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Improving Hepatitis C screenings in the 1945 to 1965 birth cohort in outpatient primary care

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Improving Hepatitis C Screenings in the 1945 to 1965 Birth Cohort in Outpatient Family Practice

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Abstract

Background: Hepatitis C virus (HCV) is a silent epidemic affecting a vulnerable patient population in our society. Among those considered high risk for having HCV are those individuals born between 1945 and 1965, termed the baby boomer population. Baby boomers are five times more likely to have and suffer mortality from HCV than any other patient population (CDC, 2018). HCV may not present with signs or symptoms until 20 to 30 years post contraction of the virus (CDC, 2018). In 2012, the Centers for Disease Control and Prevention (CDC) updated its recommendations for Hepatitis C screenings to include the baby boomer population (Guo & Sims, 2017). Despite the CDC recommendation, it is estimated that an average of 13% of baby boomers have been screened (Kasting et al., 2018). The purpose of this quality improvement project was to increase HCV screenings in the baby boomer population in outpatient family practice by providing clinical staff awareness of the need to screen.

Methods: A retrospective chart review was conducted by utilizing the Epic electronic health record (EHR) system, to determine the number of current patients born between 1945 and 1965 who had not been diagnosed or previously screened for HCV. Data was entered in "REDCap," a web application that supports data collection (REDCap, 2019). Patients were linked by a unique patient identification number. Patient data collected included; age, sex, year of birth, race, date of screening, zip code, HCV test result, insurance, visit type (lab versus provider), screened/not screened. If not screened, the reason is given if it was provided by the patient. Clinical nursing staff pre and post-test

results from the HCV education evaluation were uploaded in REDCap. The Plan, Do, Study, Act (PDSA) Cycle served as the framework for this 12-week project. The theoretical frameworks guiding this project were The Institute for Healthcare Improvement (IHI) Triple Aim and The Health Belief Model (HBM).

Intervention: HCV education was provided to clinical staff to detail the importance of and evaluate their basic knowledge of HCV facts and screening in the 1945 to 1965 patient population. Patients who had not been previously screened were identified on the provider and lab schedules. HCV education was provided to patients at the clinical visit. If the patient consented, an HCV antibody screening test was ordered.

Results: HCV screenings increased 82% for the project period. HCV screening rates in the baby boomer population for the practice increased from 31% to 42% by project end, suggesting that the clinical staff's educational intervention increased the awareness of HCV, thus increasing screening rates for the practice. Screening rates decreased monthly following the educational intervention, suggesting that there may have been decreased motivation by staff to screen and additionally indicating the need for re-education at regular intervals.

Background

Hepatitis C is a blood borne viral infection of the liver that occurs as an acute or chronic infection. Approximately 15% to 25% of those who contract acute Hepatitis C will spontaneously clear the infection (Centers for Disease Control and Prevention [CDC], 2018). The remaining 75% to 85% with acute infection progress to chronic infection (CDC, 2018). Without treatment, Hepatitis C can cause damaging effects to the liver. According to the CDC (2018), approximately 10% to 20% of those who develop a chronic infection, will develop cirrhosis over 20 to 30 years, and 1% to 5% will suffer mortality from liver decompensation or liver cancer. Approximately, 2.7 to 3.9 million people have chronic Hepatitis C in the United States (CDC, 2018). The delay between acute and chronic infection can be up to 20 to 30 years (CDC, 2018). In 2007, mortality from HCV surpassed that of HIV in the United States (Galbraith et al., 2014). In 2017, The CDC reported that more Americans were killed by Hepatitis C than any other infectious disease (CDC, 2017). The incidence and prevalence, along with mortality rate, mean that HCV is an important challenge for health professionals to address with all Americans. Some persons are at greater risk and require specific focus.

Epidemiologic data obtained from The National Health and Nutrition Examination Survey from 1999 – 2008 found that baby boomers (those born between 1945 and 1965) accounted for nearly 80% of all HCV cases in the United States (Guo & Sims, 2017). The National Health and Interview Survey from 2013 – 2015 found that HCV screenings in the baby boomer birth-cohort were only at 13% (Kasting et al., 2018). The baby boomer birth-cohort is five times more likely to have HCV than the general population (CDC, 2018). Approximately three out of four individuals with HCV are born

between 1945 and 1965, in other words for every 100 patients diagnosed with HCV, 75 are baby boomers (CDC, 2016). HCV was first known as non-A, non-B hepatitis in the 1970s as a cause for posttransfusion hepatitis (Gupta, Bajpai, & Choudhary, 2014). It was not until 1989 that HCV was discovered (Gupta et al., 2014). Baby boomers were thought to be exposed to HCV by blood transfusions that occurred prior to 1992 before safe screening practices were initiated. Prior to 1992, blood transfusions carried an HCV risk of 15 to 20% per each unit transfused (Gupta et al., 2014). The baby boomer population is now reaching the most prevalent stages of chronic HCV sequelae (Virginia Department of Health [VDH], 2017). Most cases of chronic HCV were found to be in those aged 50 and older (CDC, 2018). In 2015, nearly 20,000 Americans, most of whom were aged 55 and older, died from HCV related causes (CDC, 2017). In 2014, this birth-cohort suffered 19,659 HCV-related deaths after presenting with advanced disease from decades of being infected (Shaffer & Ahuja, 2017). Nationwide the baby boomer generation is at risk for HCV.

In addition to the national HCV needs, Hepatitis C virus infection is a growing epidemic, specifically in Virginia. In 2012, there were 6,600 reported cases of acute and chronic Hepatitis C reported to the Virginia Department of Health (VDH, 2017). In 2015, the VDH received 8,043 newly reported cases of acute and chronic Hepatitis C (VDH, 2017). In 2017, HCV was the most prevalent disease reported in over half of the state of Virginia (VDH, 2017). In 2017, this number increased to 11,555 cases of acute and chronic Hepatitis C reported to the Health Department in Virginia, but the actual number is thought to be even higher, as many cases go unreported (VDH, 2017). In 2014, there were 335 deaths in Virginia related to HCV (VDH, 2017). According to the

Virginia Electronic Disease Surveillance System (VEDSS), there were just over 40 cases of acute HCV and just over 6,000 cases of chronic HCV in 2013 (VDH, 2016). These numbers doubled by 2017 with nearly 80 acute HCV cases and close to 14,000 chronic HCV cases (VDH, 2018).

Review of Literature

A systematic literature review was conducted in September of 2017 and updated in October 2018 to identify studies that performed Hepatitis C testing for the baby boomer birth-cohort. Searches were conducted for implementation of screening processes, both inside and outside of the primary care office that may have proved successful or provide prospects for future testing. Comprehensive literature searches were conducted utilizing Google Scholar, Cumulative Index to Nursing and Allied Health (CINAHL), CINAHL PLUS, Medline, Medline Plus, Medscape, UpToDate, and PubMed. Additional searches included the Centers for Disease Control and Prevention, Virginia Department of Health, and The US Preventive Services Task Force website. Key words used to search included; *Hepatitis C, Hepatitis C Screenings,* combined with "and" to the terms *birth cohort* or *implementation* or *implementation strategies* or *barriers* or *provider barriers*. Article abstracts were reviewed for inclusion. If related to outpatient implementation or review of testing strategies in this birth-cohort, they were included. Notable articles were excluded if they focused on hospital screenings, personal characteristics of those with Hepatitis C, or those already diagnosed with Hepatitis C and receiving treatment. A total of 30 articles were reviewed.

In 2010, the Institute of Medicine (IOM) recognized Hepatitis C as a growing public health problem (Guo & Sims, 2017). In 2012, the CDC updated their HCV

screening guidelines from risk-based to birth-cohort screening (Guo & Sims, 2017). In 2013, the U.S. Preventive Services Task Force (USPSTF) supported birth-cohort testing and upgraded HCV from a grade D to grade B recommendation (USPSTF, 2016). The USPSTF grade B recommendation states, "there is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial" (USPSTF, 2018). A grade B rating is suggested for practice. The birth-cohort screening recommendation was implemented to increase screenings and identify undiagnosed HCV in this high prevalence patient population (Guo & Sims, 2017). Despite these recommendations, screenings of this birth-cohort are only at 13% (Kasting et al., 2018).

It is estimated that a one-time screening in this birth-cohort will identify 1.1 million infections (Guo & Sims, 2017). Identification and treatment of these individuals can preclude more than 120,000 HCV-related deaths (CDC, 2018). Guo & Sims (2017) estimated the HCV epidemic will peak in the United States between 2030 and 2035. It is estimated that between 2030 and 2035, there could be 35,000 HCV related deaths, 25,000 cases of decompensated cirrhosis, and 15,000 cases of hepatocellular carcinoma caused by HCV annually (Guo & Sims, 2017).

There is a strong recommendation by USPSTF to screen for HCV in primary care (USPSTF, 2016). Birth-cohort screening in primary care is thought to be more efficient due to continuum of care by primary care providers and linkage to treatment (Konerman et al., 2017). Conversely, there is limited data regarding HCV screenings in primary care. Konerman et al. (2017) implemented a best practice alert (BPA) in the EHR to increase HCV screenings in the baby boomer population in primary care. Screening rates increased from 7.6% to 72% after implementing a BPA with 53 newly diagnosed cases

referred for specialty care (Konerman et al., 2017). Litwin et al. (2011) used clinical reminder interventions to increase HCV testing rates resulting in birth-cohort testing increase from 6.0% at baseline to 9.9% during the testing period in primary care (Litwin et al., 2011). Madhani, Aamar, and Chia (2017) used education dissemination to increase birth-cohort screenings in their resident continuity clinic. Birth-cohort screenings increased from 8.5% at baseline to 34% post intervention (Madhani et al., 2017). Al-hihi, Shankweiler, Stricklen, Gibson, and Dunn (2017) implemented an electronic medical record alert for birth-cohort testing in primary care. In this example, birth-cohort screenings increased from 30% at baseline to 55% post-intervention (Al-hihi et al., 2017).

Instituting a BPA combined with ongoing HCV education for project adherence was shown to be effective. Al-hihi et al. (2017) encouraged nursing involvement with protocols for screening and placing fliers in visible view for patients. Al-hihi et al. (2017) noted the increased rates by a best practice intervention but added that nursing involvement and patient engagement would further enhance success of birth-cohort screenings. Instituting a BPA in the EHR proved effective in the study by Nitsche, Miller, Giorgio, Berry, and Muir (2018). However, there were improved results in testing when the BPA was combined with ongoing feedback and education to providers about their clinical performance regarding HCV screenings (Nitsche et al., 2018). Pilger and Costanzo (2018) stated that nurses can help overcome HCV screening challenges by educating patients on the importance of screening. Education can dispel myths and misconceptions that the patient may have (Pilger & Costanzo, 2018). Introduction by nursing staff about the importance of screening may be all the patient needs to agree to testing. Patients may neither be aware of nor think that testing is needed for them if it is

not brought to their attention (Pilger & Costanzo, 2018). Discussing HCV testing during lab visits could possibly increase screenings since the patient is already onsite (Pilger & Costanzo, 2018).

There have been barriers to screening in primary care. Notable barriers include; access to screenings, patient and provider awareness of screenings, attitudes toward screenings, patient office visit time, and the overwhelming patient load in primary care (Jemal & Fedewa, 2017; Jewett et al., 2015; Konerman et al., 2017; Kruger et al., 2017; Southern et al., 2014). Konerman et al. (2017) noted that even though a BPA increased HCV screenings 5-fold by decreasing the burden of primary care providers to remember to screen, there has been "alert fatigue" reported in the past. In primary care, providers may have automatic prompts that present upon entering a patient's chart. These prompts may alert the provider of best practices or screenings that should be completed. Providers can potentially become overwhelmed with these alerts due to limited office visit time and the multiple medical conditions that patients can present with (Konerman et al., 2017). The BPA in the Konerman et al. (2017) study was designed to reduce the possibility of "alert fatigue" by incorporating feedback from the primary care provider that would enable testing to be more feasible in practice (Konerman et al., 2017). Nitsche et al. (2018) noted that EHR reminders can add to provider burden in primary care. Southern et al. (2014) noted that multistep tasks to determine patient screening status were unlikely to be performed by physicians; therefore, if this task was placed outside of the patient-physician visit it was more likely to be completed. Screening rates declined in the Southern et al. (2014) study, despite continuous reminders suggesting that adherence was associated with the attitudes and perhaps the comfort level of those directly involved

with screening practices. Those who are tested require adequate follow up in the event the initial screening test is positive, however, many of those who test positive are lost to follow up care (Konerman et al., 2017).

Despite some gaps, there was sufficient evidence in the literature to guide a quality improvement project. There was strong evidence of a need for screening and indications that screening should occur in the primary care setting. Best practice alerts and nursing education were identified as potentially helpful, and barriers to success have been identified.

Theoretical Model

The primary care setting provides continuity of care to all patient populations. The Institute for Healthcare Improvement (IHI) Triple Aim and The Health Belief Model (HBM) are theoretical frameworks that combine an integrative approach to care and guides teaching of patient populations (IHI, 2018; Rural Health Information Hub [RHIH], 2018). The Triple Aim is an integrative approach to improve care, the health of our populations, and reduce per capita cost (IHI, 2018). The HBM was used to guide the thought process and approach to learning for the patient (RHIH, 2018).

The HBM is based on factors that predict health behavior participation. An individual's perceived perceptions, modifying factors, and the likelihood that one will perform the action are the premises of this model (Syx, 2008). The HBM is comprised of six concepts, including; perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Curran, 2014).

The HBM guided project planning for patient education. It is a framework that uses one's desire to avoid a negative health consequence as the motivator to

participate in a positive health action (Behavioral and Social Sciences Research, n.d.). Birth-cohort testing involves a one-time HCV screening of the baby boomer population. Hepatitis C is a negative health consequence. The desire to know if Hepatitis C infection is present, served as a motivator for the baby boomer population to participate in screenings. Perceived susceptibility was introduced to the patient by making them aware of their risk. Perceived severity, regarding risk and consequences was explained to ensure understanding of how Hepatitis C could be affecting them. Perceived benefits of screening and treatment was explained to ensure their understanding of how Hepatitis C is identified and managed. Perceived barriers of screening was addressed by clinical staff, based on the patients' behaviors, comments, and questions. The cues to action were based on patients' decision to be screened. If the patient agreed, they were screened. If they did not agree, they were provided information based on their learning need.

Clinical staff have a genuine concern for patient well-being. The rising number of Hepatitis C virus infections combined with the notable risk to this patient population were the foundation for professional readiness and motivation.

Project Purpose/Specific Aim

The purpose of this project was to increase HCV screenings in the 1945 to 1965 birth-cohort in an outpatient family practice, a primary care setting, in Virginia by providing HCV education and alerts to clinical staff, and thus increasing awareness of Hepatitis C and screening recommendations of this birth-cohort. Specifically, the aim of this project was to increase Hepatitis C virus screenings in the 1945 to 1965 birth-cohort in outpatient family practice by 30% from the practice baseline, post project implementation.

Sample

The entire clinic population of patients born between 1945 and 1965 that came in for appointments during the study time frame were screened for potential participation. A total of 899 patients from this birth-cohort were seen for either lab or provider appointments during the study period. Of the 899 patients evaluated, a total of 353 were found to be previously screened resulting in 545 patients who yet required screening.

Project Setting & Study Methods

Setting

This project took place at an outpatient family practice clinic, a primary care setting, in Southwest Virginia. The outpatient family practice clinic is a non-profit satellite clinic with 5,000 active patients. The clinic employs four providers and six clinical nursing staff, including; two Doctor of Osteopathic Medicine providers, one Doctor of Medicine, one Family Nurse Practitioner, two Registered Nurses, three Licensed Practical Nurses, and one Certified Medical Assistant, who also serves as the Laboratory Technician. The practice is considered a medical home clinic that provides medical care to children, starting at birth to the geriatric population. For purposes of this project, the focus was on those individuals born between 1945 and 1965.

Intervention

The intervention utilized the Plan, Do, Study, Act (PDSA) cycle in two phases, guided by the aforementioned theoretical frameworks and models (IHI, 2018). Project study period started on May 28, 2019 and ended on August 12, 2019, for a total of 12 weeks. **Plan –** The "plan" phase of the PDSA cycle began when a provider recognized the potential clinical issue by observing trends in the local clinic setting. Next, a

literature review was completed, which served as the basis for a quality improvement project proposal. Approval for the project was granted by the Institutional Review Board at the participating institution and James Madison University Investigational Review Board. Local HCV information also guided the planning phase. During the planning phase it was identified that there were no protocols or consistency among providers within the outpatient practice setting to screen the 1945 and 1965 patient population for this problem. Also identified was that Hepatitis C Virus screening recommendations were not mandatory practice. Clinical nursing staff, providers, and patients were stakeholders in this project. Also, during the planning phase, baselines were established. The institution's clinical research and development team assisted in data collection and development of the data collection tool for statistical analysis. Prior to implementation of the PDSA cycle, a retrospective chart audit was conducted by the facility's research and analytics team to determine the number of active baby boomers in the clinic from June 1, 2015 to December 31, 2018 that needed to be screened. New patients who joined the practice after December 31, 2018, who had not been screened were included in the study as well. Those previously screened for HCV, had a diagnosis of HCV, or previous lab test for HCV were identified but excluded from HCV education. Finally, educational materials were evidence based from the CDC and VDH. Materials included; Fliers from the CDC regarding HCV in the baby boomer population, general HCV information from the CDC, graphs showing the prevalence of HCV in the local region and state of Virginia, and an HCV information sheet from the Virginia Department of Health in Appendix A, B, C, D, E. A pre/post-test was created based on the educational materials to test clinical nursing staff knowledge about HCV.

Do - The "do" phase of the PDSA cycle started with an HCV educational intervention conducted for clinical staff and a one week "test" of the project. The HCV education in-service was conducted for clinical staff on May 23, 2019. HCV education included; HCV prevalence, screening recommendations, local/regional statistics, project materials, and initiation of project implementation. Education materials were obtained from the Centers for Disease Control and Prevention and the Virginia Department of Health (Appendix A, B, C, D, E). A pre and post-test based on the information provided, was given to clinical nursing staff to evaluate their knowledge of HCV before and after the in-service. Project guidelines were disseminated to staff and displayed in the nurse's station throughout the project process. Information fliers obtained from the CDC website for the screening of HCV in those born between 1945 and 1965 were displayed in each patient room, lab, waiting and triage areas, for patients to observe (Appendix A). Information provided to clinical staff was based from the CDC and the VDH (Appendix A, B, C, D, E). Information from the CDC included; general Hepatitis C "know more hepatitis" information from the CDC website (2018), Hepatitis C General Information Fact Sheet (2015), and Hepatitis C: Why Baby Boomers Should Get Tested Fact Sheet (2016). Information from the VDH, included; Hepatitis C Fact Sheet (2018) and Chronic Hepatitis C data (2017), which showed the prevalence of Hepatitis C in the locality and state of Virginia. HCV information was disseminated from clinical staff to the baby boomer population, who were not previously screened. Data was extracted from the EPIC electronic health record system. The provider and lab schedules were reviewed daily to identify patients born between 1945 and 1965 by year of birth. A list of patients meeting inclusion criteria was identified and provided to the primary nurse for the

provider or the laboratory technician. The primary nurse or laboratory technician provided HCV education to the patient and asked them to be screened. If the patient agreed, a lab order for the Hepatitis C antibody was placed.

The "test" of the project included the principle investigator and Registered Nurse. The "test" of the project began on May 28, 2019 and continued through May 31, 2019. The purpose of this cycle was to test the flow and process of the project before it was expanded out to involve all four providers in the office. Patients born between 1945 and 1965 were identified on the principle investigator's schedule. A review of Epic determined the patient's HCV screening status. Patients who did not have a recorded HCV screening test in their chart history were provided HCV education by the nurse, advised of their HCV risk, and asked if they wanted to be screened. If the patient agreed to be screened, a lab order for the Hepatitis C antibody was placed.

Study - The "study" phase of the PDSA cycle, was an analysis of the "do" phase. During the study phase, the test phase of the project was reviewed to determine if there were any issues, process, or flow changes that needed to be changed or implemented prior to advancing to the next phase. It was determined that there were no issues or changes that needed to be implemented prior to the next phase.

Act - The "act" phase (Phase 2) of the PDSA cycle was expanded to include the three physicians in the office and the lab. This phase was initiated on June 3, 2019 and continued through August 16, 2019 for a total of 12 weeks.

Clinical staff were given verbal reminders about the project daily. An identified list of patients who were to present for the day were enlisted with the primary nurse of the provider and lab technician. An outline of the project and HCV fliers were posted in

the nurse's station, lab, waiting rooms, and patient care areas. These measures were also to ensure ongoing awareness of the project and the need for HCV screening in the baby boomer population. Weekly meetings were held with the office clinical team leader and office manager to review the project process.

Financial Cost

On June 2, 2014, The Department of Health and Human Services, Centers for Medicare and Medicaid Services (CMS) approved a one-time screening test for adults born between 1945 and 1965 who are enrolled under Medicare Part A and B (CMS, 2015). Coverage for Hepatitis C testing must be ordered in the primary care setting by a primary care provider who is a Medicare provider and coded with the diagnosis code Z11.59 (CMS, 2015). Financial costs were considered prior to project implementation. Financial coverage for HCV screenings were verified with insurance payors prior to project implementation. Patients who were self-pay were advised of the costs they would incur if they chose to be screened. No extra staff or extended resources were needed. No overtime expenses were required or incurred by staff. There was no additional visit cost for the patient. Patients were informed of the costs prior to testing. The testing and processing fee charged by the participating laboratory for the Hepatitis C antibody lab test in the office was $56.00. The lab collection fee was $16.00 charged by the institution. The institution allowed a 10% discount for self-pay patients, who were paying on the same day, resulting in $14.40 for self-pay patients. The cost incurred was covered by participating insurance payors.

Statistical Analysis

Analysis of the project data was conducted following completion of the study. Information that was uploaded into the REDCap system to categorize data was extracted for statistical analysis (REDCap, 2019).

Participant Description

Total number of patients seen during the time frame was counted. Number of active patients were counted. Number of patients seen by day and week were averaged. Frequencies of geographical zip codes were identified for patients seen were calculated. Frequencies were computed to determine the race of those screened. Central tendency measures were used to calculate the ages of those who were screened and were separated by positive and negative testing results. Frequencies were used to describe the type of insurance carried by those who were screened.

Pre/Post Project Screening Rates and Results

The total percent of patients screened at study end was compared to the total number of patients screened ever prior to the study.

ANOVA Procedure and Duncan's post hoc was used to evaluate and compare the number of screening tests obtained during each month of the study to determine if there were significant differences among and between the months of testing.

Fisher's Exact Test was used to determine the statistical significance in screening status among patients seen for a lab visit versus those seen for a provider visit.

Reasons not Screened

Frequencies were used to calculate the number and percent for reasons people gave for not being screened. This was completed for those who listed a reason.

HCV Screening Rates: Lab verses provider visit

Frequencies were used to calculate the number of patients who agreed to be screened, and those not screened, when seen at a lab visit and when seen for a provider visit. A Chi-Square with Fisher's Exact Test was used to determine if there were significant differences in those who agreed to be screened depending on the type of visit (lab as compared to provider).

Clinical Staff Education

The educational intervention included a 10-question pre and post-test that was given to all six clinical nursing staff. The pre and post-test was given to evaluate the clinical nursing staff's knowledge of HCV before and after the in-service. Frequency testing was used to evaluate pre and post-test results.

Findings

The entire clinic population of patients born between 1945 and 1965 that came in for appointments during the study time frame was screened for potential participation. A total of 899 persons from this birth-cohort were seen for either lab appointments or provider appointments during the study time period. Of the 899 patients seen, a total of 353 were found to be previously screened resulting in 545 patients who yet required screening. Of the 545 total eligible patients for screening, 254 were not screened for various reason, 288 were screened (n=284), or were scheduled to be screened (n=4) by study end. There were three participants seen during the "test" phase, that were not included in the significance testing.

Of the 284 persons who agreed to be screened and completed screening prior to study end, government insurance was the primary payor. Government insurance included;

Medicare = 132 (46%), Medicaid = 5 (2%), and Veteran's Affairs = 1 (<1%), for a total of 138 persons with government insurance (49%). Commercial insurance carriers were the second largest primary payor for patients who agreed to be screened, with a total of 136 patients (48%). Six patients (2%) were self-pay. Four patients (1%) did not have insurance listed.

Pre/Post Project Screening Rates and Results (Project Aim)

During the time frame, 899 patients were seen in the clinic who met the age range eligibility criteria. Of the 899 patients seen, a total of 353 had been screened prior to the project leaving 545 potential patients for screening. During the 12-week project period from May 28, 2019 to August 16, 2019, 288 patients were screened (n = 284) or scheduled to be screened post study (n = 4) for HCV. Although there is some potential that members of the 4 persons scheduled to be screened post study did not actually receive screening, for the purpose of these results all persons screened or scheduled for screening at study end are considered screened.

There are 2,612 total patients from within the baby boomer generation who are recorded as active patients in the clinic. The baseline screening rate for patients seen in the clinic prior to the intervention was 30.97% (n=809) (Figure 1). This number indicates the total number of patients seen in this clinic and screened at any location in the health system, and thus may indicate a higher baseline screening rate than the actual clinic rate only. A 30% increase from the baseline screening rate puts the goal of screened patients at 40.26% (Figure 1).

At study end the total rate of eligible patients screened was 42.19% (n=1102). Five patients were screened for HCV during the study time period but were not seen by

the clinic. Of the 545 patients eligible to be screened during the study period, patients who had a visit and no prior screening 288 (52.84%), were screened or scheduled to be screened by study end. Of the 899 patients seen during the study, 353 were previously screened and 288 were screened or scheduled to be screened by study end. The number of new screens (n=288) divided by the number of patients seen who were previously screened (n= 353) demonstrates an 81.59% increase in screenings rates among those seen during the study period.

Four tests results were not returned by study end; thus 284 test results are known for during the study period. Of the 284 persons with returned tests results, there were a total of 134(47%) who identified as females and 149(52%) who identified as males were screened and one data point was missing. Of the 284 returned tests, 6(2%) resulted in abnormal testing and 277(98%) resulted in normal test results and one missing data point is missing. Of the six tests that were abnormal, one patient (17%) identified as African American and five patients (83%) identified as Caucasian. Of the 6 abnormal tests, the mean age was 62 (Range 55 – 74). The normal test results showed similar age mean, 64, and range (52-74).

There was a significant difference ($p = 0.008$) in the daily screening rates by month. Duncan's post hoc analysis showed that screening rates were significantly higher during days in June (6.55/day) as compared to days in July (4.77/day) and August (3.75/day). There was not a significance in testing rates between July and August, although a downward trend in screenings per day continued (Figure 2).

Reasons not screened

The majority of patients who declined testing did not give a reason. There were clear reasons for not being tested for 126 patients. The most common reason for not being tested was that the patient was acutely ill and thus too ill to discuss (n=61). Some patients (n=26) reported being tested in the past even if there was no record of them being tested in the health record. Other patients (n=16) declined because of not wishing to have HCV labs only drawn. Six patients declined because they would need to pay for the test out of pocket. Some patients (n=17) were not tested because of nurse oversight.

HCV Screening rates: Lab versus provider visits

For the 284 patients with test results by study end plus the 254 seen during the study and not screened, and recalling that 3 patients were not included, there was a statistically significant ($p<0.001$) higher number of patients who agreed to be screened during lab visits as compared to during provider visits. Among the patients who were scheduled for a clinic lab visit 84(62%) agreed to be screened and 18 (13%) were not screened (Figure 3). Of the patients scheduled for a provider visit, 200(26%) agreed to be screened and 236(31%) were not screened (Figure 3).

Clinical Staff Education

Evaluation of the pre and post-tests showed a trend in improvement of HCV knowledge. Six clinical nursing staff (n=6) participated in a 10-question pre and post-test based on their HCV knowledge before and after the in-service. The mean number of pre-test correct answers was 9. The mean number of post-test correct answers was 10. Overall, clinical nursing staff were found to have strong knowledge of HCV both prior to and after the study as evidenced by pre and post-test results. Due to the small sample size

of nursing disciplines, comparison testing between education levels and HCV awareness could not be further investigated.

Discussion

Development and implementation of this project was due to the increasing prevalence of HCV in our locality (VDH, 2017). According to the CDC (2018) baby boomers are at high risk for long term effects related to HCV while many are unaware of their risk. Based on the literature, the study utilized clinical nursing staff to educate the birth-cohort at each office visit (Pilger & Costanzo, 2018; Al-hihi et al., 2017; & Madhani et al, 2017). HCV fliers obtained from the CDC were placed in patient care areas as suggested by Madhani et. al. (2017). This strategy proved to be effective in acknowledging the HCV issue. Staff noted numerous inquiries from patients wanting to know more information about HCV after reading the fliers in the patient care areas. This alone helped to facilitate the discussion.

This study was based largely on the recommendation by Pilger & Costanzo (2018) to utilize nursing staff to promote HCV screenings by educating patients. It was suggested that the combination of education and support by nursing staff can help to dispel myths and misperceptions of HCV and testing (Pilger & Costanzo, 2018). Patients in the practice seem to value the nursing staff. Many were long time patients in the clinic and had a rapport with the clinical staff entrusted with their care. Nurse-patient engagement at triage was an opportune time for nursing staff to discuss HCV. The assumption proposed by Pilger & Costanzo (2018) that patients may readily agree to be screened if introduced to the topic of HCV was supported by the study. Most patients

readily agreed to HCV screening when they were told of their HCV risk just by being born in the baby boomer cohort.

HCV screenings increased during the study period (Figure 1). Clinical nursing staff's knowledge of HCV was found to be strong based on pre and post-test results. Pre and post-test results showed a minimal trend in improvement, but minimal. It is inconclusive to say that clinical staff education improved HCV screenings. It can be debated that increasing the awareness of HCV of staff increased screenings. Pilger & Costanzo (2018) stated that the discussion of HCV screening recommendations may be the only mechanism needed to increase screenings.

HCV screenings during the lab visit proved to be effective. Pilger & Costanzo (2018) suggested that HCV screenings may increase if discussed during lab visits. Lab visits are not held to the same time restraints as provider visits, therefore, clinical nursing staff can discuss health topics. Incorporating HCV screening discussions were top priority during the study period, making this an opportune time for HCV patient education. The data showed that patients were more likely to have screening tests obtained when they presented for their lab visit (Figure 3). This coincided with the fact that patients declined screening because they had already had lab work obtained. Patients were willing to return to have this done with their regular lab work. Patients were receptive to being screened when they learned that testing was by blood work, which they were already there to have drawn. This was evident by patients' refusal of testing at the time of provider visit due to not having labs drawn. Providers placed an HCV screening lab order with the patients next lab visit.

Screening rates were higher at the start of the study, versus the end of the 12-week study period (Figure 2). July and August screening rates were statistically the same. Southern et al. (2014) reported decline in testing adherence during their study period citing the decline was mostly due to clinical staff attitudinal barriers. It is speculated that staff were more motivated at the start of the study versus the end of the study as evidenced by nurse oversight as a reason for not being screened. The PDSA cycle served as a step-by-step guide and evaluation in the project process. It was important to maintain continuous feedback with staff members involved in the project at each cycle of the study. Staff were given verbal reminders and lists of patients to be screened each day by the project investigator.

It has been noted by previous literature that an EHR reminder substantially increased screenings. EHR alerts proved to be effective in the Al-hihi et al. (2017); Litwin et al. (2011); Konerman et al. (2017); and Nitsche et al. (2018) articles. There has also been literature that noted EHR was not enough. Notable articles that used education with or without EHR included; Litwin et al. (2011); Madhani et al. (2017); Nitsche et al. (2018); Pilger & Costanzo (2018). Combining staff education with EHR alerts can be more effective to increase screenings, however, "alert fatigue," was mentioned as a possible barrier to HCV screenings in Konerman et al. (2017). Alert fatigue can be experienced among care providers, who are already overwhelmed with alerts and management of numerous chronic conditions, in an already time-limited patient visit. These alerts can be overridden and ignored. For this reason, it was chosen not to implement with this study.

Financial costs for a one-time screening test is no comparison to the financial burden that can be incurred by undiagnosed HCV. Galbraith et al. (2014) analyzed national databases for evaluation of national healthcare utilization by those with a diagnosis of HCV or liver-related complication (Galbraith et al., 2014). Baby boomers infected with HCV accounted for 72.5% of outpatient ambulatory visits, 67.6% of emergency department visits, and 70.7% of inpatient admissions (Galbraith et al., 2014, p. 755). Xu, Tong, & Leidner (2014) evaluated hospitalizations and costs in relation to liver disease. The largest cohort utilizing inpatient healthcare services from 2004 to 2011 were those born between 1945 and 1965 (Xu et al., 2014, p. 1733). The percent of baby boomers hospitalized due to liver related issues increased from 68.7% in 2004-05 to 77.3% in 2010-11 (Xu et al., 2014, p. 1732). Inpatient costs due to HCV in 2010-11, was estimated to be at $3.5 billion (Xu et al., 2014, p. 1732). More recently, this number is estimated to be at $15 billion annually (Xu et al., 2014, p. 1732). This is thought to be due to the increased aging and the developing onset of severe liver disease.

The Department of Health and Human Services, Centers for Medicare and Medicaid approved a one-time screening test for baby boomers enrolled under Medicare Part A and B, if it is ordered by a primary care provider participating with Medicare in a primary care office (CMS, 2015). An almost equal percentage of government and commercial insurances were noted to be the primary payors for the patient population in the study. Government insurance (Medicare, Medicaid, and Veterans Affairs) were the predominant payors in the study 49%. Commercial insurance payors were at 48% Participating insurance payors covered the cost of testing. Self-pay patients comprised 2% Cost of screening equaled a range of $70.40 to $72.00.

The study found six patients to be positive for HCV, who did not know they had it. They would not have known unless they had been screened. Of the patients screened, the majority were Caucasian males, average age of 62. Statistically there was no difference between gender in percentage screened. Average age of all patients screened was 64. Five of six abnormal results were males. Average age of all patients with positive screens were 62.

The study followed the CDC (2018) and The USPSTF (2016) recommendations to identify and screen the baby boomer population in primary care to find undiagnosed HCV due to continuum of care provided by primary care providers. The six patients who were identified and found to be positive, can now be referred for treatment. This one-time screening test prompted by this study may have ultimately saved their lives.

Even though, no BPA was not used in the study, the project proved to be successful. HCV screenings of the baby boomer population increased by 82% in a 12-week time frame. By project end, the total number of baby boomers screened for the practice increased from 31% to 42%

Barriers

The type of visit, patient perception, testing location, and staffing issues were barriers encountered during the study period. Some of the barriers encountered during the study were echoed in previous articles researched for this study that included; access to screenings, patient and provider awareness of screenings, attitudes toward screenings, patient office visit time, and the overwhelming patient load in primary care (Jemal & Fedewa, 2017; Jewett et al., 2015; Konerman et al., 2017; Kruger et al., 2017; Southern et al., 2014).

Providers and clinical staff were very receptive to implementing the project. Providers and clinical nursing staff in the practice care about the health and well-being of their patient populations. They were willing to take the necessary steps to take care of their patients. The project was developed on the idea that nursing staff would provide HCV education to the patient. Unfortunately, it is unclear if this took place at each patient encounter.

Given the number of nurse oversights, nursing staff may have been somewhat of a barrier to testing. Nursing staff seemed to have a "project fatigue," toward the end of 12-week period. There were oversights of patients noted, even though there were fliers and daily reminders of the project. Patient screenings missed by nurses, could have been caught by providers so it can be surmised that providers relied on nursing staff to ensure screening was completed and did not pursue this any further.

Some nursing staff did not actually order the HCV screening test. They either told the provider or pended the test, instead of submitting the order. Al-hihi et al. (2017) noted the addition of written protocols would allow nursing staff to place orders for HCV screenings. A written protocol was not developed for clinical nursing staff for this project. It was verbally stated to them they could place the order. It was later learned that some staff members were hesitant to place the order even if it was verbally understood they could. Providers may have assumed that nursing staff provided HCV education and HCV testing was ordered, or patient refused if not communicated otherwise. Providers may have overlooked HCV discussions as well if there were other pressing conversations to have at the visit given any time restraints, though this can only

be speculated. HCV discussions were found not to be appropriate during certain patient encounters due to the nature of the visit.

Visit time did not necessarily seem to be a factor in the study based on nurse/provider feedback. HCV patient education started at triage. Nursing staff reported minimal questions asked by patients. Patients often agreed when nursing staff introduced the topic of HCV and asked them to be screened. Patients readily agreed when they were told screening was by lab draw.

Patient perception was a barrier to testing. The majority of patients who were not screened, declined without providing a reason. Some patients reported that if they had HCV, they did not want to know. The type of visit the patient presented for was a barrier to testing. If patients were acutely ill or encounters presented in which it was not appropriate to discuss HCV, screenings did not occur. Some patients stated they had been tested in the past, however, this could not be verified.

Timing of the study proved to be a factor due to regular staff being on vacation and float staff being present. Float nurses were not familiar with the process and may have not provided education to those who needed to be tested. Patient list of those who needed to be screened were overlooked if the primary nurse or the provider was not present, or a different clinician was in the lab. Steps were taken to ensure all staff members presenting for the day were notified of the process. It is unclear if adherence was followed at its entirety.

Other factors presented as barriers in the study. Provider call-ins resulted in patients being rescheduled and may have been missed during the study period. Lack of

insurance was a small barrier to screening. Self-pay patients or those with restrictive insurances did not want testing that they felt was "unnecessary." Even though education was provided about HCV there were still some patient perceptions that did not change.

Limitations

This project was implemented in one small outpatient practice setting with only six clinical nursing staff and four providers. This project may be more difficult if carried out in a larger setting with more staff members, unless there are other measures put into place to avoid any missed screenings. Project time was limited to 12-weeks. It is difficult to know what further outcomes would be possible without extending the project time. Timing of the project may be important as well. Unfortunately, the project took place in the summer months while staff members who would have normally been present, were on vacation. There were many float nurses that patients were not use to. Float nurses were unaware of the process and the patients, which may have impeded screenings. The practice has a large Caucasian population, baby boomer, and geriatric population which may have skewed the race and age findings.

Conclusion

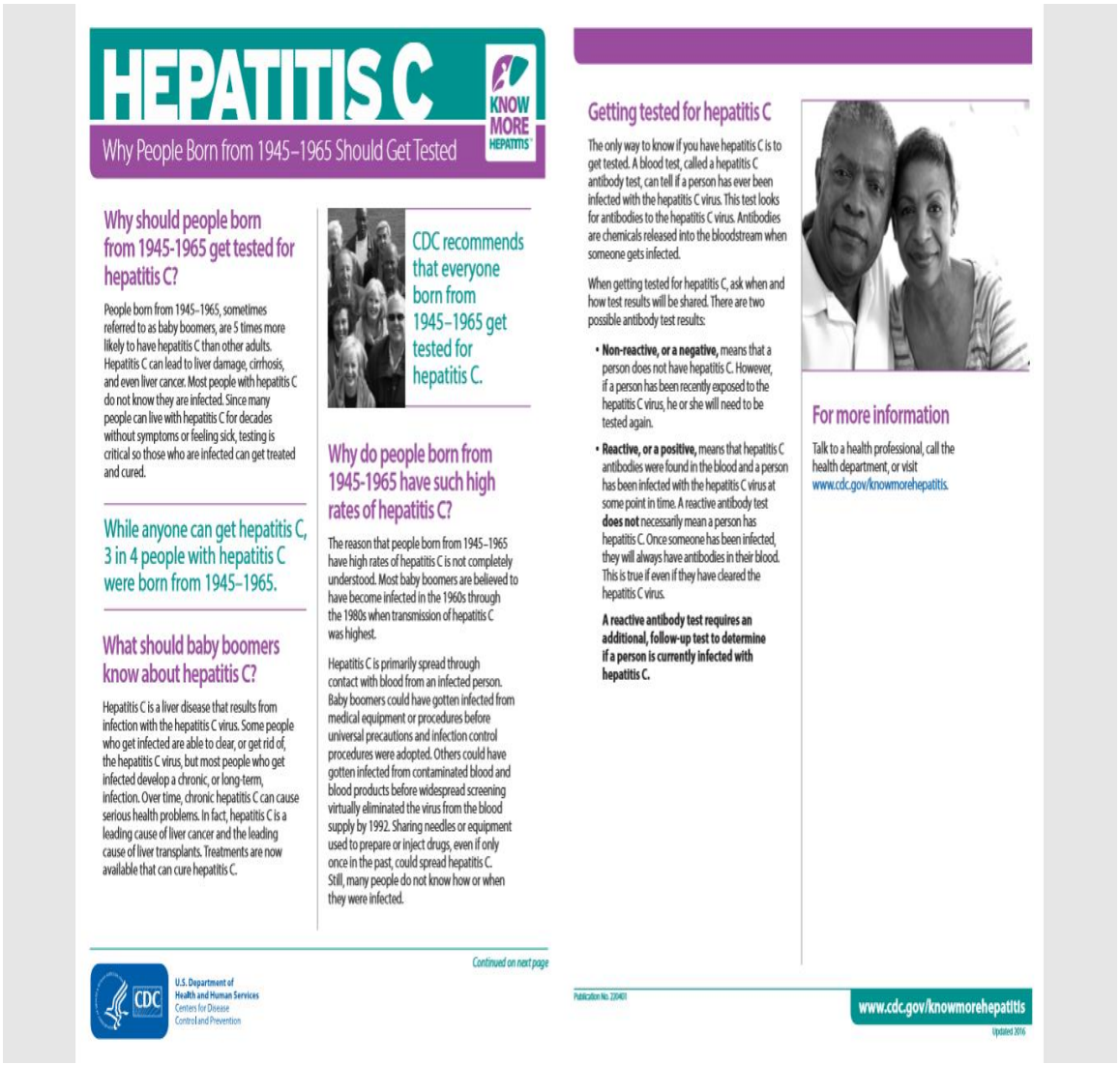
This project was necessary to evaluate how the practice was screening this patient population. HCV education was needed to promote awareness of how prevalent and debilitating this virus can be, but education is not enough. This project shows that not only nursing staff need to be vested in screening these individuals, but everyone directly involved in patient care also has responsibility to discuss and screen. HCV may not present with symptoms for decades putting the baby boomer population at risk indicating it is imperative that screening methods are put into place to capture this patient

population and preclude the risk of mortality. The project showed how HCV awareness can increase screenings in the baby boomer population in outpatient family practice.

Recommendations/Implications for Practice

This quality improvement project built upon current literature that suggested involving nursing staff to educate patients about HCV could improve screenings in outpatient primary care. Utilizing clinical nursing staff to educate patients at each encounter, even when the patient presented for labs only was found to be effective in increasing HCV screenings. EHR has been shown to increase screenings but should not be relied on completely for screenings alone. EHR alerts have the potential to be overridden, resulting in missed opportunities to screen for HCV. It is important to sustain testing with ongoing education. The education and ongoing awareness of HCV screenings in the baby boomer population in this outpatient family practice facility, was the motivator for practice change that continues to this day. Nursing staff and providers continue to identify, educate, and screen those born between 1945 and 1965. There were inferences that presented upon review of the data. More patients were identified and agreed to screenings when they presented for their lab visit. Future studies can build upon this study or develop educational opportunities by nursing staff to identify, educate, and screen during a lab visit or when labs are being drawn. Educational fliers helped to facilitate dialogue for testing. The use of fliers may help promote awareness for future quality improvement projects. Future studies can investigate barriers to screening test including the psychological component of testing in both patients and clinical staff.

Appendix A



HEPATITIS C

KNOW MORE HEPATITIS

Why People Born from 1945–1965 Should Get Tested

Why should people born from 1945-1965 get tested for hepatitis C?

People born from 1945–1965, sometimes referred to as baby boomers, are 5 times more likely to have hepatitis C than other adults. Hepatitis C can lead to liver damage, cirrhosis, and even liver cancer. Most people with hepatitis C do not know they are infected. Since many people can live with hepatitis C for decades without symptoms or feeling sick, testing is critical so those who are infected can get treated and cured.

While anyone can get hepatitis C, 3 in 4 people with hepatitis C were born from 1945–1965.

What should baby boomers know about hepatitis C?

Hepatitis C is a liver disease that results from infection with the hepatitis C virus. Some people who get infected are able to clear, or get rid of, the hepatitis C virus, but most people who get infected develop a chronic, or long-term, infection. Over time, chronic hepatitis C can cause serious health problems. In fact, hepatitis C is a leading cause of liver cancer and the leading cause of liver transplants. Treatments are now available that can cure hepatitis C.

CDC recommends that everyone born from 1945–1965 get tested for hepatitis C.

Why do people born from 1945-1965 have such high rates of hepatitis C?

The reason that people born from 1945–1965 have high rates of hepatitis C is not completely understood. Most baby boomers are believed to have become infected in the 1960s through the 1980s when transmission of hepatitis C was highest.

Hepatitis C is primarily spread through contact with blood from an infected person. Baby boomers could have gotten infected from medical equipment or procedures before universal precautions and infection control procedures were adopted. Others could have gotten infected from contaminated blood and blood products before widespread screening virtually eliminated the virus from the blood supply by 1992. Sharing needles or equipment used to prepare or inject drugs, even if only once in the past, could spread hepatitis C. Still, many people do not know how or when they were infected.

Continued on next page

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Getting tested for hepatitis C

The only way to know if you have hepatitis C is to get tested. A blood test, called a hepatitis C antibody test, can tell if a person has ever been infected with the hepatitis C virus. This test looks for antibodies to the hepatitis C virus. Antibodies are chemicals released into the bloodstream when someone gets infected.

When getting tested for hepatitis C, ask when and how test results will be shared. There are two possible antibody test results:

- **Non-reactive, or a negative,** means that a person does not have hepatitis C. However, if a person has been recently exposed to the hepatitis C virus, he or she will need to be tested again.
- **Reactive, or a positive,** means that hepatitis C antibodies were found in the blood and a person has been infected with the hepatitis C virus at some point in time. A reactive antibody test **does not** necessarily mean a person has hepatitis C. Once someone has been infected, they will always have antibodies in their blood. This is true if even if they have cleared the hepatitis C virus.

A reactive antibody test requires an additional, follow-up test to determine if a person is currently infected with hepatitis C.

For more information

Talk to a health professional, call the health department, or visit www.cdc.gov/knowmorehepatitis.

Publication No. 220401

www.cdc.gov/knowmorehepatitis

Updated 2016

HCV Information Fact Sheet obtained from the CDC website used for clinical staff education and patient awareness. Information fact sheet was displayed in patient care areas including; waiting rooms, laboratory, patient rooms, and triage areas (CDC, 2016).

Appendix B

HEPATITIS C

General Information

What is hepatitis?

"Hepatitis" means inflammation of the liver. The liver is a vital organ that processes nutrients, filters the blood, and fights infections. When the liver is inflamed or damaged, its function can be affected.

Heavy alcohol use, toxins, some medications, and certain medical conditions can cause hepatitis. However, hepatitis is most often caused by a virus. In the United States, the most common types of viral hepatitis are Hepatitis A, Hepatitis B, and Hepatitis C.

Most people who get infected with the Hepatitis C virus develop a chronic, or lifelong, infection.

What is Hepatitis C?

Hepatitis C is an infection of the liver that results from the Hepatitis C virus. **Acute** Hepatitis C refers to the first several months after someone is infected. Acute infection can range in severity from a very mild illness with few or no symptoms to a serious condition requiring hospitalization. For reasons that are not known, about 20% of people are able to clear, or get rid of, the virus without treatment in the first 6 months.

Unfortunately, most people who get infected are not able to clear the Hepatitis C virus and develop a chronic, or lifelong, infection. Over time, **chronic** Hepatitis C can cause serious health problems including liver disease, liver failure, and even liver cancer.

How is Hepatitis C spread?

Hepatitis C is usually spread when blood from a person infected with the Hepatitis C virus enters the body of someone who is not infected. Today, most people become infected with Hepatitis C by sharing needles, syringes, or any other equipment to inject drugs. Before widespread screening of the blood supply in 1992, Hepatitis C was also spread through blood transfusions and organ transplants. While uncommon, poor infection control has resulted in outbreaks in healthcare settings.

While rare, sexual transmission of Hepatitis C is possible. Having a sexually transmitted disease or HIV, sex with multiple partners, or rough sex appears to increase a person's risk for Hepatitis C. Hepatitis C can also be spread when getting tattoos and body piercings in unlicensed facilities, informal settings, or with non-sterile instruments. Also, approximately 6% of infants born to infected mothers will get Hepatitis C. Still, some people don't know how or when they got infected.

What are the symptoms of Hepatitis C?

Many people with Hepatitis C do not have symptoms and do not know they are infected. If symptoms occur, they can include: fever, feeling tired, not wanting to eat, upset stomach, throwing up, dark urine, grey-colored stool, joint pain, and yellow skin and eyes.

When do symptoms occur?

If symptoms occur with acute infection, they can appear anytime from 2 weeks to 6 months after infection. If symptoms occur with chronic Hepatitis C, they can take decades to develop. When symptoms appear with chronic Hepatitis C, they often are a sign of advanced liver disease.

Continued on next page

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

How would you know if you have Hepatitis C?

The only way to know if you have Hepatitis C is to get tested. Doctors use a blood test, called a Hepatitis C Antibody Test, which looks for antibodies to the Hepatitis C virus. Antibodies are chemicals released into the bloodstream when someone gets infected. Antibodies remain in the bloodstream, even if the person clears the virus.

A positive or reactive Hepatitis C Antibody Test means that a person has been infected with the Hepatitis C virus at some point in time. However, a positive antibody test **does not** necessarily mean a person still has Hepatitis C. An additional test called a RNA test is needed to determine if a person is currently infected with Hepatitis C.

Who should get tested for Hepatitis C?

Testing for Hepatitis C is recommended for certain groups, including people who:

- Were born from 1945 – 1965
- Received donated blood or organs before 1992
- Have ever injected drugs, even if it was just once or many years ago
- Have certain medical conditions, such as chronic liver disease and HIV or AIDS
- Have abnormal liver tests or liver disease
- Have been exposed to blood from a person who has Hepatitis C
- Are on hemodialysis
- Are born to a mother with Hepatitis C

Can Hepatitis C be treated?

Yes. However, treatment depends on many different factors, so it is important to see a doctor experienced in treating Hepatitis C. New and improved treatments are available that can cure Hepatitis C for many people.

Testing is the only way to know if you have Hepatitis C.

How can Hepatitis C be prevented?

Although there is currently no vaccine to prevent Hepatitis C, there are ways to reduce the risk of becoming infected with the Hepatitis C virus.

- Avoid sharing or reusing needles, syringes or any other equipment to prepare and inject drugs, steroids, hormones, or other substances.
- Do not use personal items that may have come into contact with an infected person's blood, even in amounts too small to see, such as razors, nail clippers, toothbrushes, or glucose monitors.
- Do not get tattoos or body piercings from an unlicensed facility or in an informal setting.

For more information

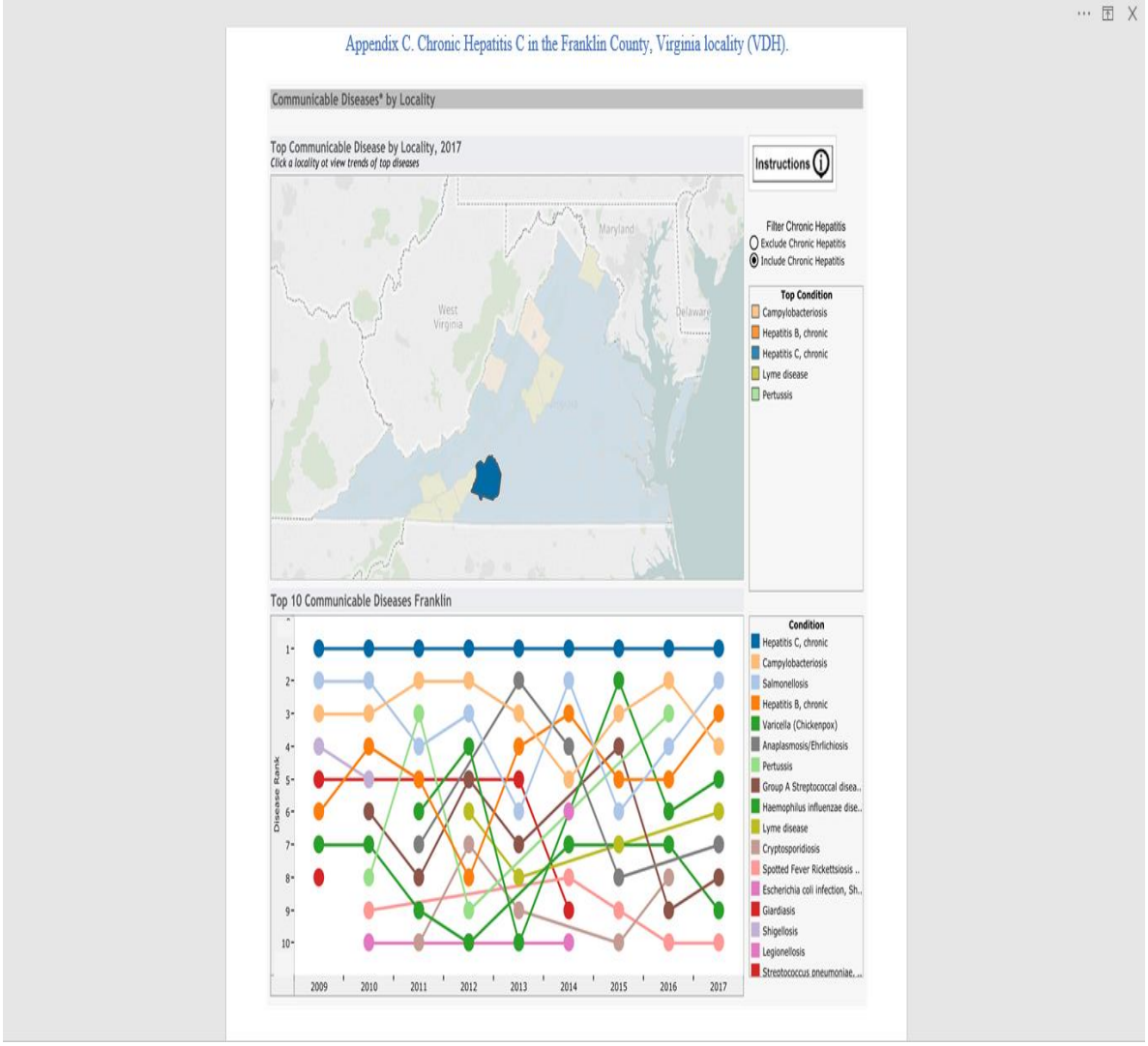
Talk to your health professional, call your health department, or visit www.cdc.gov/hepatitis.

Updated 2015

www.cdc.gov/hepatitis

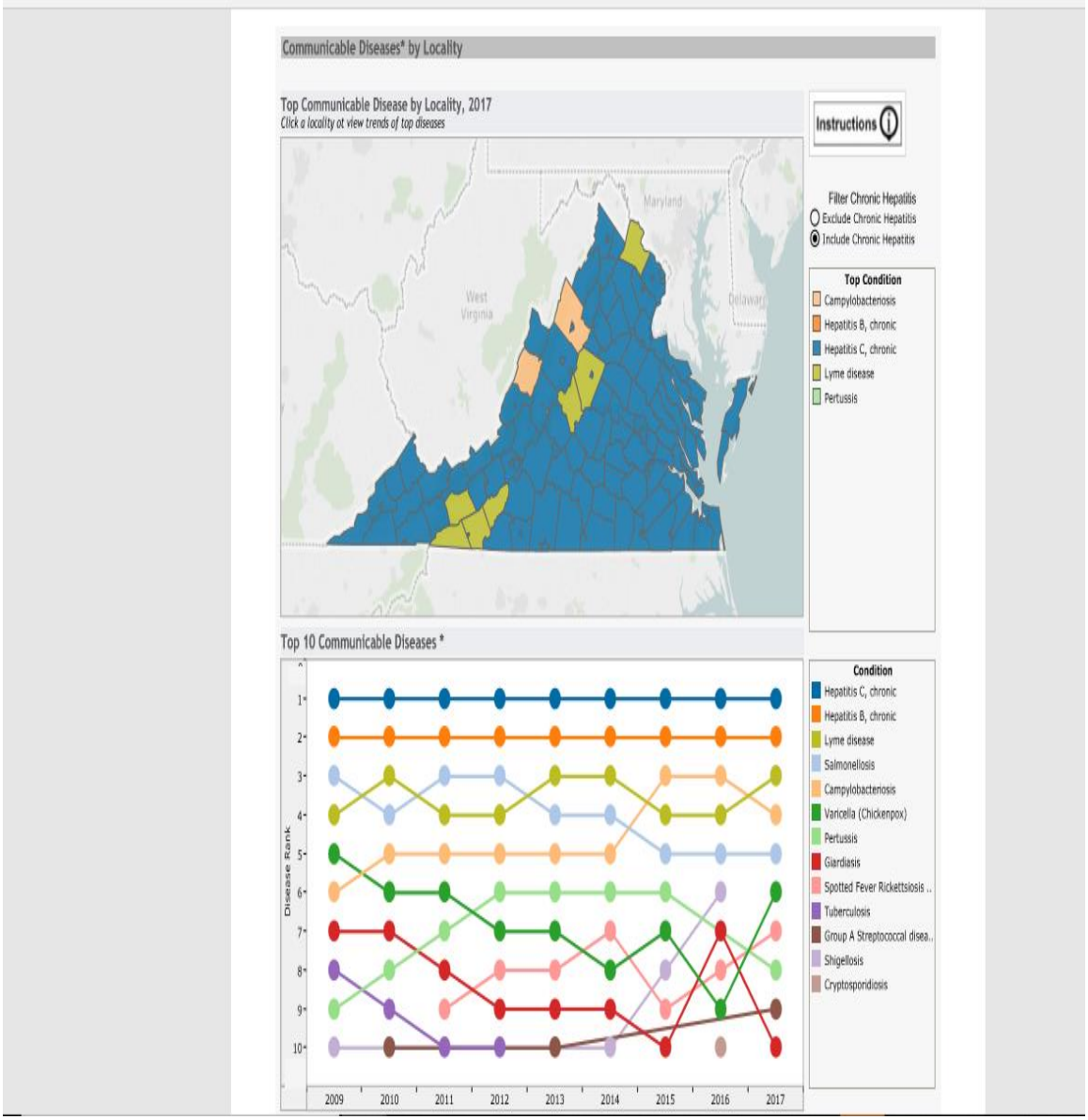
HCV General Information Fact Sheet obtained from CDC website used for clinical staff education (CDC, 2015).

Appendix C



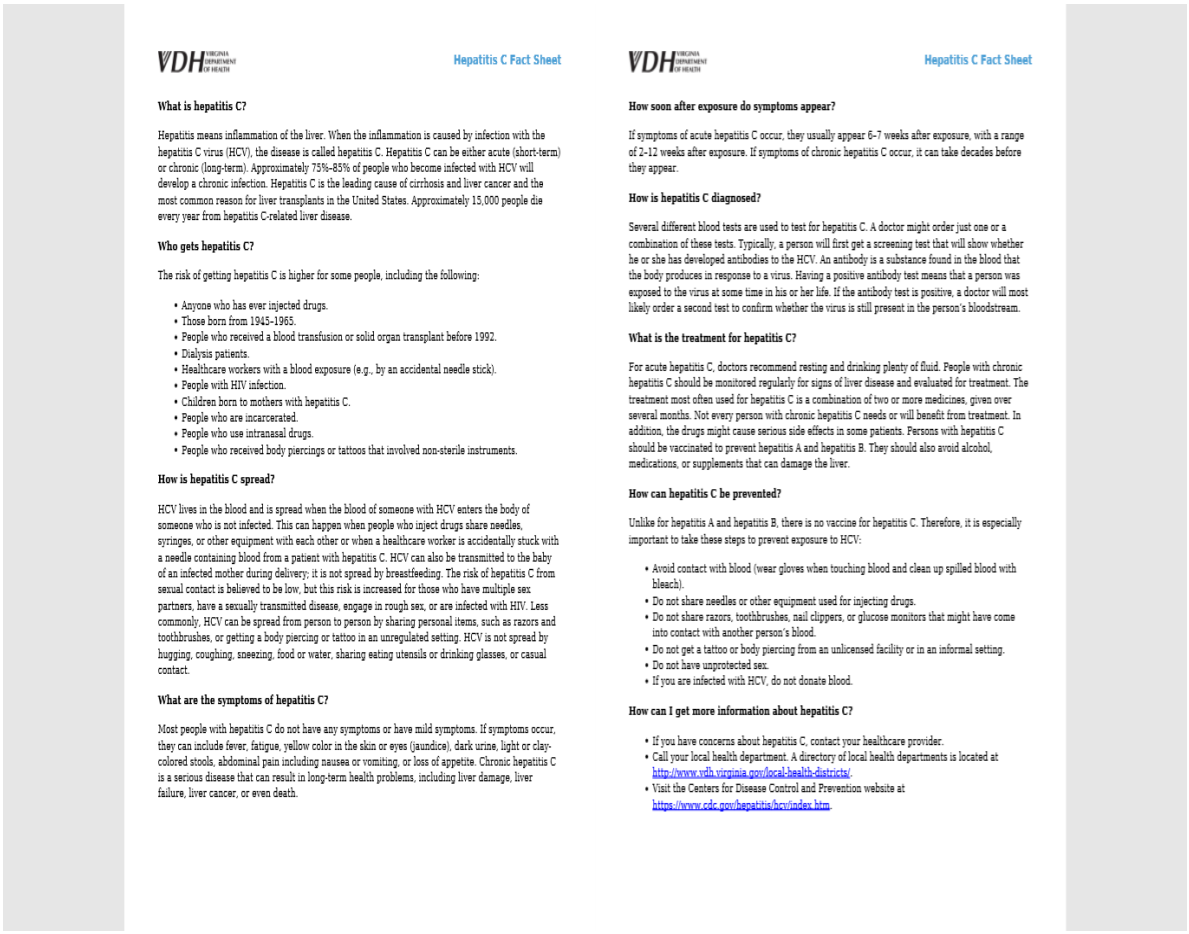
Graph of HCV prevalence in the locality where study took place. Presented to clinical nursing staff for their education and awareness (VDH, 2017).

Appendix D



Graph of HCV prevalence in the state of Virginia. Presented to clinical nursing staff for their education and awareness (VDH, 2017).

Appendix E



VDH VIRGINIA DEPARTMENT OF HEALTH — Hepatitis C Fact Sheet

What is hepatitis C?

Hepatitis means inflammation of the liver. When the inflammation is caused by infection with the hepatitis C virus (HCV), the disease is called hepatitis C. Hepatitis C can be either acute (short-term) or chronic (long-term). Approximately 75%–85% of people who become infected with HCV will develop a chronic infection. Hepatitis C is the leading cause of cirrhosis and liver cancer and the most common reason for liver transplants in the United States. Approximately 15,000 people die every year from hepatitis C-related liver disease.

Who gets hepatitis C?

The risk of getting hepatitis C is higher for some people, including the following:

- Anyone who has ever injected drugs.
- Those born from 1945–1965.
- People who received a blood transfusion or solid organ transplant before 1992.
- Dialysis patients.
- Healthcare workers with a blood exposure (e.g., by an accidental needle stick).
- People with HIV infection.
- Children born to mothers with hepatitis C.
- People who are incarcerated.
- People who use intranasal drugs.
- People who received body piercings or tattoos that involved non-sterile instruments.

How is hepatitis C spread?

HCV lives in the blood and is spread when the blood of someone with HCV enters the body of someone who is not infected. This can happen when people who inject drugs share needles, syringes, or other equipment with each other or when a healthcare worker is accidentally stuck with a needle containing blood from a patient with hepatitis C. HCV can also be transmitted to the baby of an infected mother during delivery; it is not spread by breastfeeding. The risk of hepatitis C from sexual contact is believed to be low, but this risk is increased for those who have multiple sex partners, have a sexually transmitted disease, engage in rough sex, or are infected with HIV. Less commonly, HCV can be spread from person to person by sharing personal items, such as razors and toothbrushes, or getting a body piercing or tattoo in an unregulated setting. HCV is not spread by hugging, coughing, sneezing, food or water, sharing eating utensils or drinking glasses, or casual contact.

What are the symptoms of hepatitis C?

Most people with hepatitis C do not have any symptoms or have mild symptoms. If symptoms occur, they can include fever, fatigue, yellow color in the skin or eyes (jaundice), dark urine, light or clay-colored stools, abdominal pain including nausea or vomiting, or loss of appetite. Chronic hepatitis C is a serious disease that can result in long-term health problems, including liver damage, liver failure, liver cancer, or even death.

VDH VIRGINIA DEPARTMENT OF HEALTH — Hepatitis C Fact Sheet

How soon after exposure do symptoms appear?

If symptoms of acute hepatitis C occur, they usually appear 6–7 weeks after exposure, with a range of 2–12 weeks after exposure. If symptoms of chronic hepatitis C occur, it can take decades before they appear.

How is hepatitis C diagnosed?

Several different blood tests are used to test for hepatitis C. A doctor might order just one or a combination of these tests. Typically, a person will first get a screening test that will show whether he or she has developed antibodies to the HCV. An antibody is a substance found in the blood that the body produces in response to a virus. Having a positive antibody test means that a person was exposed to the virus at some time in his or her life. If the antibody test is positive, a doctor will most likely order a second test to confirm whether the virus is still present in the person's bloodstream.

What is the treatment for hepatitis C?

For acute hepatitis C, doctors recommend resting and drinking plenty of fluid. People with chronic hepatitis C should be monitored regularly for signs of liver disease and evaluated for treatment. The treatment most often used for hepatitis C is a combination of two or more medicines, given over several months. Not every person with chronic hepatitis C needs or will benefit from treatment. In addition, the drugs might cause serious side effects in some patients. Persons with hepatitis C should be vaccinated to prevent hepatitis A and hepatitis B. They should also avoid alcohol, medications, or supplements that can damage the liver.

How can hepatitis C be prevented?

Unlike for hepatitis A and hepatitis B, there is no vaccine for hepatitis C. Therefore, it is especially important to take these steps to prevent exposure to HCV:

- Avoid contact with blood (wear gloves when touching blood and clean up spilled blood with bleach).
- Do not share needles or other equipment used for injecting drugs.
- Do not share razors, toothbrushes, nail clippers, or glucose monitors that might have come into contact with another person's blood.
- Do not get a tattoo or body piercing from an unlicensed facility or in an informal setting.
- Do not have unprotected sex.
- If you are infected with HCV, do not donate blood.

How can I get more information about hepatitis C?

- If you have concerns about hepatitis C, contact your healthcare provider.
- Call your local health department. A directory of local health departments is located at http://www.vdh.virginia.gov/local-health-districts/.
- Visit the Centers for Disease Control and Prevention website at https://www.cdc.gov/hepatitis/hcv/index.htm.

HCV Fact Sheet obtained from the VDH website. Fact sheet was used for clinical staff education (VDH, 2018).

Figure 1

HCV Screening Tests: Pre-Project, Goal, & Post-Project Results

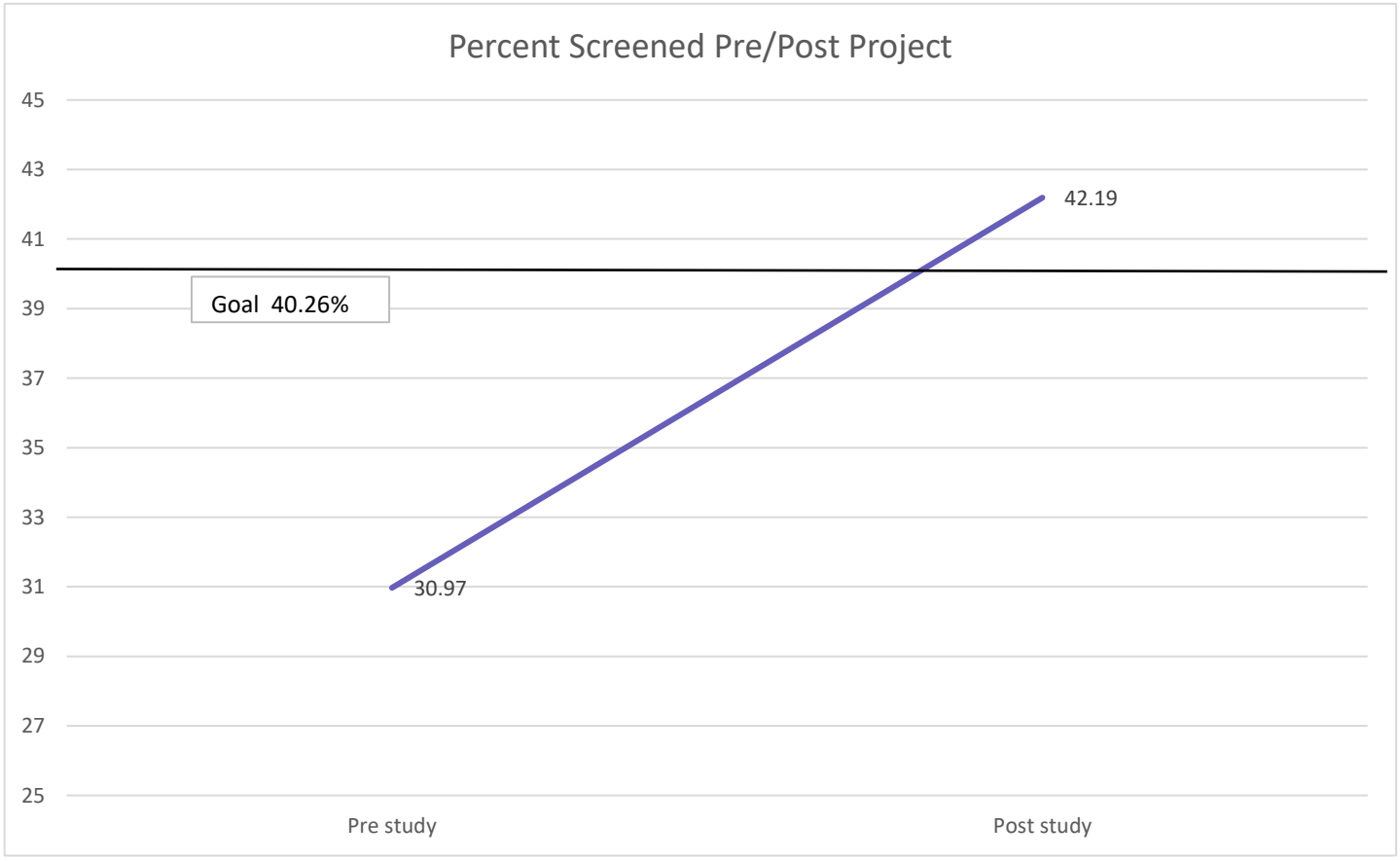


Figure 2

Mean HCV Screenings per day for each month (June, July, August)

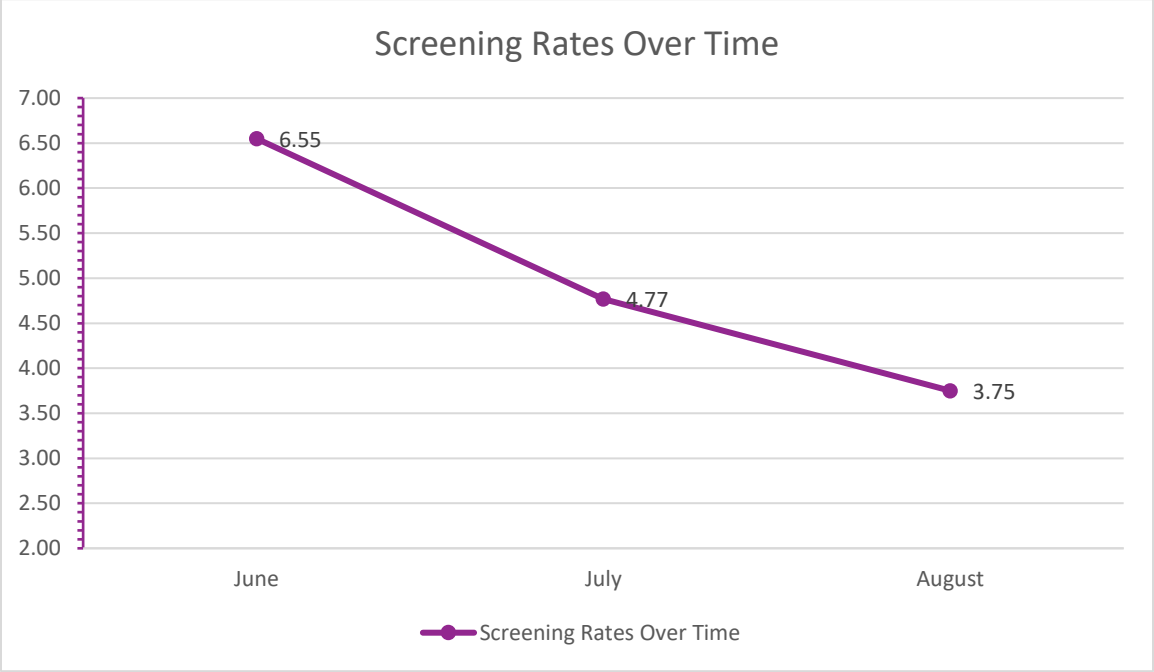
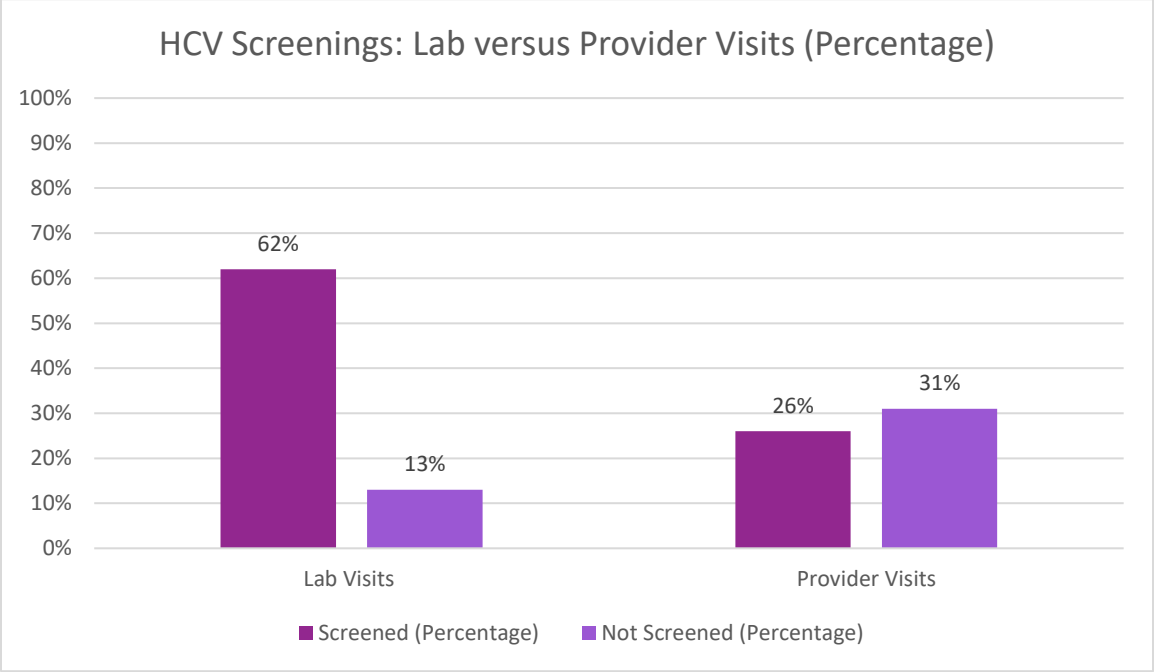


Figure 3

HCV Screenings: Lab versus Provider Visits (Percentage)



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