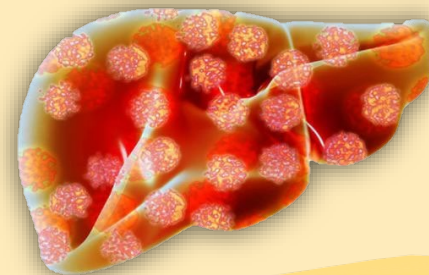
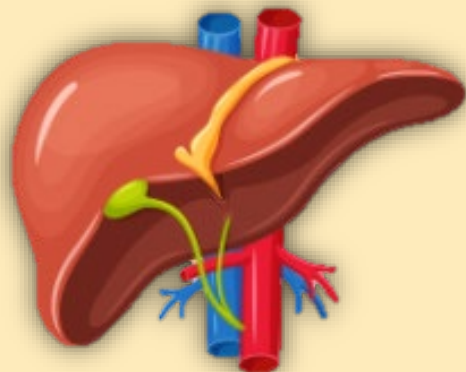
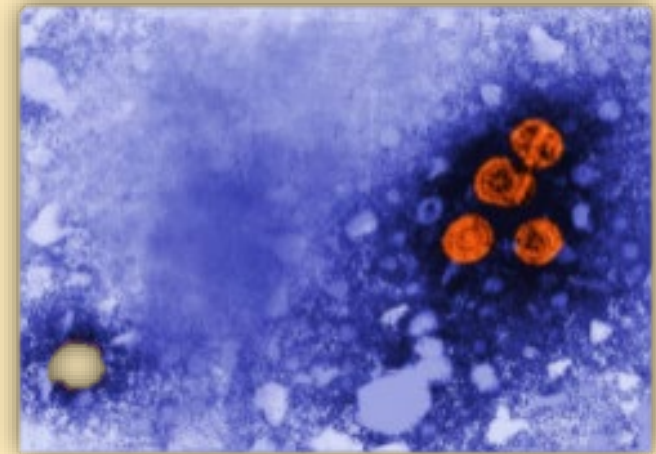


CCHCS Hepatitis B Virus (HBV) Quality of Care Improvement Initiative

Dr. Amy Krawiec

Chief Physician: HIV and Hepatitis, Renal Transplant
California Correctional Health Care Services



Where Are The Gaps?

KEY PERFORMANCE INDICATORS FOR HBV

| SUBPOPULATION OF TOTAL 101,619-125,981 PATIENT POPULATION 2019-2021 | POPULATION NUMBERS DENOMINATORS <i>FOR 2019-2020</i> | GOAL | AUGUST 2021 STATUS |
|---|---|------|--------------------|
| Screened through the Reception Center (RC) | ~ 24,000 | 85% | 14% |
| Screened all patients at CCHCS | ~ 89,000 | 85% | 52% |
| All patients with chronic HBV referred to Hepatologist | ~ 350 | 85% | 2% |
| All susceptible patients vaccinated | ~ 20,500 | 85% | 57% |

HBV Quality Initiative Objectives

- I. Understand the why we needed an Initiative**
- II. Ensure each patient is offered screening for HBV infection with the appropriate tests**
- III. Use available clinical opportunities and population management tools to ensure Hepatitis A Virus (HAV) and/or HBV vaccination offered to all susceptible patients**
- IV. Appropriately refer all patients with chronic HBV**

HBV Quality Initiative - Steps

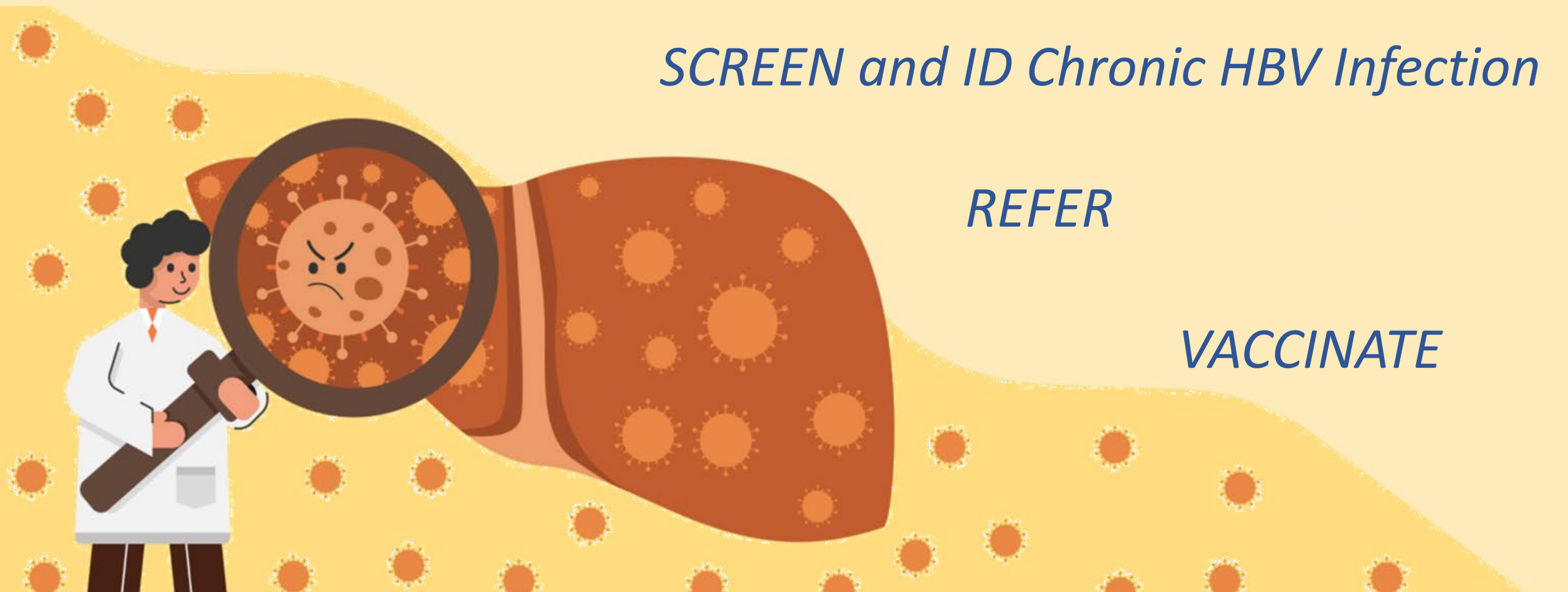
- Gap in care discovered
- Set improvement goals
- Education – Buy in for the initiative - Why closing the gap is important
- All hands on deck. Everyone is responsible for improving
 - Incentives to improve - goals on organizational dashboard measures
- Central/HQ support – Program Creation
- Create infrastructure changes
- Measure success, continual process improvement

CDCR HBV Quality Improvement Initiative

SCREEN and ID Chronic HBV Infection

REFER

VACCINATE



HBV Quality Initiative – Infrastructure

- Infrastructure Changes
 - Improve screening process – add to **opt out panel**
 - Create population management tools, add HBV to existing tools –
 - *“make it easy to do the right thing”*
 - Create electronic medical record shortcuts (order sets)/tools and add to existing tools
 - Change to shorter interval vaccine

HBV Quality Initiative – Infrastructure

Central Team and Program Creation

- Support to field -warmline to central team access
- Track and monitor population
 - Ensure corrections to program to meet goals
- Chronic hepatitis B disease management – refer, Tx, HCC screen
- Develop specialist relationship with center of excellence in Hepatology for econsults for identified HBV patients

HBV Quality Initiative – Infrastructure

- Headquarters/Central Support
 - Educational Webinar
 - Care guide
 - Teach Population management reports/tools
- Future risk assessment and mitigation
 - Sexually Transmitted Infection screening
 - SUD screening

HBV Population Management Tools

Interpreting screening results

CCCHS Quality Management Wellness Registry - Screenings TAB *scroll right*

WELLNESS - SCREENINGS
Patient Registry

Screenings | Immunizations | Breast Cancer Screening

Identification & Housing

| CDCR# | Last Name | Age | Date of Birth | Cell Bed | Care |
|-------|-----------|-----|---------------|----------------|------------|
| | | | | C 310 2022001L | Facility C |
| | | | | F 610 2015001L | Facility F |
| | | | | B 250 1007002U | Facility B |

| Infection Screenings | | | | |
|----------------------|--------------|--------------|------------------|--------------------|
| HBV sAg | HBV sAb | HBV cAb | HBV Consult Date | HBV Consult Status |
| NON-REACTIVE | 36 | REACTIVE | | |
| NON-REACTIVE | | | | |
| NON-REACTIVE | NON-REACTIVE | NON-REACTIVE | | |
| NON-REACTIVE | NON-REACTIVE | NON-REACTIVE | | |
| | <5 | NON-REACTIVE | | |
| NON-REACTIVE | 9 | NON-REACTIVE | | |
| NON-REACTIVE | <5 | REACTIVE | | |
| NON-REACTIVE | <5 | NON-REACTIVE | | |
| | 34 | | | |

HBV Screening Electronic Health Record System Tools

HBV Order Set PowerPlan Screening Hepatitis B Lab Workup

one v = all three get ordered

Hepatitis B **Surface** Anti**GEN**

Hepatitis B Surface Antigen with Reflex to Confirmation (Refl) - 498

Hepatitis B **Surface** Anti**BODY**

Hepatitis B Surface Antibody, Quantitative – 8475, Blood, Routine collect

Hepatitis B **Core** Anti**BODY**

Hepatitis B Core Antibody, Total, with Reflex to IgM - 37676

HBV Quality Initiative – Infrastructure

Sexual Health Screening – EHRs Adhoc Form

Name of the Powerform: STI Screening/Education

Sections: Below are the four sections apart from Patient Encounter Information

Patient Encounter Info

- * STI Screening
- 340B Sexual History Q
- * STI Education
- Social History/Problem

First Section: STI Screening. Upon clicking each STD from main DTA, boxes below opens with default pull from prior doc.

STI Screening

Reasons for Sexual Health Screening

Initial RC Arrival Hx HIV
 Hx HBV Hx Substance Use Disorder
 Hx HCV Other:

Willingness to sexual history questions

Agree
 Declines

* I am going to ask you a few questions about your sexual health and sexual practices. While these questions are personal, they are important in assessing
 * If it's okay with you, I'm going to ask you a few questions about sexual matters now.
 * If it's okay with you, I'm going to ask you a few questions about sexual matters now.

Past STDs' History Questions

Ever Diagnosed with Sexually Transmitted Infection?

Chlamydia HCV HPV Chancroid Other
 Gonorrhea Herpes Syphilis Granuloma inguinale
 HIV HIV Trichomonas Lymphogranuloma venereum

| STD Labs | | |
|------------------------|------------------------------|-----------|
| Chlamydia | Event Result | Date/Time |
| Chlamy | REACTIVE Abnormal | 10/07/19 |
| Chlam_Trash RNA | DETECTED Abnormal | 10/07/19 |
| Gonorrhea | | |
| Event Name | Event Result | Date/Time |
| Neis_Gonor RNA | DETECTED Abnormal | 10/07/19 |
| HBV | | |
| Event Name | Event Result | Date/Time |
| Hep B Core Ab | NON-REACTIVE | 02/24/20 |
| Hep Bs Ab | HS Low | 02/24/20 |
| Hep B Surface Ag | REACTIVE Abnormal | 02/24/20 |
| Hep B Vir DNA | <10 | 02/24/20 |
| Hep B Virus DNA | <1.00 | 02/24/20 |
| HCV | | |
| Event Name | Event Result | Date/Time |
| Hep C Ab | REACTIVE Abnormal | 10/07/19 |
| Hep C Cut OB | 234.95 High | 10/07/19 |
| HCV RNA RT PCR (IU/mL) | 13579 High | 10/07/19 |
| HCV RNA RT PCR (IU/mL) | 23456 High | 10/07/19 |
| HIV | | |
| Event Name | Event Result | Date/Time |
| HIV 1/2 Ab Son | REPEATEDLY REACTIVE Abnormal | 10/07/19 |
| HIV 1 Ab | INDETERMINATE Abnormal | 10/07/19 |
| HIV 2 Ab | POSITIVE Abnormal | 10/07/19 |
| Syphilis | | |
| Event Name | Event Result | Date/Time |
| RPR (DX) | REACTIVE Abnormal | 10/07/19 |

To the first section, will add a column next to each STD with the freetext box for "Prior History."

Upon agrees for "Sexual History Question," from the first section, below conditional section opens.

STI Screening

Reasons for Sexual Health Screening

Initial RC Arrival Hx HIV
 Hx HBV Hx Substance Use Disorder
 Hx HCV Other:

Willingness to sexual history questions

Agree
 Declines

* I am going to ask you a few questions about your sexual health and sexual practices. While these questions are personal, they are important in assessing
 * If it's okay with you, I'm going to ask you a few questions about sexual matters now.
 * If it's okay with you, I'm going to ask you a few questions about sexual matters now.

Second section: 340B Sexual History Questions, conditional section opens.

1: Partners Questions

Note to Providers:

* Without making assumptions about the patient's sexual orientation determine the number of your patient's different sexual encounter contacts.

In the past 12 months, # of different people you had sex with?

1 4 7
 2 5 8
 3 6 Other:

People have had sexual encounters are:

Both men and women Transgender
 Men Women
 Non-binary Other:

2: Practice Question

Provider can say:

* I need to ask about specific sex practices to help us know if there is any testing you might need.

Type of sexual contact in past 12 months

Anal Sex (penis in the anus)
 Oral Sex (mouth on penis, vagina, or anus)
 Vaginal Sex (penis in the vagina)
 Other:

3: Prevention of STI's and Pregnancy Questions

Note to Providers:

* Based on partner information from the prior section, determine if the patient is at risk of becoming pregnant or of fathering a child, **IF having conjugal visits**
 * Questions should be gender appropriate
 * This assists in determining appropriate level of risk-reduction counseling for each patient.

If having Conjugal Visits, do you and your partner(s) use any protection against STDs such as condoms?

Yes
 No
 Other:

How often, contraceptives are used?

All of the time
 Some of the time
 Rarely
 Other:

HBV - Offer Vaccination If Not Immune

PowerPlan for ordering

* Current Dashboard measures

HBV Screening and Vaccination*

- Order at HCV, HIV, AMCT visits
- Order at Chronic Care/PCP visits
- RN visits and co-visits
- Population management strategies

Way to determine patients who need vaccination from
Wellness Registry, Reports

- Eventually annual Whole Person Care nursing visit
- Future Mpage alert with ordering from the page

HBV Vaccination Tools

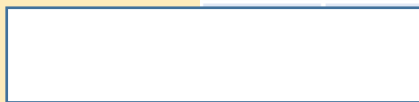
CCHCS Quality Management Wellness Registry - Immunizations TAB *scroll right*


WELLNESS - IMMUNIZATIONS
 Patient Registry

[Click for Public Health Vaccine FAQ](#)
[Click for Adult Vaccine Assessment Tool](#)

| | | | | | | |
|------------|---------------|-------------------------|---------------------------|------------------------|---------------------|-----------------|
| Screenings | Immunizations | Breast Cancer Screening | Cervical Cancer Screening | Colon Cancer Screening | Cocci Risk Registry | Tuberculosis (T |
|------------|---------------|-------------------------|---------------------------|------------------------|---------------------|-----------------|

| Identification | | | | Housing & Risk Level | | | Influenza | | Tdap/Td | | Pneumococcal | | |
|----------------|-----------|-----|----------------------------|----------------------|------------|------------|---------------------|-------------------|-------------------|-----------------|-----------------|---------------|-----------------|
| CDCR# | Last Name | Age | Potential Contraindication | Cell ID | Care Team | Risk Level | Influenza Completed | Influenza Refused | Tdap/Td Completed | Tdap/Td Refused | PCV13 Completed | PCV13 Refused | PPV23 Completed |
| AA0662 | Forbes | 54 | No | C 310 2022001L | Facility C | MED | 10/21/2020 | | 09/28/2016 | | | | 09/28/2016 |
| | | 60 | No | F 610 2015001L | Facility F | LOW | | 10/21/2020 | | 01/30/2019 | | | |
| | | 40 | No | B 350 1007001L | Facility B | MED | 11/11/2020 | | 09/05/2016 | | 12/05/2013 | | 12/05/2013 |

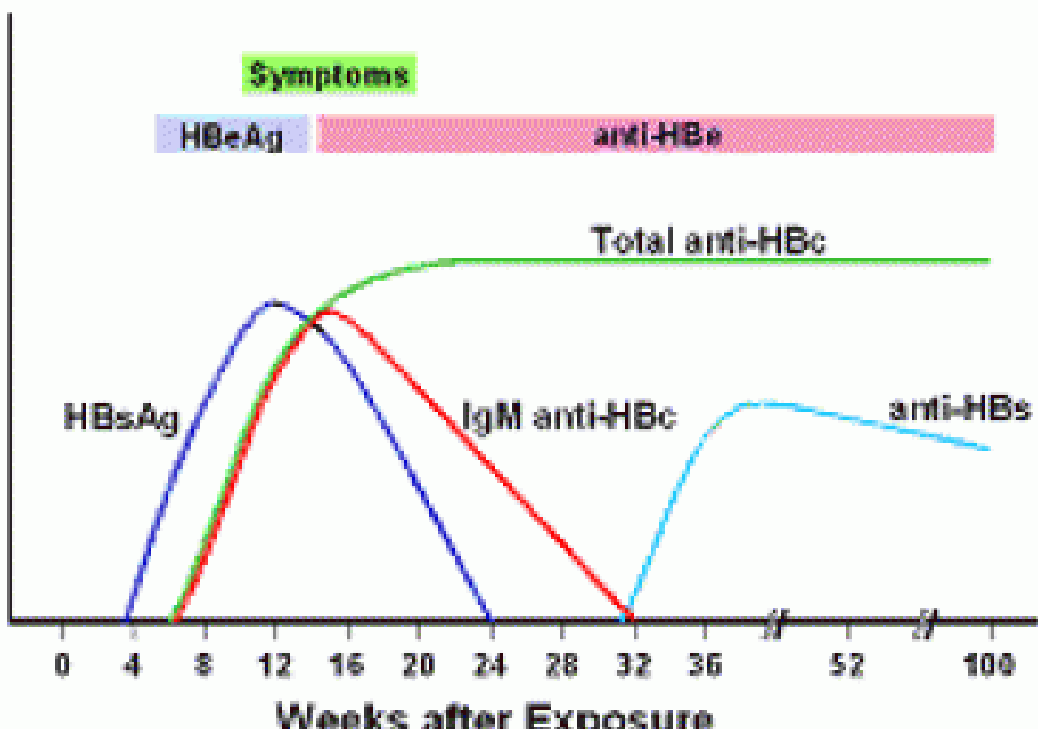


| Hepatitis A | | | | | Hepatitis B | | | | |
|------------------|----------------------|----------------------|----------------------|-------------|------------------|----------------------|----------------------|----------------------|-------------|
| HAV Lab Immunity | HAV Completed Dose 1 | HAV Completed Dose 2 | HAV Completed Dose 3 | HAV Refused | HBV Lab Immunity | HBV Completed Dose 1 | HBV Completed Dose 2 | HBV Completed Dose 3 | HBV Refused |
| No Labs | 09/28/2016 | 10/27/2016 | 03/23/2017 | | No Labs | 09/28/2016 | 10/27/2016 | 03/23/2017 | |
| No Labs | | | | 04/12/2019 | No Labs | | | | 04/12/2019 |
| No Labs | 08/09/2013 | 09/06/2013 | 02/14/2014 | | No Labs | 08/09/2013 | 09/06/2013 | 02/14/2014 | |

HBV Field Care Guide

Field Support

Acute Hepatitis B Virus Infection with Recovery Typical Serologic Course



May 2022

CCHCS Care Guide: Hepatitis B

SUMMARY

DECISION SUPPORT

PATIENT EDUCATION/SELF MANAGEMENT

GOALS

- ✓ Screen for chronic Hepatitis B Virus (HBV) infection
- ✓ Vaccinate non-immune patients
- ✓ Evaluate patients with active HBV for treatment
- ✓ Monitor patients for hepatocellular carcinoma (HCC) as appropriate
- ✓ Screen for substance use disorder

ALERTS

- Acute flare of HBV may occur with treatment discontinuation, monitor patient for several months after discontinuation
- If patient has a co-infection with Hepatitis C Virus (HCV), consult with the HCV Central Team. Treatment for HBV should be initiated concurrently or prior to HCV treatment. Order "Consult to HBV Central Team" in the electronic health record system (EHR)

DIAGNOSTIC CRITERIA

Chronic HBV is a deoxyribonucleic acid (DNA) virus infection defined by Hepatitis B surface antigen (HBsAg) present for > 6 months. Disease presentation can vary:

1. Serum HBV DNA varies from undetectable to several billion IU/mL
2. Subdivided into Hepatitis B e-antigen (HBeAg) positive and negative. The "e" antigen represents replicating virus and infectivity.
 - HBeAg positive patients have HBV DNA levels that are typically > 20,000 IU/mL and they have an increased risk of progressive liver disease, but they can respond better to treatment
 - HBeAg negative patients typically have lower HBV DNA values (2,000-20,000 IU/mL) but can have elevated alanine aminotransferase (ALT) levels, necroinflammation in their liver, a more fluctuating and less predictable course to cirrhosis, and less response to treatment
3. Normal or elevated ALT and/or aspartate aminotransferase (AST) levels
4. Biopsy results show chronic hepatitis with variable necroinflammation and/or fibrosis (see page 5).

EVALUATION

Indication for screening for chronic HBV is based on several risk factors, most of our patients have indications (see page 3). Screening is based on HBsAg and Hepatitis B surface antibody (HBsAb) in addition to total hepatitis B core antibody (anti-HBc) (see page 4 for interpretation). Treatment is not indicated in all patients, but for those being considered for additional evaluation, testing is done which can include:

- History and Physical (H&P): mode of transmission, family history of liver disease and/or HCC cancer, and Hepatitis A Virus (HAV) vaccine status
- Sexual risk assessment and substance use disorder screening
- Labs: complete blood count (CBC), comprehensive metabolic panel (CMP), INR, HBeAg, HBe antibody (anti-HBe), and HBV DNA
- Identify viral co-infections: Hepatitis C, Human Immunodeficiency Virus (HIV), and Hepatitis D (anti-HDV)
- In some patients liver fibrosis staging with Fibroscan or FibroSure, or in some rare cases liver biopsy

PREVENTION

Vaccinate non-immune patients for HAV and/or HBV (for those who screen negative and are still susceptible). For HBV, use current 2-dose formulary product (e.g., Hepisav-B[®], which is only 2 doses separated by 1 month). Note that the HBV/HAV combination vaccine is no longer favored and for those patients with both HAV and HBV non-immune status, use the 2 dose HBV vaccine and the 2 dose Hepatitis A series (1440 units/mL, Havrix[®]) for 4 shots total. Certain populations need a test of immunity 1 month after completing the HBV vaccine series, including chronic dialysis patients, people with HIV and other immunocompromised people (disease state or immunosuppressant medications), and patients with an isolated core antibody positive (cleared HBV, but reactivation risk). See Attachment A.

Patients with chronic HBV should be vaccinated for HAV if not immune. Offer COVID-19 (see CDC COVID-19 Guidelines), annual influenza and pneumococcal vaccines (Note: Pneumococcal vaccination recommendations have changed in 2022. Please see the new CDC Pneumococcal Guidelines). HBV vaccination is not needed in patients with chronic HBV, but it will not harm the patient if they do receive the vaccine.

TREATMENT

- Refer to the HBV Central Team for assistance with treatment and consultant decisions
- Treatment with antiviral agents (interferon alpha and nucleoside/nucleotide analogues [NAs]) is unlikely to eradicate HBV infection, but is used to suppress viral replication and hopefully, induce seroconversion to HBeAg negative status and potentially reduce progression to cirrhosis or HCC.
- The decision to treat is based on multiple factors including:
 - Severity of liver disease/risk of progression (patients with cirrhosis generally treated)
 - Co-infection with HIV, HDV, HCV (patients generally treated)
 - Higher ALT and HBV DNA levels
 - HBeAg status (HBeAg negative patients less responsive to treatment)
 - Age of patients/duration of infection (Patients > 40 more likely to be treated)
- Typically patients should be referred to a specialist for consideration of HBV treatment (see page 7)

MONITORING (SEE PAGES 7-8)

On treatment, every 3 months or as indicated

TABLE OF CONTENTS

Background and Screening3

HBV Orders/ Clinical Power Plan

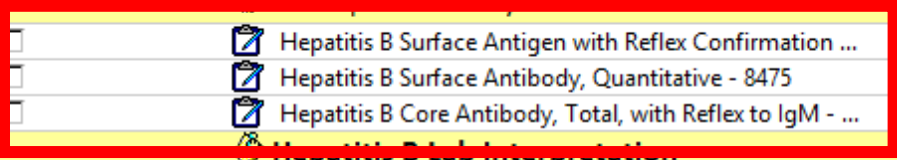
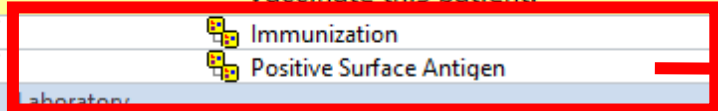
Search: Advanced Options

Folder:

- HBV
 - HBV by PCR Quantitative - 8369
 - HBV by PCR Quantitative - 8369 Blood, Routine collect
 - HBV Consult
 - HBV Consult T;0001, High Priority (Within 14 days), T+14;235
 - HBV Consult T;0001, Medium Priority (15-45 days), T+45;235
 - HBV Consult T;0001, Routine Priority (46-90 days), T+90;2359

| Component | Status | Dose ... | Details |
|--|--------|----------|-------------------------|
| Hepatitis B Care Guide | | | |
| HBV For Patients Infected with Hepatitis B Virus - Patient Education | | | |
| HBV What You Should Know Hepatitis B Virus - Patient Education | | | |
| AASLD Hepatitis B Guidance | | | |
| Medications | | | |
| All patients who are not immune and susceptible to Hepatitis B (no Surface ...) | | | |
| A negative surface AntiBODY with a negative Core AntiBODY and a negative ... | | | Vaccinate this patient. |
| Immunization | | | |
| Positive Surface Antigen | | | |
| Laboratory | | | |
| All incarcerated patients are considered high risk and should be offered scre... | | | |
| Screening Hepatitis B Lab Workup | | | |
| Some patients may have some of the labs already completed, but not all thre... | | | |
| Hepatitis B Surface Antigen with Reflex Confirmation ... | | Blood, | |
| Hepatitis B Surface Antibody, Quantitative - 8475 | | Blood, | |
| Hepatitis B Core Antibody, Total, with Reflex to IgM - ... | | Blood, | |
| Hepatitis B Lab Interpretation | | | |
| A POSITIVE SURFACE ANTIGEN (viral surface protein) = CURRENTLY INFEC... | | | |
| A positive Surface AntiGEN (viral surface protein): Refer to central HBV Tear... | | | Hepatology. |
| A positive Surface AntiGEN with a positive Core IgG (negative IgM) and nega... | | | |

| | | | |
|---|--|-------------|--------------|
| Renal dosing for CrCl < 50 ml/min needed. See HBV Care Guide. | | | |
| Entecavir is NOT recommended in HIV-HBV coinfections due to potential of resis... | | | |
| Entecavir dosage increases are indicated in nucleoside experienced, nucleoside | | | |
| entecavir | | 0.5 mg, Ora | 2 hours befo |
| CAUTION: lamivudine carries a high risk of viral resistance. | | | |
| Renal dosing for CrCl < 50 ml/min needed. See HBV Care Guide. | | | |
| Formulary doses of lamivudine (150 mg, 300 mg) are not FDA approved for HBV a | | | |
| lamivudine | | 100 mg, Ora | |
| Laboratory | | | |
| Hepatitis B Surface Antigen with Reflex Confirmation ... | | Blood, Rout | |
| Hepatitis B Surface Antibody, Quantitative - 8475 | | Blood, Rout | |
| Hepatitis B Core Antibody, Total, with Reflex to IgM - ... | | Blood, Rout | |
| Hepatitis Be Antigen - 555 (HBV e Antigen - 555) | | Blood, Rout | |
| Hepatitis Be Antibody - 556 (HBV e Antibody - 556) | | Blood, Rout | |
| Hepatitis B Virus DNA, Quantitative, Real-Time PCR - ... | | Blood, Rout | |
| Hepatitis C Antibody Reflex to HCV RNA, Quantitative... | | Blood, Rout | |
| Hepatitis D Virus (HDV) Antibody, Total - 4990 | | Serum, Rout | |
| Hepatitis A Antibody | | Blood, Rout | |
| HIV 1/2 Antigen/Antibody Fourth Generation w/ Refle... | | Blood, Rout | |
| Comprehensive Metabolic Panel (CMP) | | Blood, Rout | |
| CBC with Diff | | Blood, Rout | |
| Prothrombin Time with INR | | Blood, Rout | |
| Patients being worked up for chronic Hepatitis B need a liver fibrosis assessmen | | | |
| Liver Fibrosis, Fibrotest Actitest Panel-92688 | | Blood, Rout | |
| Diagnostic Tests | | | |



Central Support: HBV Chronic Infection

- ◆ Staffed 2 provider **Central HBV Team**
- ◆ Created EHRS “**Consult to HBV Central**” order
- ◆ **All HBsAg +** patients and
Patients HBcAB + (with HBsAg -/HBsAb -)
- ◆ Mission: evaluate/see, refer to specialty via e-consult and follow-up with patients with chronic HBV

HBV Improvement Initiative - ongoing



Screen, Refer, Vaccinate

MSD MEDICAL SERVICES DIVISION **HEPATITIS B** POPULATION OVERVIEW

INSTITUTION: All

STATEWIDE

KEY PERFORMANCE INDICATORS KPI REPORT MONTH: September 2022

| NEW ARRIVALS - SCREENED TIMELY | | CURRENT POPULATION - SCREENED | | NON-IMMUNE - VACCINATED | | CHRONIC HBV - LLU CONSULT | |
|--------------------------------|----------|-------------------------------|----------|-------------------------|----------|---------------------------|----------|
| Previous Month | % Change | Previous Month | % Change | Previous Month | % Change | Previous Month | % Change |
| 98% | -0% | 66% | 3% | 59% | -1% | 83% | -2% |
| Performance Goal = 85% | | Performance Goal = 85% | | Performance Goal = 85% | | Performance Goal = 85% | |

Summary

HBV Initiative –

- Screen (Identify chronic)
- Refer (Refer to CCHCS Central HBV team)
- Vaccinate (As soon as possible)

