do) to be upsetting or stressful. If so, we can tell you about some people who may be able to help you with these feelings.

What are the benefits of taking part in this study?

You are not likely to get any personal benefit from taking part in this study. Your participation is expected to provide benefits to other Health care providers by determining barriers to early screening for Hepatitis C and develop interventions that will increase uptake by providers, nurses, and direct patient care workers to enhance early detection and treatment of this disease.

If I do not take part in this DNP project, are there other choices?

If you do not want to be in the DNP project, there are no other choices except to not take part in the study.

This is a voluntary participation.

Now that you have some key information about the study, please continue reading if you are interested in participating. Other important details about the study are provided below.

Who is doing the study?

The person in charge of this study is Jennifer West APRN, DNP student at Eastern Kentucky University. She is being guided in this research by Dr. Melanie Johnson DNP Chair and Dr. Molly Bradshaw. They may be additional research team Member assisting at various times during the study.

What will it cost me to participate?

There are no costs associated with taking part in this study.

Will I receive any payment or rewards for taking part in the study?

You will not receive any payment or reward for taking part in this DNP project.

Who will see the information I give?

Your information will be combined with information from other people taking part in the study. When we write up the study to share it with other researchers, we will write about this combined information. You will not be identified in these written materials.

This DNP project is anonymous. That means that no one, not even members of the research team, will know that the information you give came from you.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Include the following statement if the data will not be recorded with identifying information: For example, your name will be kept separate from the information you give, and these two things will be stored in different places under lock and key.

However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court (if applicable: or to tell authorities if we believe you have abused a child or are a danger to yourself or someone else). Also, we may be required to show information that identifies you for audit purposes.

If the study involves online data collection, the following statement is required:

We will make every effort to safeguard your data, but as with anything online, we cannot guarantee the security of data obtained via the Internet. Third-party applications used in this study may have.

Can my taking part in the Project end early?

If you decide to take part in the project, you still have the right to decide at any time that you no longer want to participate. You will not be treated differently if you decide to stop taking part in the project.

The individuals conducting the study may need to end your participation in the study.

They may do this if you are not able to follow the directions they give you, if they find

that your being in the study is more risk than benefit to you, or if the University or agency funding the study decides to stop the study early for a variety of reasons.

What happens if I get hurt or sick during the project?

If you believe you are hurt or get sick because of something that is done during the study, you should call Jennifer West at 1-606-516-9805 immediately. It is important for you to understand that Eastern Kentucky University will not pay for the cost of any care or treatment that might be necessary because you get hurt or sick while taking part in this study. Also, Eastern Kentucky University will not pay for any wages you may lose if you are harmed by this study. These costs will be your responsibility.

Usually, medical costs that result from research-related harm cannot be included as regular medical costs. Therefore, the costs related to your care and treatment because of something that is done during the project will be your responsibility. You should ask your insurer if you have any questions about your insurer's willingness to pay under these circumstances.

What else do I need to know?

If applicable, disclose what institutions or companies are involved in the study through funding or cooperative research or by providing supplies or equipment.

You will be told if any new information is learned which may affect your condition or influence your willingness to continue taking part in this study.

We will give you a copy of this consent form to take with you.

Consent

Before you decide whether to accept this invitation to take part in the DNP project, please ask any questions that come to mind now. Later, if you have questions about the study, you can contact the investigator, Jennifer West at 606-516-9805. If you have any questions about your rights as a research volunteer, you can contact the staff in the Division of Sponsored Programs at Eastern Kentucky University at 859-622-3636.

If you would like to participate, please read the statement below, sign, and print your name. I am at least 18 years of age, have thoroughly read this document, understand its contents, have been given an opportunity to have my questions answered, and voluntarily agree to participate in this DNP project.

Signature of person agreeing to take part in the study

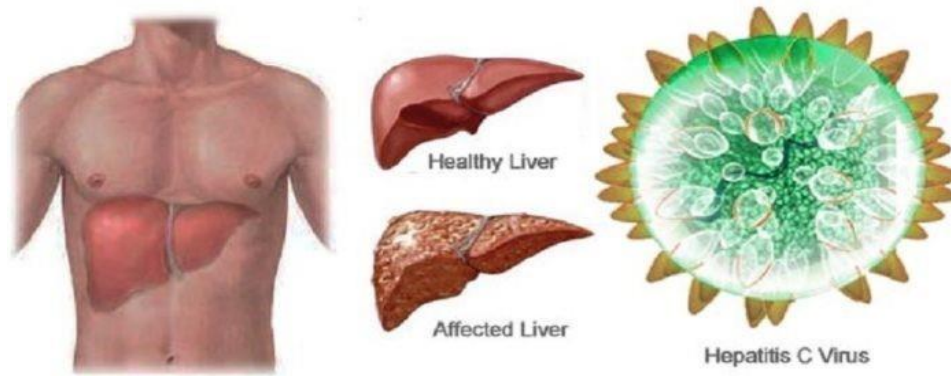
Date

Printed name of person taking part in the study

Name of person providing information to subject

Appendix G

HCV Recruitment flyer



Improving Hepatitis C Screening Rates through Bundle Interventions

Participants needed

Eastern Kentucky University DNP project

- Date 1/28/2023
- Site First Choice intermediate Care of McCreary Formerly Whitley Family Medical center
- Objectives assess Current Hepatitis C screening practices among providers. Refresher on Hepatitis C screening, detection, and treatment. Introduction of revised EMR tabs, lab options and medical treatment plan for HCV treatment.

Appendix H

SWOT analysis

<p>Strengths</p> <p>Increase providers' confidence in HCV screening guidelines. Increase early detection hence early HCV treatment. Decreasing health risk associated with Hepatitis and its sequela. User friendly lab template to easy HCV screening and labs associated with treatment</p>	<p>Weakness</p> <p>Decrease provider uptake with new EMR additions. Additional perceived work for staff and providers. Decrease patient acceptance of screening. Decrease patient compliance with follow-up labs and treatment.</p>
<p>Opportunities</p> <p>Improve screening of HCV within a rural clinic. Enhance HCV treatment in rural communities. Educate providers and nurses on HCV guidelines</p>	<p>Threats</p> <p>Patient refusing screening for HCV. Lack of available resources/referral for those patients with complicated HCV. Lack of approval for medication for HCV through insurance companies.</p>

Appendix I

Validation Instrument

Demographic survey

Variable	N=15	%
Gender Male Female Other		
Education Nursing (LPN, RN, APRN) Medical Osteopathic Other HCP (health care provider)		
Age 18–25 25–35 35–45 45–55 55–65 65+		
Time on job < 1 year 1–5 years 5–10 years Over 10 years		
How many patients do you estimate you see daily that may be at risk for HCV? < 1 1–10 10–20 20–30 > 30		

Self-Efficacy scale

N=15 Pre/post survey	5 Strongly agree	4 agree	3 Not sure	2 Disagree	1 Strongly disagree
I know the current HCV screening guidelines.					
I feel comfortable screening for HCV.					
I feel comfortable treating patients for HCV.					
I feel comfortable					

referring patients for HCV treatment.					
I feel my overall knowledge on HCV is strong.					

Note. Identify by number how you feel about hepatitis C screening and treatment (5 = strongly agree, 4 = agree, 3 = not sure, 2 = disagree, 1 = strongly disagree).

Appendix J
Descriptive Demographic

Variable	n=15	%
Gender		
Female	12	80
Male	3	20
Education		
Nursing- RN/LPN/APRN	12	80
Medical RT/CCMA	2	13.3
Osteopathic	1	6.7
Other HCP		
Age		
18-25		
25-35	7	46.7
35-45	3	20
45-55	3	20
55-65	2	13.3
65 +		
Time on Job		
< 1 year	3	20
1-5	1	6.7
5-10	3	20
10 <	8	53.3
How many HCV patients do you estimate you see daily that may be at risk for HCV?		
<1	1	6.7
1-10	8	53.3
10-20	5	33.3
20-30	0	0
> 30	1	6.7