2022

# Staff Education on Hepatitis C Screening Guidelines

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This is to certify that the doctoral study by

Duy Trinh

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2022

Abstract

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by

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MS, Bowie State University, 2016

BS, Frostburg University, 2012

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2022

## Abstract

Hepatitis C virus (HCV) is found worldwide, but the burden is much higher in correctional settings compared to general populations. In a detention centered located in Washington, the nurses at booking do not know who are at risk for Hepatitis C. This Doctor of Nursing (DNP) project attempted to answer the question of if educating nursing staff at the detention facility in Washington increase their knowledge of the importance of screening inmates for hepatitis C.The purpose of this project was to educate nursing staff about the risk factors for HCV so that proper screening can be done. Knowles's adult learning theory and the analysis, design, development, implementation, and evaluation model guided the DNP project. There were 55 nurses who voluntarily participated in the 60-minute synchronous in-person staff education. Descriptive statistical analysis paired *t* test was used to determine the percentage difference between the pre- and post-test scores. The two-tail *p* value equaled 0.0056, demonstrating significance. The findings indicated that nursing staff's knowledge increased after participating in the education program. Recommendations include continuing education courses on hepatitis C screening for the nursing staff and access to online hepatitis C screening guidelines. The project has potential implications for positive social change for several groups, including nursing staff and inmates having risk for hepatitis C, by increasing the nursing staff's knowledge and by providing tools needed to screen inmates for hepatitis C.

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# Dedication

I dedicate this project to my wife (Thao Nhi Bui), my children (Khoa Trinh, Khoi Trinh), and my father (Kiet Trinh), for your unconditional love, inspiration, prayers, and encouragement in achieving my dream. Thank you for being my rock and shoulders to lean on. Though it all, I am highly blessed to have all of you in my life. I love you forever

# Acknowledgments

To my Godsent Committee Chair, Dr. Anna Maria Hubbard, and wonderful Committee URR, Dr. Mark Anthony Wells and Committee Member, Dr. Lynda Hall Crawford, thank you for your guidance throughout this journey. Your suggestions and directions are priceless. I have grown under your leadership and guidance. I am very honored to have learned from both of you.

To my loving mom who is in Heaven, Ngoc_Anh Nguyen, thank you for teaching me the meaning for hard work and perseverance. You are my inspiration to embark on this nursing journey. You made me the family nurse practitioner that I am today. Without you, I would not have chosen this path. I love you and I miss you, Mom!

Above all, I am more than grateful to my God, who has been my pillar, helper, comforter, and strength throughout this journey. To God, I give all glory, honor, and adoration. Thank you, God!

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Section 1: Nature of the Project

## Introduction

Hepatitis C virus (HCV) is found worldwide. In the United States, HCV is the most common bloodborne infection with an estimated 4.1 million patients with positive HCV antibodies and 2.4 million patients with positive HCV (Hofmeister et al., 2019). HCV affects the liver system through contact with infected blood sources such as sharing needles or other shared equipment, and injected drugs. Hepatitis C can be an acute phrase illness, but it becomes a chronic infection that could cause serious health problems such as liver cirrhosis and hepatocellular carcinoma. However, direct-acting antiviral medications have high cure rates and few side effects. These medications have led to increased efforts to diagnose, treat, and cure HCV infection and to lower disease burden, prevent transmission, and decrease mortality (Morris et al., 2017).

Despite increasing treatment options, the burden of HCV infection is much higher in the correctional settings compared to general populations. According to the study of Centers for Disease Control and Prevention (CDC) in 2000, it estimated about 16% to 41% of American inmates have tested positive for hepatitis C antibodies (Weinbaum, 2003). Within this group, approximately 12% to 35% of these inmates have chronic infections, which amounts to 2.7 million to 3.9 million inmates in U.S. jails and prisons (Colin, 2010). The incarcerated people in the United States have positive HCV antibodies ranging from 17.4% to 23.1% (Varan, 2014). This average percentage of U.S. citizens with HCV antibodies is 1% (Denniston, 2014).

The problem at the project site was that the nursing staff do not adhere to hepatitis C screening guidelines. The inmates at risk for hepatitis C or reported with hepatitis C are supposed to refer to health care providers after they are booked in jail for 30 days, but the referrals are sometimes missed. Therefore, an educational program on hepatitis C screening guidelines at this site is needed. The purpose of this project was to develop staff education regarding hepatitis C screening guidelines. This can help the nurses identify which inmates come to this detention center should be screened for hepatitis C per protocol. This project may create positive social change through improved collaboration and communication among the project site staff, improved tone for future organizational change, and improved health for the inmates they serve. Early screening for HCV helps reduce morbidity and mortality. If the chronic hepatitis inmates did not receive the proper treatment, they could suffer from hepatic failure and eventually hepatic carcinoma.

## Problem Statement

The local nursing practice problem at the project site was a lack of nursing knowledge on hepatitis C screening guidelines. At this detention center in Washington State, the gap in nursing practice was that the nursing staff do not know how to properly screen the inmates for hepatitis C. When inmates come to the detention center, they identify themselves with having positive HIV or being an intravenous drug user in the past or being a male who has sex with another male (MSM). The nurses did not know that these inmates are at high risk for contracting HCV and did not understand the need to be screened for hepatitis C. The screenings can be initiated at the booking by sending

notification for providers through the electronic medical records. Thus, they play important roles in hepatitis C screening prevention, as they are directly involved in inmate care and inmate education. Nurses can be effective in initiating hepatitis C screening at point of care if they are knowledgeable of current screening guidelines.

This educational project held significance for nursing practice because it improved nurses' knowledge so that they are equipped to educate inmates on the importance of hepatitis C screening and initiate referrals for the screening. Early screening for HCV helps reduce morbidity and mortality. If the chronic hepatitis inmates do not receive the proper treatment, they could suffer from hepatic failure and eventually hepatic carcinoma. Since screening for hepatitis C is not mandatory in prisons, nurses with an understanding of hepatitis C are crucial to the prevention of spread of this disease through patient education. With improved knowledge, nurses can communicate this information to inmates and might influence their decisions on whether to participate in hepatitis C screening.

## Purpose Statement

The purpose of this project was to develop staff education regarding hepatitis C screening guidelines. The educational project addresses inadequate knowledge of staff on hepatitis C screening at the project site. The guiding practice-focused question was: "Will educating nursing staff at the detention facility in Washington increase their knowledge of the importance of screening inmates for hepatitis C?" This doctoral project can improve nursing knowledge, which can improve and protect inmates' lives through early screening for HCV, which helps reduce morbidity and mortality. With improved

knowledge, nurses can communicate might influence inmates' decisions on whether to participate in hepatitis C screening.

## Nature of the Doctoral Project

I conducted a literature research review through electronic databases, including Cumulative Index to Nursing and Allied Health (CINAHL), Google Scholar, MEDLINE, and PubMed. The following keyword search terms were used: *hepatitis C screening, screening guidelines, incarcerated environment, correctional facilities,* and *nursing education*. I also limited the literature research to peer-reviewed journal articles published between 2016 and 2021 available in English. Cohort studies, descriptive qualitative, and quantitative studies, quasi-experimental studies, and systematic reviews were included. To be eligible and included, studies focused on inmates that are in incarcerated environment with risks of hepatitis C.

I received facility approval and Walden's Institutional Review Board (IRB) approval. Once I received the approval, I used the analysis, design, development, implementation, and evaluation (ADDIE) model as well as Knowles's adult learning theory in the process of implementation of education sessions with input from other experts. The medical director of this detention center served as the content expert. Prior to the presentation to the other staff, the medical director reviewed the PowerPoint Presentation with me and provided feedback.

Educating nursing staff on screening inmates for hepatitis C in a detention center located in Washington State is feasible. Currently, there are multiple interdisciplinary health care workers, including 75 nurses who are employed at this detention center. After

reviewing the literature related to hepatitis C and Screening guidelines from CDC, the U.S. Preventative Services Task Force (USPSTF), the American Association for the Study of Liver Disease and the Infectious Disease Society of America, and other resources, I created 10-question multiple choices, and true/false instrument for pre- and post-test (Appendix A). A pretest evaluation of knowledge regarding hepatitis C screening was administered to nursing staff prior to the education session. Then the education occurred via Zoom in a 45–60-minute session. It followed with evaluation of learning through posttests. Project evaluation data was collected from the planning team regarding their satisfaction with the planning process, work products, and student leadership. The project evaluation form can be found in Appendix B. There are several questions about demographic data collected in the posttest section. Appropriate ethics approval at the site was received through Walden's IRB.

The purpose of this project was to develop staff education regarding hepatitis C screening guidelines. This educational project bridged the gap-in-practice: noncompliance with hepatitis C screening guidelines due to inadequate nursing knowledge. According to Substance Abuse and Mental Health Service Administration (2015), a benefit of early identification of HCV infection is that early treatment can improve an individual chances of clearing the virus through treatment and avoiding long-term damage). With increased knowledge, nurses can be initiating and facilitating hepatitis C screening required to reach acceptable screening rates.

## Significance

Nurses, the medical director, and the administrative assistant were the stakeholders that are involved in this project. The role of the nurses were participants who attended the education and completed pre- and post-test and complete the evaluation after hepatitis C screening guidelines presentation. The medical director of this detention center served as the content expert. Prior to the presentation to the other staff, the medical director reviewed he PowerPoint Presentation and provided feedback. Then I revised content of the Power Point and send the final draft to the medical director. With his approval, I set up time in the future to present this topic through Zoom. The administrative assistant was responsible for setting up the education session. This individual sent an email to the nursing staff about the incoming education session related to hepatitis C screening guideline.

The potential contribution of this DNP project to nursing practice was to improve the knowledge and competencies of jail nurses in identifying who is high risk for HCV and properly referring inmates to the medical providers for proper plan of treatment. Advanced practice nurses have a responsibility to provide in nursing care (American Nurses Association, 2019). Advanced practice nurses aspire daily to deliver the best possible care to improve patient outcomes. Nurses are also advocates for the highest standard of care and seek to identify gaps in care that compromise quality and patient safety. Through this project, I supported nursing and physician practice by providing evidence-based education on best practice guidelines.

The potential transferability of the DNP project might impact the jails or prisons in Washington State. In Washington State, cases of hepatitis C must be reported to a County Health Department, which submits into the State Health Department data. At the state level, the types of hepatitis (acute, past, or present) with biological data of the patients will be reported to the central data of CDC via the National Notifiable Diseases Surveillance System (CDC, 2019). The United States HCV data provides important information for monitoring trends in transmission patterns, developing hepatitis C prevention strategies, monitoring the effectiveness of any implemented plans, and identifying local outbreaks or regional patterns of infections. As this DNP project shows, the education can be used in other incarcerated settings within Washington State. Currently variance exists in the screening for HCV, including the nursing staff of this detention center in Washington State. The lack of confirmatory diagnosis of HCV in part is due to the lack of easily accessible detailed education regarding the screening for HCV. By educating staff on the significance of hepatitis C screening and the importance of early identification to prevent mortality, inmate satisfaction and quality of life can be improved. Inmates of this detention will benefit from this project by receiving the HCV screening and completing HCV treatment while they are incarcerated.

This project also supported Walden University's mission to promote positive social change. Walden University's (2021) mission is to provide a diverse community of career professionals with the opportunities effecting positive social change. Educating staff nursing on HCV screening at the detention center in Washington State can lead to early detection of HCV. Within the first 6 months after exposure, acute HCV can occur

and develop into chronic HCV (CDC, 2016). Therefore, the need for treatment for HCV is crucial. Chronic HCV can last a lifetime, often leading to serious liver conditions including cirrhosis, cancer, and liver failure (CDC, 2016).

## Summary

In Section 1, I introduced the current problem at this detention as jail nurses often fail to identify which inmates are high risk for hepatitis C. The purpose of the project, the practice focused questions, and the nature of doctoral project as well as the significance of the project were included in this section. In Section 2, the background and context of my project is outlined reflecting the concepts, models, or theories that are applied to the final project. I also address the project relevance to nursing practice and the role of the DNP student and project team. Last, I explain the local background and context of the project.

Section 2: Background and Context

## Introduction

The practice problem at the project site was that hepatitis C screening guidelines are not initiated by the nursing staff during booking for a high-risk population. The practice focused question therefore was "Would evidence-based education regarding hepatitis C screening be an effective means for nurse education, according to a panel of local experts?" The purpose of this project was to develop staff education regarding hepatitis C screening guidelines. In this section, Knowles's adult learning theory (1984) and the ADDIE model are described and the rationale for their use in this project to nursing is explained. The relevance of staff education of hepatitis C screening guidelines to nursing is also explained. Finally, the roles of the DNP student and project team are explained.

## Concepts, Models, and Theories

Knowles's (1984) adult learning theory and the ADDIE model guided the implementation of the staff education project. The ADDIE model was vital in providing an educational program to embrace a change in the current practice because it was recommended by the Sigma Theta Tau International and the Honor Society of Nursing as an instructional model to support the learning, knowledge, and development of health care providers committing creating a positive difference in healthcare (Jeffery & Longo, 2016). I discuss their specific application to the project in the following subsections.

**Knowles's Adult Learning Theory**

Malcolm Knowles was well-known for the use of the term *andragogy*, which refers to adult education. Knowles's theory of andragogy is an attempt to develop a theory for adult learning. According to the theory, adults are self-directed and expect to take responsibility for their decisions. Adult learning programs must accommodate this fundamental aspect. At first, Knowles made four assumptions about the characteristics of adult learners that are different from the assumptions about child learners in 1980 and then in 1984, he added the fifth assumption (Loeng, 2018):

- Self-concept: When we get older, our concept of who we are shifts from dependence towards independence and self-direction.
- Adult learner experience: As we grow and experience more in life, we accumulate knowledge based on this experience that then becomes a more valuable resource for future learning.
- Readiness to learn: Our readiness to learn becomes more oriented to the developmental tasks of our social and work-related roles.
- Orientation to learning: As adults, our perspective changes from one of postponed application of knowledge to immediate application. Then our orientation shifts from one of subject-centered to one of the problem-centered.
- Motivation to learn: As we mature, the motivation to learn is internal. (Knowles, 1984, p. 12)

Based on these assumptions, Knowles suggested four principles that educators shoulder consider when teaching adults:

1. Adults need to be involved in the planning and evaluating the instruction.
2. Personal experience (including achievement and mistakes) provides the foundation for adult learning.
3. Adults are really interested in learning activities that are more relevant to their professional life and/or their personal life.
4. Adult learning is problem-centered rather than content-oriented. (Kearsley, 2010)

The staff education program was developed using the principles of Knowles' theory of adult learning as demonstrated in Table 1.

**Table 1**

*Knowles's Theory on Development of Staff Education Program on Hepatitis C Screening*

| Principles of Knowles Adult Learning Theory | Application to the Project |
|---|---|
| Self-Concept | I encourage nurse participation in the learning session |
| Adult Learner Experience | I encourage nurses sharing experiences and demonstrating knowledge about Hepatitis C if possible. |
| Readiness to learn | Nurses are ready to take Pre-Test about Hepatitis C. PowerPoint slides related to Hepatitis C screening will be presented during education session. |
| Orientation to Learning | Nurses will sign up with their supervisor so that they could spend 60 minutes for this education session. |
| Motivation to Learn | Nurses will participate in small group discussions during this education session. They can ask questions if needed. |
| Engagement of Adults | Nurses participates in pre-test and post-test questions. If nurses have any questions or concerns, they will ask me during the presentation. |
| Personal History of Experience | Nurses' experiences related to Hepatitis C are valuable to the education session. |
| Immediate Impact | Nurses are interested in Hepatitis C screening because it helps nurses refer to medical providers so that inmates will be screened and receive the Hepatitis C if possible. |
| Problem-centered Adult Learning | Nurses love interaction and collaboration in a session. Nurses can learn from others and even relate to similar problems or issues faced by others. |

**ADDIE model**

The origins of this ADDIE model are unclear, but it could have been developed in 1975 by Florida State University for the U.S. Army as an instructional systems design (Kurt, 2018). The process involved in the formulation of an instructional systems development program for military interservice training to do a particular job. ADDIE is shorthand for describing any process-based approach to developing instructional content (Molenda, 2015). Learning the ADDIE model will provide a proven method for designing clear and effective training programs with more effective quality designs, clearly defined learning objectives, structured, and coherent content (Aldobie, 2015). It is measured and organized for educators and nurses, incorporated visualizations and media, and appropriate nurse activities.

ADDIE is an acronym for the five stages of a development process: analysis, design, development, implementation, and evaluation. Each stage could be done in the given order but with a focus on reflection and interaction (Aldobine, 2015). The ADDIE model steps as applied to this study are as follows:

1. Analysis: information is gathered about the intended nurses (characteristics and knowledge/skill).
2. Design: an outline of instructional strategies is created including learning content, activities, assessments, and presentation selection through PowerPoint.
3. Development: Creation and assembly of the material and activities related to hepatitis C screening in jail that will be utilized in this education session.

4. Implementation: Encompasses review and testing to ensure that the reference material, education sessions, equipment, tools, and software are ready for education session.
5. Evaluation: The purpose of this step is to ensure the training and contents achieved the learning objectives.

## Relevance to Nursing Practice

In the retrospective analysis of an opt-out HCV screening program at a Dallas County jail from April 1st, 2017 to November 2nd, 2017, there were 4,089 incarcerated inmates screened (Abe et al., 2019). Seven hundred and three inmates (17.3%) had a positive HCV antibody result, and 413 inmates (12.4%) had a positive HCV ribonucleic acid (RNA) result compared to the prevalence of HCV infection in Texas-1.8%. That means 71.7% of incarnated inmates who had a positive HCV antibody test had detectable HCV RNA. This study showed the high percentage of the inmates (17.3%) with a positive HCV antibody test, highlighting the importance of screening inmates for HCV when they are booked in jail.

Universal opt-out HCV screening in prisons would reduce HCV transmission and HCV-associated diseases primarily in the outside community (He et al., 2016). By implementing risk-based and opt-out screening, it could diagnose 41,000–122,700 new HCV cases, could prevent 5,500–12,700 new HCV infections caused by releasees and could also prevent 4,200–11,700 liver-related deaths in the next 30 years in prisons (He et al., 2016). The study showed the benefits for opt-out HCV screening in prisons by

implementing a universal opt-out HCV screening in prisons could save lives and prevent further other complications related to chronic HCV.

**Recommendations and Guidelines**

According to CDC (2021), in the United States from 2013–2016, an estimated 2.4 million adults were living with HCV infection with only 56% aware of their infection. Patients with hepatitis C must make informed choices regarding their screening, care, and treatment. As more people are diagnosed with hepatitis C, the advanced practice nurse is at the forefront of providing information about the spread and diagnosis through screening with HCV antibody, treatment options available, and potential side effects of antiviral therapy (Clark & Ghalib, 2019).

Individuals born between from 1945–1965 represent 81% of all persons chronically infected with HCV in the United States, with sixfold higher prevalence than adults of other ages and are largely unaware of their positive status (Bakhai, et al. 2019). Based on the New York State Policy changes for HCV screening, registered nurses can order HCV testing as part of routine blood work unless the patient's objected, and nurses can now notify patients about HCV RNA positive test results and inform the patients about the need for linkage to care to Hepatology clinic (The New York State Senate, 2021). The American Association for the Study of Liver Disease (2016) identifies that any sexual contact where blood-to-blood transmission may occur may also pose transmission risk, especially intravenous drug use. Being an intravenous drug user is the most important risk factor for HCV infection accounting for approximately 60% of acute infections in the United States (Maasoumy, 2012).

When inmates are being booked at the jail, the nurses are responsible for screening for all inmates for hepatitis C. The screenings can be initiated at the booking by sending notification for providers through the electronic medical records. Patients with high-risk for hepatitis C are the ones who have a history of intravenous drug user or MSM. Then they should be tested for anti-HCV at first then HCV RNA should be followed to confirm the status of HCV infection.

The CDC (2020) recommends for hepatitis C screening among adults in the United States at least once in a lifetime for all adult age 18 years and older (see the Appendix D for more detail about hepatitis C screening). The USPSTF recommends for screening hepatitis C virus infection in adult aged 18 to 79 years. It is considered for Grade B Recommendation (USPSTF, 2020). According to USPSTF (2020), Grade B is known that the clinician provides the hepatitis C screening service to eligible patient because the USPSTF found at least fair evidence that the hepatitis C screening service improves important health outcomes and concludes that benefits outweigh harms. The American Association for the Study of Liver Disease and the Infectious Disease Society of America (2020) published evidence-based practice guidelines for the screening of Hepatitis C (see Appendix D). It recommends one-time, routine, opt out HCV testing for all adults 18 years or older.

## Local Background and Context

There was a gap-in practice in hepatitis C screening guidelines at this detention center located in Washington State. Currently, there are approximately 2,200 inmates in the detention center. In addition, there are multiple interdisciplinary health care workers,

including 75 nurses who are employed at this detention center. The nurses at booking stations are responsible for screening all inmates who come to jail for hepatitis C. Then inmates with high risk for HCV are referred to health care providers for further follow up.

## Role of the DNP Student

As the DNP student, my role at my project site was that of leadership, facilitating, communicating, interacting to enhance team roles, and at the same time, preparing educational materials for practice change. I got approval from the detention center to educate nursing staff about hepatitis C screening. Upon receiving facility approval and the Walden University's IRB approval, I planned the curriculum with input from the medical director. I sent the Power Point slides of HCV Screening presentation and got the approval from the medical director of this detention center prior to having an education session for participants. Ten questions were included in the presentation, so the medical director reviewed them as well.

## Role of the Project Team

The project team consisted of myself and two nursing supervisors. Two nursing supervisors and I worked closely together for this education project. I project to design, develop, implement, and evaluate a staff education program conducted under my leadership to coordinate education and supervise all activities. In my role as a project leader, staff education was developed, disseminated, and evaluated.

## Summary

The purpose of this project was to educate nursing staff about the risk factors for HCV so that proper screening can be done. This DNP nurse educational project on

hepatitis C screening was grounded in Knowles's adult learning theory and the ADDIE model. The education about the HCV screening took place via Zoom. During the presentation, the participants completed the pre-test questions at the beginning of the educational session and posttest questions at the end of educational session. Descriptive statistics were used to analyze the data. My role as a DNP student in this project was to provide leadership and involve stakeholders for the improvement of hepatitis C screening guidelines.

Section 3 will restate the practice focused question and will provide evidence for the doctoral project. An analysis, synthesis, and summary can be found in this section as well.

Section 3: Collection and Analysis of Evidence

## Introduction

For this doctoral project, the practice problem at the project site was inadequate nursing knowledge on hepatitis C screening guidelines. At this detention center located in Washington State, the gap in nursing practice was that the nursing staff did not properly screen the inmates for hepatitis C. The purpose of this DNP project was to answer the question "Will educating nursing staff at the detention facility in Washington increase their knowledge of the importance of screening inmates for hepatitis C?" According to the Substance Abuse and Mental Health Service Administration (2015), a benefit of early identification of HCV infection is that early treatment can improve an individual chances of clearing the virus through treatment and avoiding long-term damage. Chronic HCV can often lead to serious liver conditions including cirrhosis, cancer, and liver failure (CDC, 2016). This project aligned with the roles encountered by the DNP prepared nurse on the academic level to improve inmate outcomes.

## Practice-Focused Question

At this detention center located in Washington State, the gap in nursing practice was that the nursing staff do not properly screen the inmates for hepatitis C. When inmates come to the detention center, they identify themselves with having positive HIV or being an intravenous drug user in the past or being MSM. The nurses did not know that these inmates are at high risk for contracting HCV and did not understand the need to be screened for hepatitis C. The practice-focused question that guided this project was "Will educating nursing staff at the detention facility in Washington increase their

knowledge of the importance of screening inmates for hepatitis C?" I developed nursing education project to educate nurses on the importance of screening inmates for hepatitis C. By increasing the knowledge of the staff about the importance of screening inmates for hepatitis C, it will become a part of their normal routine with patients.

## Sources of Evidence

As sources of evidence for this doctoral project, I relied on evidence-based practice, and the most up-to-date research on hepatitis C screening. Journals and professional organization publications with current information on hepatitis C screening in adult population will be reviewed. I gathered information about hepatitis C screening guidelines through the CDC of 2020, the USPSTF of 2020 and the American Association for the Study of Liver Disease and the Infectious Disease Society of America of 2020. I used this information to develop an educational program. Members of this project team assessed the educational program before implementation. As part of the education program, participants anonymously completed the pre- and post-test assessments.

I conducted literature search through electronic databases, including CINAHL, Google Scholar, MEDLINE, and PubMed. The following keyword search terms that were used: *hepatitis C screening, screening guidelines, incarcerated environment, correctional facilities,* and *nursing staff education.* I also limited the literature research to peer-reviewed journal articles published between 2016 and 2021 available in English. Cohort studies, descriptive qualitative, and quantitative studies, quasi-experimental studies, and systematic reviews were included. To be eligible and included, studies focused on inmates that are in incarcerated environment with hepatitis C related.

Although there are discordant findings about using nursing education as an effective intervention as an effective intervention, several studies indicate it is worthwhile. For example, DiVasta et al. (2016) reported that nursing staff who participated in a learning community intervention where they received education about assessment, epidemiology, and appropriate screen methods, improved their screening rates. Goel et al. (2017) used nurse-focused oral presentations and electronic modules on HCV epidemiology, screening guidelines, and the screening process to increase HCV screening, with significant results. Similarly, McLeod et al. (2017) showed significant improvement in the screening rates for hepatitis C among patients with a risk history from 41% in 2007 to 65% in 2013, $p < 0.001$ due to training on hepatitis C. The findings also suggested educational initiates targeted at professionals with the purpose to promote hepatitis C testing among patients with high risk for hepatitis C. In a different study, nurses were given for both electronic and face-to-face education sessions about hepatitis C screening (Hariri et al., 2020). Screening for HCV infection based on having a history of drug use could replace universal screening in correctional facilities to reduce costs. Therefore, there was a need for effective prison-based programs to scale-up HCV diagnosis and linkage for the people who are rarely reached by healthcare systems.

Analysis of hepatitis C screening guidelines through the CDC, USPSTF, and the American Association for the Study of Liver Disease and the Infectious Disease Society of America as well as these studies let to development of the questionnaire in this education project (see Appendix A). This patient questionnaire was used in the nursing education as an example for nurses on how to ask questions to identify inmates for high

risk of hepatitis C. I developed this questionnaire based on the evidence-based studies to provide examples of questions during the education project.

## Project Approach

I followed Walden University Staff Education Manual while developing DNP staff education. The project approach is explained in the following subsections.

### Participants

Following IRB approval, the participants of education program were identified. Participants who completed the training and evaluation were registered nurses of the local detention center. Participation in the educational program and completion of the pre- and post-test assessments were voluntary. There were 75 nurses employed at this detention center, but only 55 nurses voluntarily chose to participate in the education.

### Procedures

Upon completion of the literature research, I analyzed and synthesized the data to develop an educational program to be presented through a PowerPoint presentation via Zoom, followed by an open discussion with project participants. I developed the pretest and posttest assessments as well as an evaluation survey to be administered after the program. The project team reviewed the content for relevance and appropriateness. After the education program, I analyzed the differences in scores between the pre- and post-tests to measure amount of content learned.

There are two shifts in this jail setting: a.m. shift from 6a.m.–6:30p.m. and p.m. shift from 6p.m.–6:30a.m. I had two education sessions—one for the morning shift and the other for the evening shift. I planned to have the morning education session starting

from 6a.m.–7a.m. and the evening education session starting from 6p.m.–7p.m. If the nurses were unable to participate in any of two education sessions, they had an opportunity to view the record Zoom education sessions. The administrator assistant recorded the sessions and sent the pre-test questions to absent nurses. Those nurses had to come to the nursing office to submit their pretest questions within 3 days of receiving the email from the administrator assistant. Once they completed the pretest questions, the administrator assistant sent them the recorded video. They completed the posttest questions with the demographic data within 7 days of watching the video training at the nursing office. A series of demographic questions were incorporated with the posttest not included in the pretest. These demographic data are gender, highest degree completed, and a total number of years in current practice. The effectiveness of training was included in the posttest section as well with two Yes/No questions. Please see Appendix B for further information.

Then I carried out a quantitative comparison of the pre- and post-test data using a paired sample *t* test to evaluate the effectiveness of the educational program. The same questionnaire was used but the answers for pre- and post-test assessment was collected in the different envelopes. There is one nursing supervisor per shift. The nursing supervisor helped me to place these envelopes in my office mailbox. Then all data were analyzed using IBM SPSS Version 27. The summary of the results was shared with the clinic leaders and clinic staff.

## Protections

Before implementation, I obtained Walden University IRB approval following the guidelines of the Walden University *DNP Staff Education Manual* (approval no. 04-20-22-1027828). Project participants were provided with a consent form, and they gave their consent before participation. They had the option to withdraw their consent at any time without the threat of reprisal. Minimal risks were involved for project participants. This project was solely intended for education and used de-identified data to maintain the anonymity of participants and minimize the risk of a confidentiality breach. The posttest was anonymous, and participants were allowed to place their questionnaire within an unmarked box. I will keep the data collected in a locked drawer and on a password-protected computer for 10 years before deleting it. Only I will access to the data collected in the study.

## Analysis and Synthesis

The purpose of the educational program provided nurses with evidence-based knowledge and skills to screen HCV properly during booking period. Due to the COVID-19 pandemic and the shortage of the nursing staffing, only 55 out of 75 jail nurses were available to participate I gathered data, analyzed, and entered the data into an Excel spreadsheet. Descriptive statistics and a paired *t* test were used to analyze the results.

## Summary

The purpose of this DNP project was to develop staff education regarding hepatitis C screening guidelines. The local nursing practice problem at the project site was inadequate nursing knowledge on hepatitis C screening guidelines. At this detention

center located in Washington State, the gap in nursing practice was that the nursing staff do not properly screen the inmates for hepatitis C. In this section, the resource of evidence that was used to support the development of the project are described. I presented the systems for analysis and synthesis of data obtained from the project.

The next section will include a presentation of the findings and implications, recommendations, contributions of the doctoral project team, and strengths and limitations of project are discussed. The results are presented in tables with narrative text. This project will use a quantitative method of analysis using descriptive statistics. This project promotes positive social change by facilitating staff nurse's learning in early-identifying inmates with high risks of hepatitis C. The significance of the education project for nurses will improve the services of the jail health clinic and the services towards the community at large by promoting better health care.

Section 4: Findings and Recommendations

## Introduction

Routine hepatitis C screenings for inmates with high risk for hepatitis C can help improve early detection rates and inmates' outcomes within an incarcerated setting. I designed this staff education to fill the gap in practice in increasing nursing knowledge using evidence-based practice and to improve nursing confidence in hepatitis C screening. The practice focused question for this project was "Will educating nursing staff at the detention facility in Washington increase their knowledge of the importance of screening inmates for hepatitis C?"

The hepatitis C screening education program was a 1-day event consisting of two 60-minute sessions offered in this incarcerated setting in Washington State. The training content for this project was reviewed by the medical director of this incarcerated setting and deemed relevant to this clinical practice. There were 55 out of 75 nurses who voluntarily participated. These nurses were given pre-printed pretest 10-item assessments as part of this staff education project in the form of a multiple-choice questions and true/false questions. Then, the nurses were present for a 30-minute oral presentation about hepatitis C screening guidelines. After the education session, the nurses were given the same 10-item posttest assessment as well as two questions about an evaluation for this education session with yes/no questions. The analysis of these data was performed using descriptive statistics and paired *t* test in SPSS. This section discusses the findings and implications, recommendations, contributions of the doctoral project team, and the strength and limitation of this doctoral project.

## Findings and Implications

Before this project began, the proposal was reviewed and approved by the Walden University IRB. All data were identified for anonymity. With this staff education project, I sought to determine if nursing staff knowledge concerning hepatitis C screenings would increase regarding current evidence-based guidelines in order to implement early detection.

Of the 10 questions on the pretest and posttest, five of the questions did not discriminate between nurses with knowledge and those without knowledge. All of these questions were poorly worded and received the same scores across all participants. The remaining five questions were good discriminators and indicated a statistically significant change in scores for the posttest compared to the pretest. See Table 2)

Of the 55 nurses in the posttest, the results showed increased scores and all reported being 100% satisfied with the education program. The nurses felt the education provided helpful and clear and reported they will change the way they interview inmates for HCV screening based on this education.

There was a paired *t* test performed that indicated an increase in staff knowledge regarding hepatitis C screenings. According to the results of the paired *t* test, the test statistic was $t = 3.6147$, with 9 degrees of freedom and $p < 0.0001$. Because the *p* value was less than $\alpha = 0.05$, with 95% confidence limits (-20.00, -4.60), there was a statistically significant increase in nursing knowledge. compared pretest and posttest with correct answers. The descriptive statistics and paired *t* test results are illustrated in Table 2.

**Table 2**

*Pretest and Posttest Results*

| | Pretest | Posttest | Difference |
|---|---|---|---|
| Question | Correct | Correct | Correct |
| 1 | 35 | 55 | 20 |
| 3 | 32 | 55 | 22 |
| 7 | 28 | 54 | 26 |
| 9 | 25 | 55 | 30 |
| Mean | 30 | 53.5 | |
| SD | 3.87 | 2.05 | |

For question 1, question 3, question 7 and question 9, the true mean of the pretest scores was at 30 with standard deviation at 3.87. After the education session, the true mean of the posttest scores for these questions was at 53.5 with standard deviation at 2.05. It supported that nurses' knowledge improved from 30 points to 53.5 points. That was 43.9% increasement in knowledge based on these questions.

The finding of this study could positively impact the community by increasing the knowledge of the nurses within the incarcerated setting regarding early screening of inmates at risk for hepatitis C. Early screening leads to improved survival rates among this community's population as well as higher awareness of the serious complications associated with a late diagnosis. In addition, the results show a potential for positive social change within the health care setting by providing staff education to the nursing staff that improves the quality of the care delivered. This staff education project set a foundation for the importance of the implementation of current guidelines within the incarcerated setting and continuous education of the nursing staff. One important aspect of this staff education was that the project met clinical objectives and approval from the current administration to help increase nursing knowledge of hepatitis C screening. In

addition, the nursing staff agreed that the information provided helped increase their knowledge base and was applicable to current practice within the incarcerated setting.

## Recommendations

Within this incarcerated setting, the problem was that the nursing staff did not adhere to hepatitis C screening guidelines. The inmates at risk for hepatitis C or reported with hepatitis C were supposed to referred to health care providers after they are booked in jail for 30 days. Health care providers identified inmates who had been in jail over 30 days ago should have been referred to us for hepatitis C screening but were not. Therefore, an educational program on hepatitis C screening guidelines at this site was needed. The patient population at this facility are at high risk for hepatitis C. Therefore, it is the recommendation that nurses need to have continuous education within the current protocols regarding hepatitis C screenings. In addition, this setting treats a large majority of inmates with high risk for hepatitis C from their illicit drug with intravenous way, their sexual activities with MSM as well as condomless. Therefore, early detection in this population may be highly recommended. It would be useful to implement a clinical policy and protocol for nursing staff to apply this information to care delivery on routine screenings for new inmates booked in this incarcerated setting. To address this gap in practice, it is important that administration maintains consistency in following current guidelines from the CDC and others.

## Contribution of the Doctoral Project Team

Working with the doctoral project team involved the medical director, registered nurse supervisors, administration assistant, and nursing staff, and me as the DNP student

to identify, develop, and modify appropriate material for presentation based on the gap identified in clinical practice. The project team was responsible for selecting an appropriate time and place to conduct the meetings, selecting the length of time required to complete each task, and identifying any information missed based on clinical experiences. Then we collaborated to determine specific learning objectives for the nursing staff as well as the appropriate way to deliver the information, the topics to focus on, and the type of survey that would be user friendly for the nursing staff. In addition, the doctoral team assessed the process used to determine how the results impacted the knowledge of the nursing staff and the impact of that knowledge on the clinical practice. After completing this education project, the doctoral team has planned to create an action plan for the facility to expand this type of the project to other areas where gaps were identified in the practice.

## Strengths and Limitations of the Project

The current DNP project had several limitations and strengths. One of the major limitations of this project was the lack of discrimination in five of the test questions. There were two multiple questions (question 2 and question 8) that gave away the correct answers in the wording of the questions, and did not accurately provide a measure of knowledge. There were two true/false questions (questions 4 and 6) that were not included in the statistical analysis. All of the nurses were able to answer these questions correctly during the pretest session and did not discriminate those with knowledge and those without knowledge. Question 5 confused participants. Those questions were not part of the statistical analysis.

One of the strengths of this project was the positive attitudes and willingness of the members of the doctoral team to participate fully. The principal strength of this DNP project was the opportunity to address an urgent need for jail nurses to hone their knowledge and skills on current practices in hepatitis C screening guidelines. This hepatitis C screening guidelines education program will be a necessary tool for jail nurses who are involved in caring inmates with high risk of hepatitis C and providing nursing education to inmates about early screening hepatitis C during the booking process. There seemed to be a consensus from all for the need for improvement in current hepatitis C screening guidelines.

## Summary

This staff education project illustrates the effectiveness of including clinical based guidelines into clinical practice on hepatitis C screenings. In addition, the advancement of nursing staff education helped increase the knowledge and confidence in daily clinical practice to improve clinical outcomes. The pre- and post-assessments results supported the recommendations for this project. In Section 5, the dissemination, analysis of self and summary are discussed.

# Section 5: Dissemination Plan

## Introduction

The DNP project established the existence of knowledge gaps among registered nurses in the selected incarcerated setting in State of Washington. As revealed by this DNP project, the selected registered nurses lacked sufficient knowledge of hepatitis C screening guidelines for screening inmates during the booking process. However, the education sessions improved their knowledge of these screenings. Therefore, the dissemination of these research findings is significant. Dissemination is considered an essential part of evidence-based practice in nursing because it helps translate knowledge into clinical practice (Curtis et al., 2017). It would be appropriate to continue dissemination of this project to other incarcerated settings in the State of Washington through staff training online or in person. The optimal audiences for further dissemination include nursing staff, administration, and health care providers.

## Analysis of Self

I took on many roles that posed challenges and rewards during this staff education project. The execution of my DNP project was an enormous task, and it affected my role as practitioner, scholar, and project manager. There was a significant improvement on all aspects including my writing skills and editing acumen. As a DNP student, I need these skills which are necessary to become an effective change agent to address gaps in practice using evidence-based guidelines to improve patient care.

**As Practitioner**

About 40-455% of my inmates in this incarnated are at risk for hepatitis C. As the jail medical provider, I need to monitor their hepatitis C and manage their condition. This has provided me with a clear perspective of registered nurse's challenging in screening new incoming inmates for hepatitis C during the booking process. In addition, the knowledge gained throughout this DNP project help me to formulate a staff development activity to promote early hepatitis C screenings for new incoming inmates with high risk for hepatitis C. My long-term professional goal as a hepatitis C expert is to see improved knowledge of hepatitis C screening for new incoming inmates with high risk of hepatitis C among registered nurses.

**As Scholar**

The motivation for undertaking this DNP project was my belief that all inmates deserve quality care and improved quality of life. The experience I gained has prepared me for the challenges within the nursing profession as the hepatitis C prevalence among inmates higher than people from outside community and the chronic hepatitis C cases continue to raise in the incarcerated setting. The planning stage and the implementation was an experience that I will never forget as my passion and expertise as a nurse educator was put in use.

**As Project Manager**

In this project, the project manager role that I undertook in this DNP project was critical because I was responsible for ensuring effective formulation and completion of the doctoral project. I developed my patience and perseverance with some of the

challenge and delays of a scholarly project, including with approval of my initial project plan in the prospectus and the more detailed proposal of the project. Throughout the DNP project, I developed my leadership skills in the implementation of the educational project. The experience gained in successfully implementing this DNP project provides me with knowledge that I can draw on in my future professional assignments.

## Summary

This staff education project was developed to increase the knowledge among the nursing staff regarding the importance of hepatitis C screenings in the incarcerated setting. There was a gap in practice noted within this setting regarding identification of high-risk inmates among this population. To improve early hepatitis C screening for new incoming inmates with high-risk for hepatitis C, this DNP project was developed and implemented through a collaboration effort. There was a pre- and post-assessment conducted to assess staff knowledge during this project. The data showed an increase in staff knowledge after the information was disseminated for this doctoral project. The implementation of this DNP project created an opportunity for nursing advancement to improve the quality of inmate care throughout the use of evidence-based guidelines in clinical practice. The participants of this DNP project were found to be satisfied with the teaching and training they obtained. This DNP education initiative, when disseminated and shared with other incarcerated settings within State of Washington or even in the United States, has potential to affect positive social change with benefits to inmates and health care outcomes.

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# Appendix A: Pretest and Posttest Questionnaire

1. How many people in the United States have chronic hepatitis C?
    a. 1 million
    b. 3.5 millions
    c. 10 millions
    d. none of them

2. Who are the most impacted population with chronic hepatitis C?
    a. Young white non-urban people who injected drugs
    b. Baby-boomers, especially African Americans
    c. HIV-positive men who have sex with men
    d. All of these above.

3. What are the percentage of people with living with HIV in the US are co-infected with HCV?
    a. 25%
    b. 30%
    c. 35%
    d. 40%

4. True or False: Per CDC guideline, Hepatitis C screening at least once in lifetime for all adults aged >=18 years.

5. What is the grade of 2020 USPSTF HCV Screening Recommendations?
    a. Grade A
    b. Grade B
    c. Grade C
    d. Grade D

6. True or False: Biannual testing for men with HIV who have condomless sex with men, men who have sex with men and are on HIV pre-exposure prophaxis (PrEP), and people who inject drug (IVDU).

7. A two-part testing sequence is required to confirm an active HCV infection:
    a. HCV Antibody
    b. HCV RNA confirmatory
    c. HCV Viral load
    d. a and b
    e. a and c
    e. b and c

8. What are the benefits of Direct-acting Antiviral medications?
    a. Fewer side effects

b. Shorter treatment duration (8-24 weeks)
c. Curative 95% for most patients and most genotypes
d. All of the above

9. Which HCV genotype is the most of chronic HCV cases?
a. Genotype 1
b. Genotype 2
c. Genotype 3
d. Genotype 4
e. Genotype 5
f. Genotype 6

10. What are HCV Free Washington Coordinating Committee available?
a. State agencies and offices (DOA, HCA, DOC, OFM, LNI, etc)
b. Trial health centers
c. Local health jurisdictions
d. Federal qualified health centers
e. Community-based organizations
f. All of the above

Thank you.

Demographic Data

1. What is your gender?
a. Male
b. Female
c. Others

2. Are you Hispanic or Latino?
a. Yes
b. No

3. Please indicate how you identify yourself (Select one or more):
a. American Indian or Alaskan Native
b. Asian
c. Back or African American
d. Native American or Other Pacific Islander
e. White

4. How many years have you been a nurse?
a. 0-5 years
b. 6-10 years
c. 11-15 years
d. 16-20 years
e. >20 years

5. Highest level of nursing education:
    a. Diploma
    b. Associate's Degree
    c. Bachelor's Degree
    d. Master's Degree
    e. PhD or DNP Degree
    f. Others

---

Evaluation about Education Session

6. Was the education provided helpful and clear?
    a. Yes
    b. No

7. Do you feel you will change how you interview inmates for HCV screening based on this education?
    a. Yes
    b. No

Thank you.

Appendix B: PowerPoint Presentation

# Hepatitis C

## An Overview for Healthcare Staffing

Duy Trinh, DNP student, FNP-C
Walden University

## Why HCV? Why now?

- Hepatitis C virus (HCV) kills more Americans than the 60 other reportable infectious diseases, including HIV, combined
- Baby boomers (born between 1945 and 1965), especially African Americans, face high burdens of chronic HCV infection
- People who inject drugs face rapidly rising rates of acute HCV infection as a result of the growing opioid epidemic
- This is a pivotal moment in HCV treatment, because curative treatment regimens are now available
  - These treatments are significantly more effective, rapid, and tolerable than prior regimens
  - With curative treatment, eliminating HCV as a public health threat is a real possibility

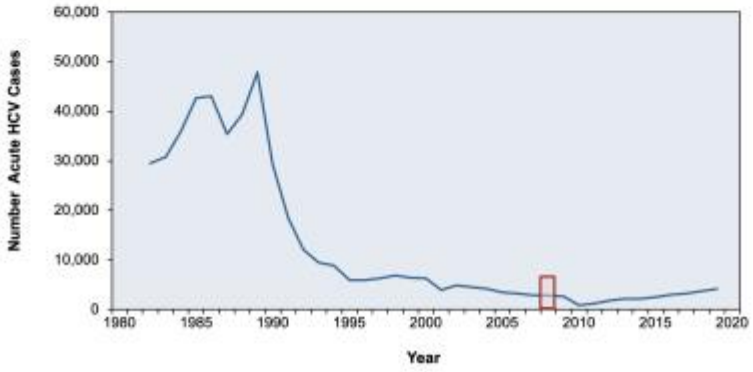
1. Centers for Disease Control and Prevention (CDC). Hepatitis C FAQ for Health Professionals. http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm#section1
2. CDC. Hepatitis C Kills More Americans than Any Other Infectious Disease. http://www.cdc.gov/media/releases/2016/p0504-hepc-mortality.html
3. National Academies of Sciences, Engineering, and Medicine. A National Strategy for the Elimination of Hepatitis B and C: Phase Two Report. http://www.nationalacademies.org/hmd/Reports/2017/national-strategy-for-the-elimination-of-hepatitis-b-and-c.aspx

# HCV Epidemiology in USA

- Current estimated US prevalence: 3.5 million (2.7-5 million)
- 2019 US incidence:
  - Nearly 4,136 acute cases were reported to CDC in 2015
  - However, CDC estimates that there were 57,700 new infections in 2019
- Most impacted populations:
  - Young white non-urban people who inject drugs
  - Baby boomers, especially African Americans
  - HIV-positive men who have sex with men

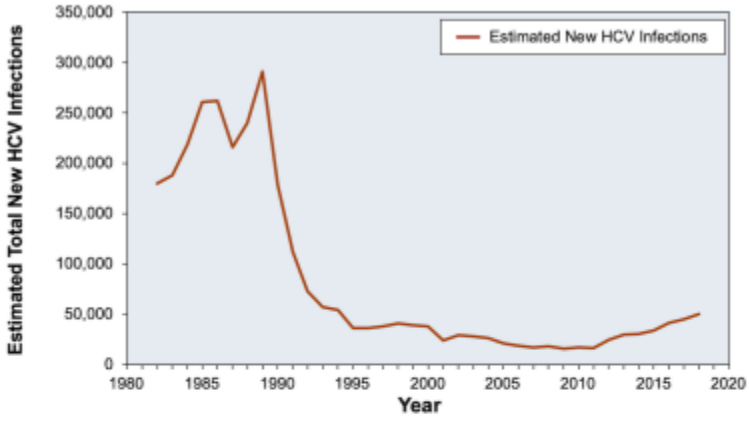
CDC. Hepatitis C FAQ for Health Professionals. http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm#section1

# Number Acute HCV Cases

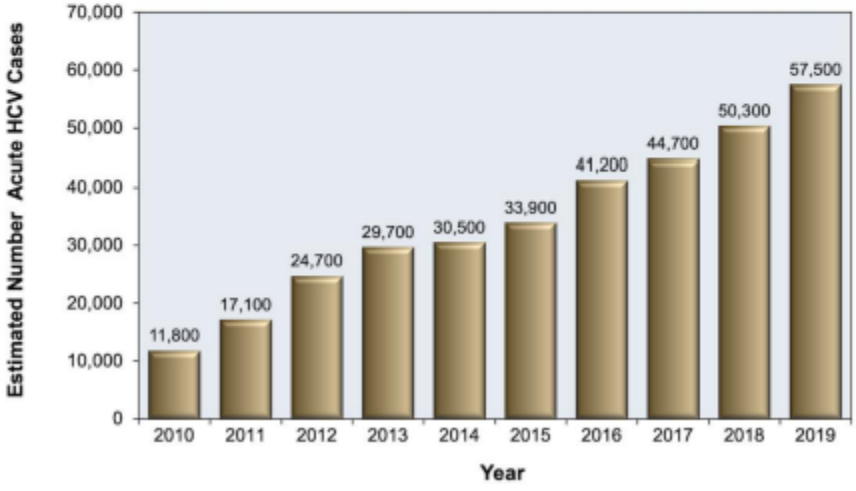



HCV Incidence: The number of people who become newly infected with HCV in a defined time period, typically reported for 1-year period.

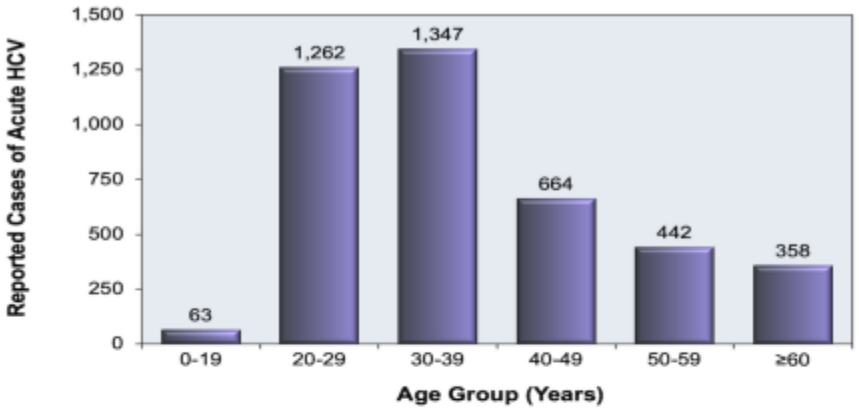
# Estimated Total New HCV Infections




# Estimated Number Acute HCV Cases

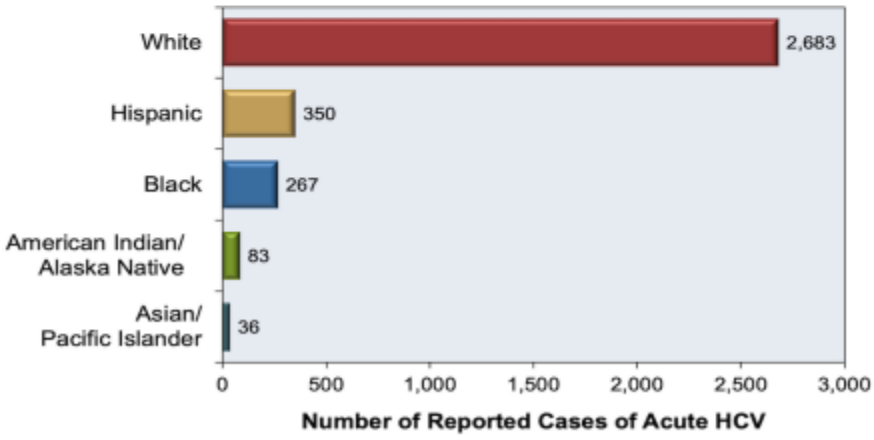


# Reported Cases of Acute HCV



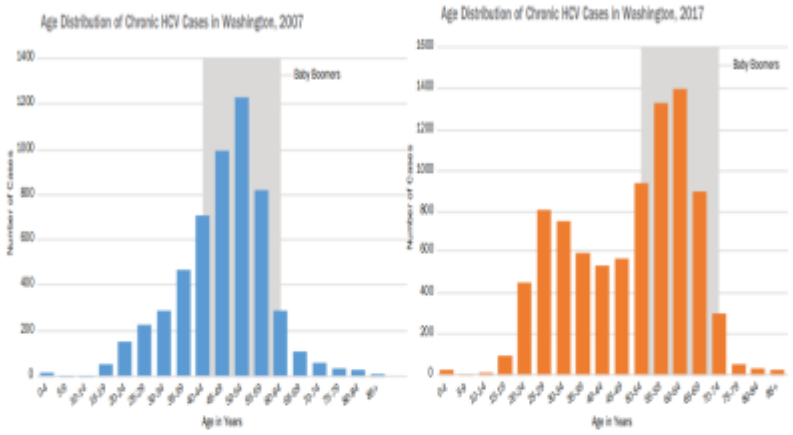

Reported Cases of Acute HCV, By Age Group United States, 2019

# Number of Reported Cases of Acute HCV




Reported Cases of Acute HCV, By Race, United States, 2019

# HCV in Washington




Source: Washington State Department of Health, Hepatitis Surveillance Records

Age Shift among Chronic HCV Cases in Washington State, 2007 and 2017

# Hepatitis C Surveillance in WA

- In 2017:
  - 8,839 new reports of chronic infection
  - 543 deaths attributed to chronic HCV
  - 73 new reports of acute infection
- There are an estimated 65,000 Washingtonians currently living with chronic HCV.

| Newly Reported HCV cases | | | |
|---|---|---|---|
| Year | Acute | Chronic | Total |
| 2012 | 54 | 4,865 | 4,919 |
| 2013 | 63 | 4,438 | 4,501 |
| 2014 | 83 | 5,995 | 6,078 |
| 2015 | 63 | 7,085 | 7,148 |
| 2016 | 95 | 8,118 | 8,213 |
| 2017 | 73 | 8,839 | 8,912 |

Source: WA DOH Hepatitis Surveillance Records

# Priority Populations for HCV in WA

- People in Jails or Prisons
  - 1% of populations of US
  - 17.4% to 23.1% in the U.S. Prisons (majority IVDU)
  - 11%-15% of incarcerated people in the WA DOC with chronic HCV
- People living with HIV
  - In US about 1 in 5 people with HIV: past or present HCV infection
  - In 2018, WA 10% of people with newly diagnosed with HIV: acute or chronic HCV infection.
  - In 2018, WA 9% of people with HIV had chronic HCV infection
  - Reasons: direct blood to blood contact, MSM, IVDU and non-injected
- African American and Native Americans
  - There is no data race/ethnicity submitted to the WA Dept of Health
  - AA 11% of US Population represents 25% with chronic HCV
  - Nationally, American Indian/Alaska Natives: highest rates of acute HCV; and rate of death related to HCV is 2.7 times higher than non-Hispanic Whites.
  - During 2006-2012 in WA, American Indian/ Alaska Natives: higher rate of HCV associated death when compared to non-Hispanic Whites (a recent analysis from Northwest Portland Area Indian Health Board in 2017)

# At-risk Populations

# Risk factors for HCV Acquisition

- Injection Drug Use: >60% of cases of HCV
  - 20%-30%: infected with HCV within the first two years
  - 50% within 5 years
  - Decline from 1992-2002: availability of needle exchange program
- Non-injection Drug Use: 2.5%-35.3% of cases of HCV
- Sexual Exposure: 15% of cases of HCV
- Chronic Hemodialysis: 8% of persons receiving dialysis.
- Receipt of Blood products: low; new guidelines from US Public Health Services

# Baby Boomer Cohort

- Individuals born 1945–1965 (aged 52-72 in 2017)
- Adults born in these years:
  - Are 6 times more likely to be HCV-infected than adults born in other years
  - Are at the greatest risk for liver cancer and other HCV-related liver diseases
  - Account for 73% of deaths associated with HCV infection
- 77% of HCV-infected adults belong to the baby boomer birth cohort

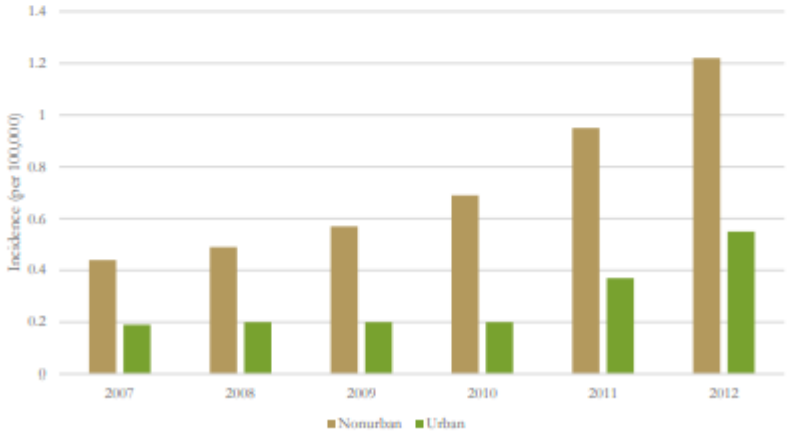
1. CDC. Recommendations for the Identification of Chronic Hepatitis C Virus Infection Among Persons Born During 1945–1965.
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6104a1.htm?s_cid=rr6104a1_w
2. CDC. Viral Hepatitis Surveillance, United States, 2015. https://www.cdc.gov/hepatitis/statistics/2015surveillance/pdfs/2015HepSurveillanceRpt.pdf

# Persons Who Inject Drugs

- Individuals who inject drugs account for the greatest increases in new HCV infections in the US
  - Dramatic increases in new infections tied to the opioid epidemic
- Exposure through injection drug use disproportionately impacts young people and those living in nonurban areas
  - HCV exposure occurs most often among new injectors
  - Acute HCV infection is often asymptomatic, and young injectors are unlikely to seek medical care
- Heroin and opioid use occurring primarily among white males and females in suburban and rural settings

1. CDC Viral Hepatitis Surveillance, United States, 2015. https://www.cdc.gov/hepatitis/statistics/2015surveillance/pdfs/2015HepSurveillanceRpt.pdf
2. Office of HIV/AIDS and Infectious Disease Policy. Hepatitis C Infection in Young Persons Who Injects Drugs. https://www.aids.gov/pdf/hcv-and-young-pwid-consultation-report.pdf

# Rising Rates of New Infections among Persons Who Inject Drugs




Suryaprasad, et al. Emerging epidemic of hepatitis C virus infections among young nonurban persons who inject drugs in the United States, 2006-2012. *Clinical Infectious Diseases*, 2014;59(10):1411-1419.

# Other Populations at Risk

- HIV-positive persons
  - 25% of people with living with HIV in the US are co-infected with HCV
- Individuals with occupational exposure to HCV through accidental needlesticks
- Children born to HCV-positive mothers
  - Transmission occurs at birth, and no prophylaxis is available

1. CDC. Testing Recommendations for Hepatitis C Virus Infection. http://www.cdc.gov/hepatitis/hcv/guidelinesc.htm
2. Yaphe, et al. Incidence of acute hepatitis C virus infections among men who have sex with men with and without HIV infection: A systematic review. *Sexually Transmitted Infections*. 2012;88 (7):558-564.
3. CDC. Viral Hepatitis – CDC Recommendations for Specific Populations and Settings. http://www.cdc.gov/hepatitis/populations/hiv.htm
4. CDC. Hepatitis C FAQ for Health Professionals. http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm#section1

# Populations at Risk in WA

- People in Jails or Prisons
- People living with HIV
- African American and Native Americans

# Screening/Testing Guidelines

## 2020 CDC Recommendations for HCV Screening

**CDC Recommendations for Hepatitis C Screening Among Adults -- United States**

| Persons Recommended for Screening |
|---|
| **Universal hepatitis C screening:** |
| • Hepatitis C screening at least once in a lifetime for all adults aged ≥18 years, except in settings where the prevalence of HCV infection (HCV RNA-positivity) is <0.1% |
| • Hepatitis C screening for all pregnant women during each pregnancy, except in settings where the prevalence of HCV infection (HCV RNA-positivity) is <0.1% |
| **One-time hepatitis C testing regardless of age or setting prevalence among persons with recognized risk factors or exposures:** |
| • Persons with HIV |
| • Persons who ever injected drugs and shared needles, syringes, or other drug preparation equipment, including those who injected once or a few times many years ago |
| • Persons with selected medical conditions, including persons who ever received maintenance hemodialysis and persons with persistently abnormal alanine aminotransferase (ALT) levels |
| • Prior recipients of transfusions or organ transplants, including persons who received clotting factor concentrates produced before 1987, persons who received a transfusion of blood or blood components before July 1992, persons who received an organ transplant before July 1992, and persons who were notified that they received blood from a donor who later tested positive for HCV infection |
| • Health care, emergency medical, and public safety personnel after needle sticks, sharps, or mucosal exposures to HCV-positive blood |
| • Children born to mothers with HCV infection |
| **Routine periodic testing for persons with ongoing risk factors, while risk factors persist:** |
| • Persons who currently inject drugs and share needles, syringes, or other drug preparation equipment |
| • Persons with selected medical conditions, including persons who ever received maintenance hemodialysis |
| **Any person who requests hepatitis C testing should receive it, regardless of disclosure of risk, because many persons might be reluctant to disclose stigmatizing risks** |

Schillie S, Wester C, Osborne M, Wesolowski L, Ryerson AB. CDC Recommendations for Hepatitis C Screening Among Adults - United States, 2020. MMWR Recomm Rep. 2020;69:1-17.

# U.S. Preventative Serives Task Force

| USPSTF Grade Recommendations (after July 2012) | | |
|---|---|---|
| Grade | Definition | Suggestions for Practice |
| A | The USPSTF recommends the service. There is high certainty that the net benefit is substantial. | Offer or provide this service. |
| B | The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. | Offer or provide this service. |
| C | The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small. | Offer or provide this service for selected patients depending on individual circumstances. |
| D | The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. | Discourage the use of this service. |
| I | The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined. | Read the clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms. |

U.S. Preventive Services Task Force. Final Recommendation Statement. Hepatitis C: Screening.

# 2020 USPSTF HCV Screening Recommendations

| | |
|---|---|
| **What does the USPSTF recommend?** | **For adults aged 18 to 79 years: Grade B**<br>Screen adults for hepatitis C virus (HCV) infection. |
| **To whom does this recommendation apply?** | Asymptomatic adults (including pregnant persons) aged 18 to 79 years without known liver disease. |
| **What's new?** | This recommendation expands the population that should be screened. The USPSTF now recommends that all adults aged 18 to 79 years be screened. Previously, it recommended screening adults born between 1945 and 1965 and others at high risk. |
| **How to implement this recommendation?** | **Screen.** Screen adults aged 18 to 79 years with anti-HCV antibody testing followed by confirmatory polymerase chain reaction testing.<br>• The USPSTF also suggests that clinicians consider screening persons younger than 18 years and older than 79 years who are at high risk for infection (eg, those with past or current injection drug use).<br>Adults with a positive screening test result are usually followed up with a diagnostic evaluation using 1 of various noninvasive tests. Treatment typically consists of oral direct-acting antiviral regimens for 8 to 12 weeks.<br>Important considerations include:<br>• Communicating that screening is voluntary and undertaken only with the patient's knowledge<br>• Informing patients about HCV infection, how it can (and cannot) be acquired, the meaning of positive and negative test results, and the benefits and harms of treatment<br>• Providing patients the opportunity to ask questions and to decline screening. |
| **How often?** | One-time screening for most adults.<br>Periodically screen persons with continued risk for HCV infection (eg, persons with past or current injection drug use). There is limited evidence to determine how often to screen persons at increased risk. |
| **What are other relevant USPSTF recommendations?** | The USPSTF has made recommendations on screening for hepatitis B virus infection in pregnant persons, hepatitis B virus infection in adults, and HIV infection. These recommendations are available at www.uspreventiveservicestaskforce.org. |
| **Where to read the full recommendation statement?** | Visit the USPSTF website to read the full recommendation statement. This includes more details on the rationale of the recommendation, including benefits and harms, supporting evidence, and recommendations of others. |

US Preventive Services Task Force, Owens DK, Davidson KW, et al. Screening for Hepatitis C Virus Infection in Adolescents and Adults: US Preventive Services Task Force Recommendation Statement. JAMA. 2020 Mar 2.

# AASLD/IDSA HCV Testing Guidance

The American Association for the Study of Liver Disease (AASLD) and Infectious Disease Society of America (IDSA) guidance for HCV testing:

- One time, routine, opt-out HCV testing for all individual aged 18 years and older
- One-time testing for persons younger than age 18 who have increased risk for acquiring HCV
- Periodic testing for persons who have risk activity for acquiring HCV
- Annual testing for men with HIV who have condomless sex with men; men who have sex with men and are on HIV preexposure prophaxis (PrEP), and people who inject drug (IVDU)

https://www.hcvguidelines.org/evaluate/testing-and-linkage

# Testing Recommendations by Risk

- Baby boomer cohort (born between 1945-1965)
  - One-time screening for all members of baby boomer cohort
  - No prior HCV risk attainment recommended
- People who inject drugs
  - Those currently injecting drugs
  - Those who have ever injected drugs, even once
- HIV-positive persons
  - At initial HIV-related medical visit
  - Annually for all HIV-positive MSM
- Children born to HCV-positive mothers
  - After 18 months if using an antibody screening
  - At 1–2 months if using an RNA test, and repeated subsequently to confirm

1. CDC. Testing Recommendations for Hepatitis C Virus Infection. http://www.cdc.gov/hepatitis/hcv/guidelinesc.htm
2. CDC. Screening Recommendations: Referenced in Treatment Guidelines and Original Recommendation Sources. http://www.cdc.gov/ncHHSP/2013/screening-recommendations.htm
3. CDC. Hepatitis C FAQ for Health Professionals. http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm#section1

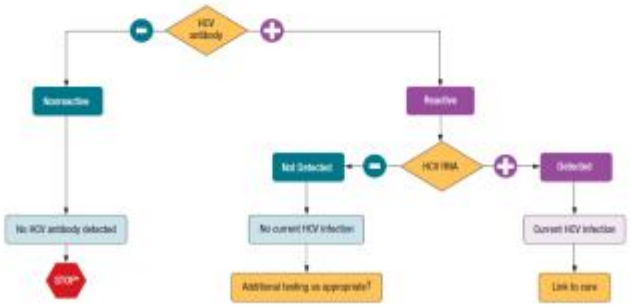
# Rationale for Expanded HCV Screening of All Adults

Since the release of the 2012 CDC birth-cohort (1945-1965) HCV screening recommendations, expanded HCV screening in the US increases as:

- Changing HCV Epidemiology in the U.S:
  - A major surge in new cases of HCV in US involved younger adults OUD, especially IVDU.
- High Cure Rate with DAA Therapy:
  - Newer direct-acting antiviral therapy with 8-12 week oral regimens, 98% cure rates
- Impact of Treatment on HCV Natural History:
  - Achievement of sustained virologic responses (SVR) with HCV treatment about 98%
  - Major decreases in Hepatocellular carcinoma, liver-related mortality, and all-cause mortality
- Lower Cost of DAA Regimens: have significantly drive down the cost of the treatment
  - Around 2015, ledipasvir-sofobuvir cost $84,000 for HCV treatment with DAAs
  - Glecaprevir-pibrentasvir regimen cost $18,000 to $39,600 for 8-12 weeks
- Potential Public Health Benefits:
  - The concept of HCV treatment as prevention is based on the fundamental principle that persons with HCV who are treated and cured will not transmit HCV to others.
  - Treatment as the prevention which has a major role in controlling (and eventually eliminating) HCV.

# CDC Testing Algorithm

- A two-part testing sequence (HCV antibody and HCV RNA confirmatory) is required to confirm an active HCV infection



# Two-part Testing Sequence

1. Initial HCV antibody screening
   - Use CLIA-waived rapid test, or lab-based assay
   - Non-reactive indicates no presence of HCV antibodies
   - Reactive indicates:
     1. Current HCV infection, or
     2. Past HCV infection that has resolved, or
     3. False positivity
2. Refer or Test for HCV RNA
   - **If antibody screening test is reactive, conduct or refer to a specialist for an RNA test to detect active infection**
   - RNA testing can be conducted using blood from:
     1. A venipuncture sample subsequent to antibody screening, or
     2. A single initial venipuncture in which two specimens are collected in separate tubes, or
     3. A single initial venipuncture sample automatically directed to RNA testing after a reactive antibody screening (reflex-to-RNA), or
     4. A separate venipuncture sample collected after reactive rapid test using a fingerstick sample

CDC. Testing for HCV Infection: An Update of Guidance for Clinicians and Laboratorians. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6218a5.htm

# Treatment & Cure

# Treatment Past & Present

***Past***

- Interferon-based
- Low efficacy against the most common HCV genotype (treatment often was not curative)
- Patients often experienced significant side effects

***Present***

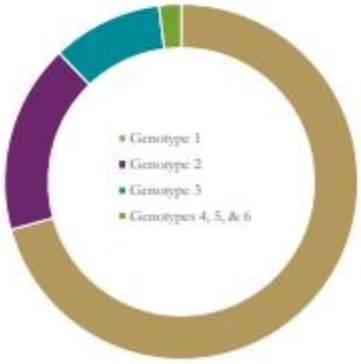
- Direct-acting Antivirals (DAAs)
- Curative (95%) for most patients and most genotypes
- Provide improved patient quality of life: fewer side effects and shorter treatment duration (8-24 weeks)

Treatments are evolving with new medications, making it important to stay up-to-date with the latest guidelines at ttps://www.hcvguidelines.org

1. CDC. Hepatitis C FAQs for Health Professionals. http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm
2. U.S. Food and Drug Administration [FDA]. Harvoni (ledipasvir/sofosbuvir) Label Updated. http://content.govdelivery.com/accounts/USFDA/bulletins/1252f06
3. FDA. FDA Hepatitis C Update – Approval of Zepatier for Treatment of Chronic Hepatitis C Genotypes 1 and 4. http://content.govdelivery.com/accounts/USFDA/bulletins/1355c51

# Necessity of HCV Genotyping

- Genotypes of HCV are distinct groups of the virus that impact different populations and require specific treatment protocols
- Genotyping is often performed as part of RNA testing, and is necessary to optimize treatment




US Genotype Prevalence

1. US Department of Veterans Affairs. Hepatitis C Genotypes and Quasispecies. http://www.hepatitis.va.gov/provider/reviews/genotypes.asp#ref2
2. University of Washington. Hepatitis C in the United States. http://www.hepatitisc.uw.edu/pdf/overcoming-diagnosis/epidemiology-us/core-concept/all

# Key Steps for Health care Staffing

## Screen

Using lab-based HCV antibody assay:

- All persons born between 1945-1965 (baby boomers) once in their lifetime without attaining past risk
- People who inject drugs who are currently injecting or who have ever injected
- HIV-positive persons at their first medical visit, especially HIV-positive MSM

## Confirm

With an HCV RNA test using reflex-to-RNA to streamline diagnosis and reduce loss-to-follow-up

## Refer and Link

- To RNA confirmatory testing for antibody-positive patients
- Or, to be assessed for treatment for RNA-confirmed patients

## Counsel

- HCV-positive persons on adherence for those receiving treatment, transmission prevention, and liver health
- HCV-negative persons on harm reduction information

## Follow Up

With antibody-positive patients, they need to receive a confirmatory RNA test and are linked to care for treatment

## Implement

- Standing orders for nurses to screen for HCV
- Electronic medical record enhancements, including alerts and prompts to screen 1945-65 birth cohort
- Clinical decision support tools for confirmatory testing, risk-based testing, counseling and prevention for people who test positive, and referral coordination with HCV clinic from HMC if needed.
- Patient communication tools including kite reminders and notifications

## Consult

The most up-to-date HCV prevention and treatment guidelines at https://www.hcvguidelines.org

# Local Contact Information

- Local health department contact information
  - Public Health-Seattle & King County

  https://kingcounty.gov/depts/health/communicable-diseases/disease-control/hepatitis-C/test-and-cure.aspx

- State or regional viral hepatitis coordinator contact information
  - Washington State Department of Heath-Adult Viral Hepatitis Prevention Section

  https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/Hepatitis/HepatitisC

- Information on local harm reduction services, including syringe service programs/exchanges:
  - King County Needle Exchange

  https://kingcounty.gov/depts/health/communicable-diseases/hiv-std/patients/drug-use-harm-reduction/needle-exchange.aspx

# WA State Syringe Service Programs HCV Screening Sites

# Hep C Free WA Coordinating Committee

Includes representatives from:

- State agencies and offices (DOH, HCA, DOC, OFM, LNI, etc.)
- Tribal health centers
- Local health jurisdictions
- Federally qualified health centers
- Community-based organizations
- Syringe service programs
- Opioid treatment programs
- Veterans Administration
- Academic institutions (UW, WSU)
- Health plans
- Professional organizations

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Appendix C: CDC Hep C Screening Guidelines

- Universal Hepatitis C screening:
    - Hepatitis C screening at least once in a lifetime for all adult age 18 years and older
    - Hepatitis C screening for all pregnant women during each pregnancy.
- One-time hepatitis C testing regardless of age or setting prevalence among people with recognized conditions or exposures:
    - People with HIV
    - People who ever injected drugs and shared needles, syringes, or other preparation equipment
    - People with selected medical conditions, including:
        - People who ever received maintenance hemodialysis
        - People with persistently abnormal ALT levels
    - Prior recipients of transfusion or organ transplants, including:
        - People who received clotting factor concentrates produced before 1987
        - People who received a transfusion of blood or blood components before July 1992
        - People who received an organ transplant before July 1992
        - People who were notified that they received blood from a donor who later tested positive for HCV infection

    - Health care, emergency medical, and public safety personnel after needle sticks, sharps, or mucosal exposures to HCV-positive blood
    - Children born to mothers with HCV infection
- Routine periodic testing for people with ongoing risk factors, while risk factors persist:
    - People who currently inject drugs and share needles, syringes, or other drug preparation equipment
    - People with selected medical conditions, including:
        - People who ever received maintenance hemodialysis.
- Any person who requests Hepatitis C testing should receive it, regardless of disclosure of risk, because many persons may be reluctant to disclose stigmatizing risks (CDC, 2020).

# Appendix D: The American Association for the Study of Liver Disease and the Infectious Disease Society of America Screening Recommendations

| Recommendations for One-Time Hepatitis C Testing | |
|---|---|
| RECOMMENDED | RATING |
| One-time, routine, opt out HCV testing is recommended for all individuals aged 18 years or older. | I, B |
| One-time HCV testing should be performed for all persons less than 18 years old with activities, exposures, or conditions or circumstances associated with an increased risk of HCV infection (see below). | I, B |
| Prenatal HCV testing as part of routine prenatal care is recommended with each pregnancy. | I, B |
| Periodic repeat HCV testing should be offered to all persons with activities, exposures, or conditions or circumstances associated with an increased risk of HCV exposure (see below). | IIa, C |
| Annual HCV testing is recommended for all persons who inject drugs, for HIV-infected men who have unprotected sex with men, and men who have sex with men taking pre-exposure prophylaxis (PrEP). | IIa, C |

**Risk Activities**

- Injection drug use (current or ever, including those who injected only once)
- Intranasal illicit drug use
- Men who have sex with men

**Risk Exposures**

- Persons on long-term hemodialysis (ever)
- Persons with percutaneous/parenteral exposures in an unregulated setting
- Healthcare, emergency medical, and public safety workers after needlestick, sharps, or mucosal exposure to HCV-infected blood
- Children born to HCV-infected women
- Recipients of a prior transfusion or organ transplant, including persons who:
    - Were notified that they received blood from a donor who later tested positive for HCV
    - Received a transfusion of blood or blood components, or underwent an organ transplant before July 1992
    - Received clotting factor concentrates produced before 1987
- Persons who were ever incarcerated

**Other Conditions and Circumstances**

- HIV infection
- Sexually active persons about to start pre-exposure prophylaxis (PrEP) for HIV
- Chronic liver disease and/or chronic hepatitis, including unexplained elevated alanine aminotransferase (ALT) levels
- Solid organ donors (living and deceased) and solid organ transplant recipients