

Hepatitis B and Tuberculosis Elimination Programs at North East Medical Services

Amy Shen Tang, MD
Director of Immigrant Health
Hep B United/TB Elimination Alliance Summit
November 2, 2021



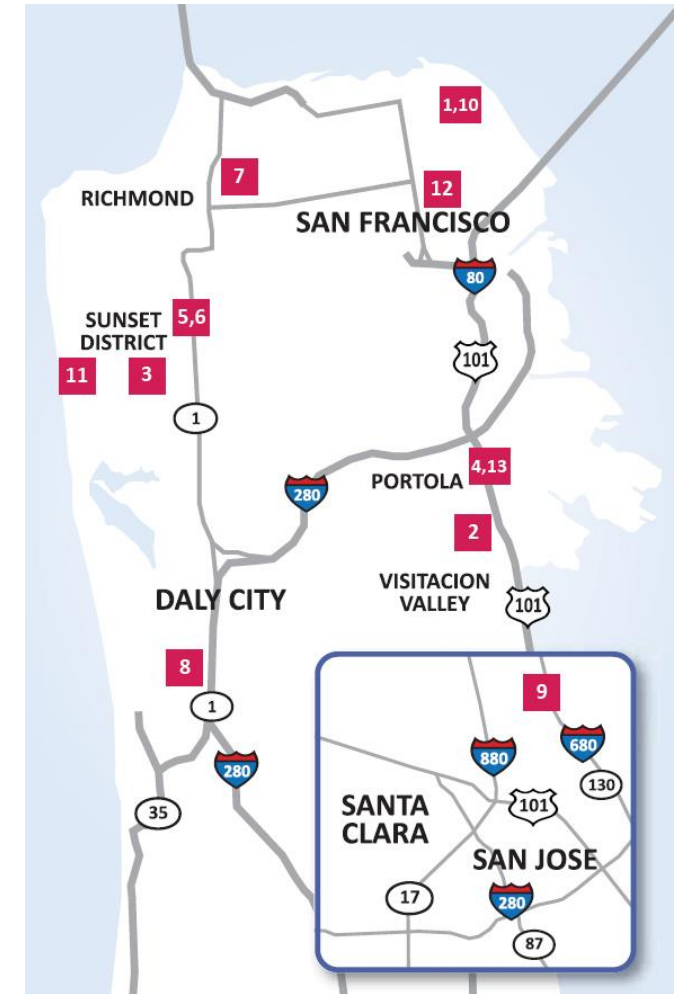
NORTH EAST
MEDICAL SERVICES
東北醫療中心
a california *health+* center

Background



North East Medical Services (NEMS) was founded in 1968 and began serving patients in 1971 in response to the lack of adequate health care services for uninsured and underprivileged Asians in San Francisco, California.

Over the last 50 years, NEMS has grown from a small primary care clinic in San Francisco's Chinatown to one of the largest community health centers in the United States serving medically underserved Asian Americans and other marginalized populations, with 13 clinic locations across the San Francisco Bay Area.



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NEMS Services



Adult Medicine
成人內科



Pharmacy
藥房



Health Education
健康教育部



Pediatrics
兒科



Laboratory
化驗部



Member Services
會員服務部



Obstetrics &
Gynecology
婦產科



Radiology
放射部/X光



Chiropractic
脊椎神經科



Dental
牙科



Behavioral
Health Services
心理健康服務部



Acupuncture
針灸科



Optometry
驗眼/配鏡科



Social Services
社會服務部



Physical Therapy
物理治療中心

Medical Specialties 醫療專科

- Cardiology 心臟科
- Endocrinology 內分泌科
- Gastroenterology 腸胃科
- Hand Surgery Consultation 手外科
- Hepatology 肝臟科
- Neurology 神經內科
- Ophthalmology 眼科
- Otolaryngology 耳鼻喉科
- Podiatry 足科
- Psychiatry 精神科
- Surgery 外科



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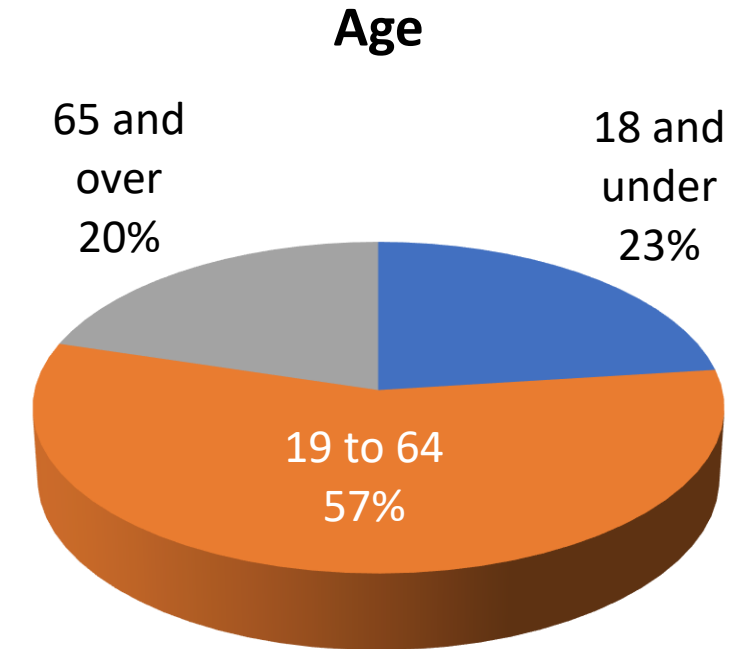
Who We Serve

NEMS Patient Demographics 2020

- ~65-70K patients served each year
- 89% Asian
- 80% Limited English Proficient
- 74% Medi-Cal (California's Medicaid program; including 16% dual eligible Medi-Cal/Medicare)



Source: 2020 UDS Report



Percentage of elderly patients age 65+ is higher than San Francisco city (14%) and California state (13%)



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Immigrant Health Disparities at NEMS

As a NEMS service provider, what risk-based health screening needs to be considered for our patients?

What health conditions/diseases disproportionately impact our Asian immigrant population?

- **Hepatitis B infection and liver cancer**
- **Tuberculosis infection**
- Smoking and lung cancer
- H pylori infection and stomach cancer



Prevalence of Most Common Chronic Conditions among NEMS Patients

Diabetes **10%** (NEMS UDS 2020) vs. **14%** US average (CDC 2018)

Hypertension **21%** (NEMS UDS 2020) vs. **47%** US average (CDC 2018)

Latent tuberculosis infection **20%** vs. **4.7%** US average (NHANES 2011-2012)

Chronic Hepatitis B infection **8%** vs. **0.3%** US average (NHANES 2011-2012)

- 38% of persons infected with hepatitis B (HBsAg-positive) were also infected with tuberculosis (TST- or IGRA-positive)

Selected health conditions and risk factors, by age: United States, selected years 1988–1994 through 2017–2018
<https://www.cdc.gov/nchs/data/hus/2019/021-508.pdf>



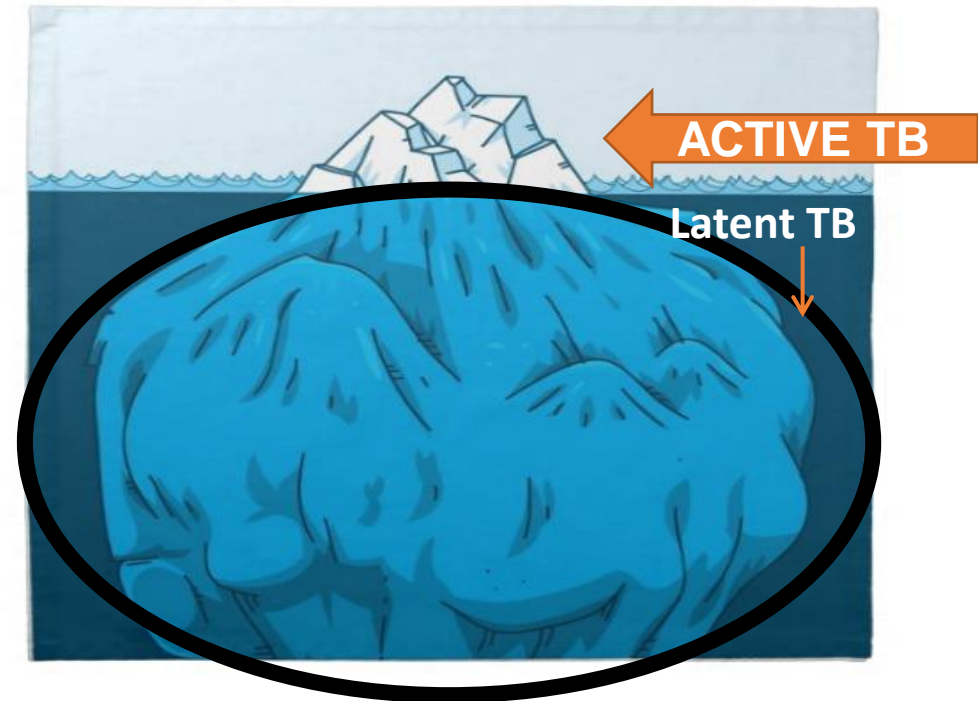
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Tuberculosis at NEMS

- Reactivation of LTBI is the main source fueling active TB.
- ~75% of active TB cases are likely due to reactivation



1 in 5 NEMS patients
infected with tuberculosis
in their lifetime





TB Among Residents in Single Room Occupancy (SRO) Housing

Among 60,856 NEMS patients in San Francisco with at least one UDS eligible medical visit as of 1/1/2019:

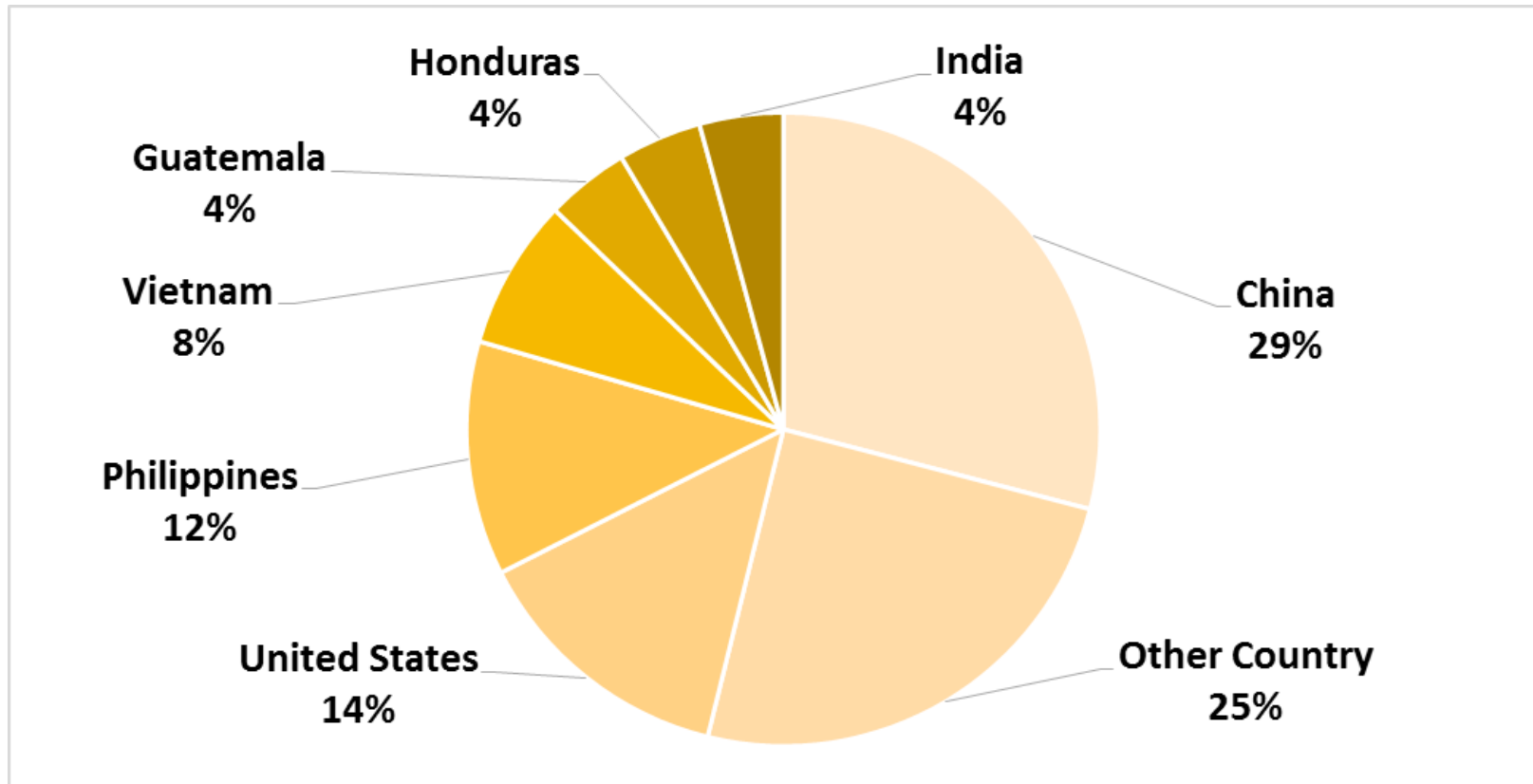
- 3,434 (5.6%) reported living at a Single Room Occupancy (SRO) building or apartment
- 582 (17%) of SRO patients have had a positive PPD or QFT (compared to 12.5% of SF patients)
- 304 (51.3%) of SRO patients have been treated ever for TB

San Francisco Bay Area: A High TB-incidence Region

Jurisdiction	2019 TB incidence per 100,000 population
United States	2.7
California	5.3
San Francisco	11.9
San Mateo	8.5
Santa Clara	8.4
Los Angeles	5.6

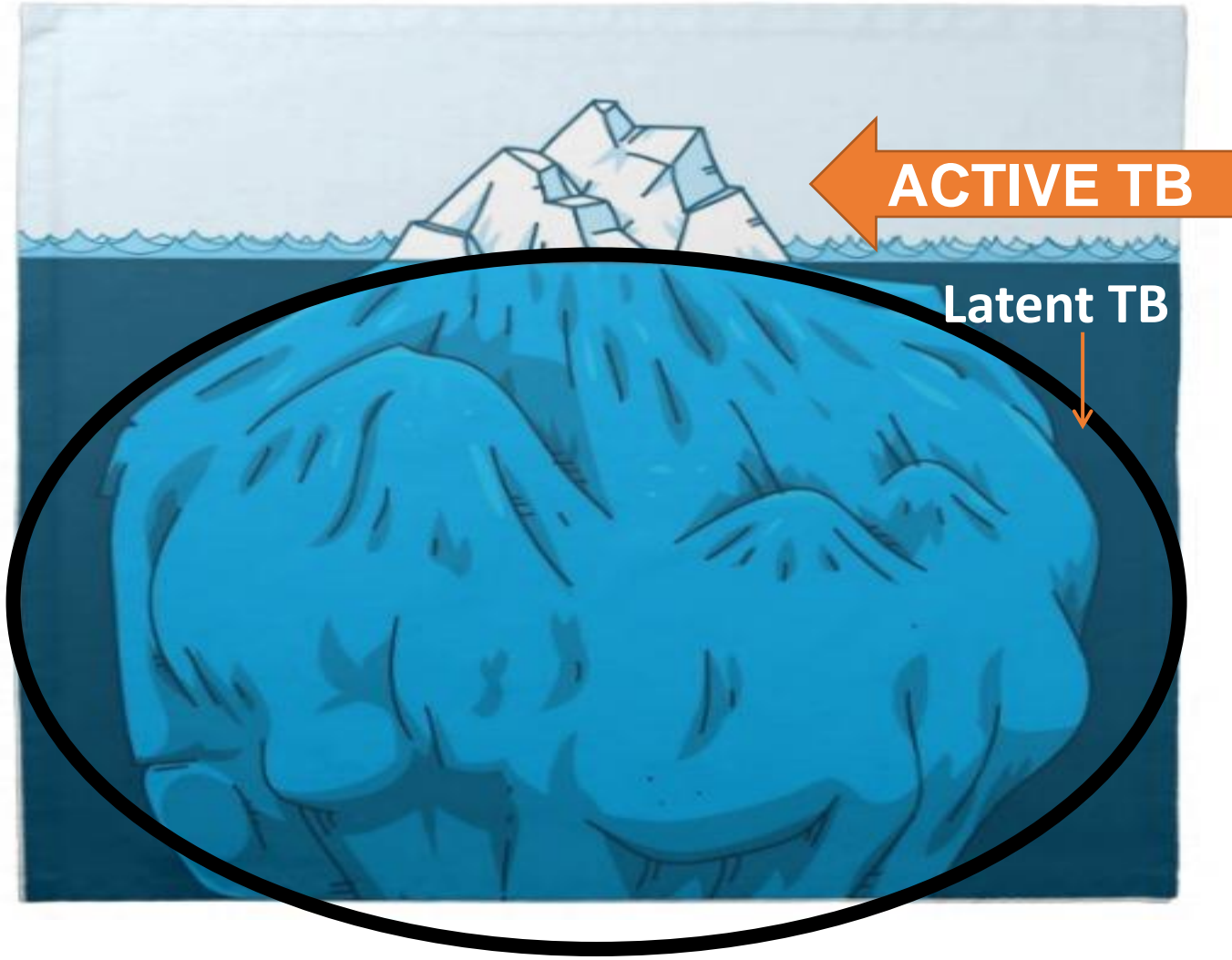
Data source: CDPH TB Control Branch provisional data tables 2019
cdph.ca.gov/Programs/CID/DCDC/Pages/TB-Disease-Data.aspx

86% of San Francisco TB Cases are Born Outside of the U.S. (~50% Born in Asia)



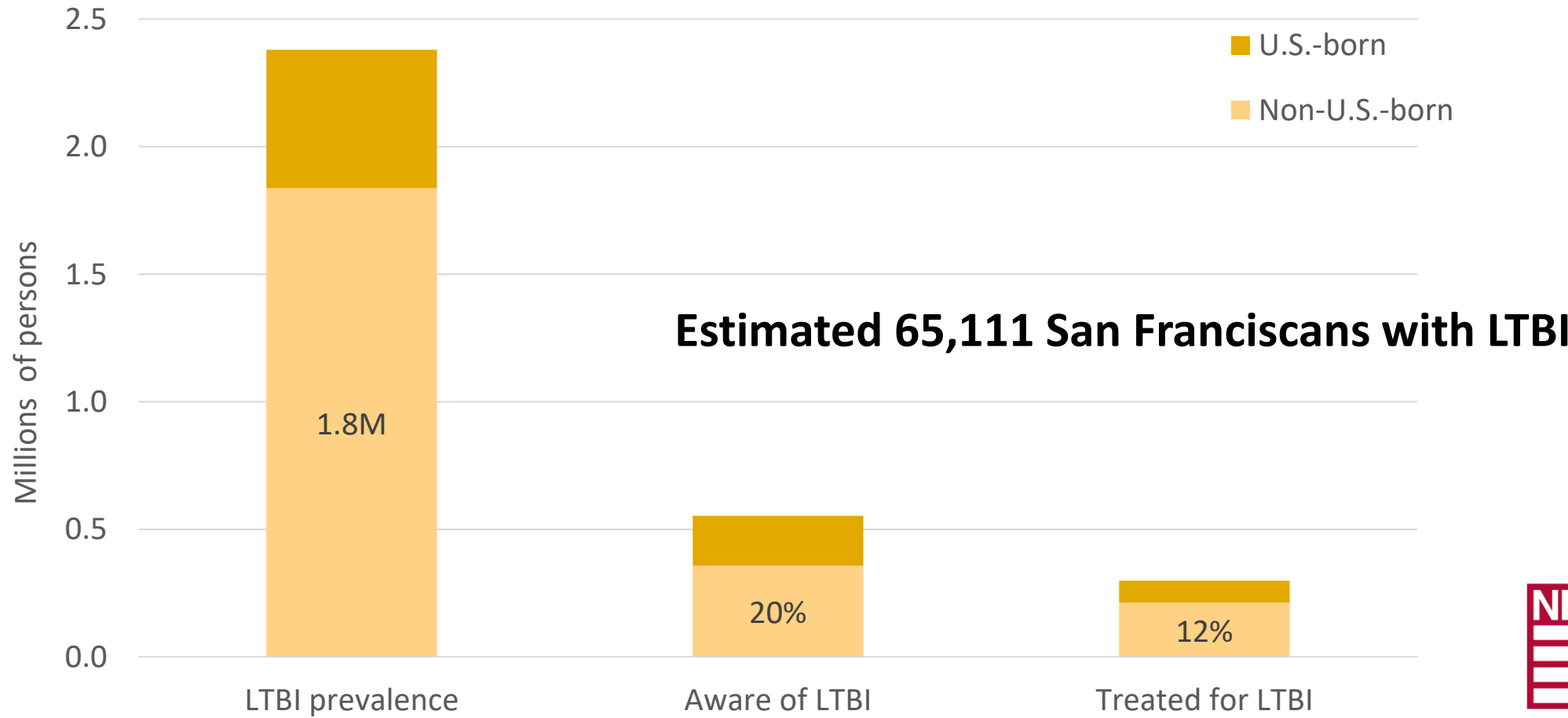
2018 TB Cases by national origin, San Francisco





- Reactivation of LTBI is the main source fueling active TB.
- ~75% of active TB cases are likely due to reactivation

Untreated LTBI – A Prevention Opportunity!



NHANES 2011-2012 applied to California population
 Estimates from 2018 CDPH TB Control Branch Report



EMR TB risk assessment based on the CTCA/CDPH TB Risk Assessment Questionnaire

Patients on hemodialysis and sheltered/homeless were added as risk factors per local SFDPH guidance



California Adult Tuberculosis Risk Assessment



- Use this tool to identify asymptomatic **adults** for latent TB infection (LTBI) testing.
- **Do not repeat testing** unless there are **new risk factors** since the last test.
- Do not treat for LTBI until active TB disease has been excluded:
For patients with TB symptoms or an abnormal chest x-ray consistent with active TB disease, evaluate for active TB disease with a chest x-ray, symptom screen, and if indicated, sputum AFB smears, cultures and nucleic acid amplification testing. A negative tuberculin skin test or interferon gamma release assay does not rule out active TB disease.

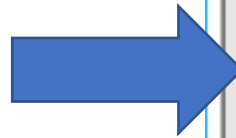
LTBI testing is recommended if any of the boxes below are checked.

- Birth, travel, or residence** in a country with an elevated TB rate for at least 1 month
 - Includes any country other than the United States, Canada, Australia, New Zealand, or a country in western or northern Europe
 - If resources require prioritization within this group, prioritize patients with at least one medical risk for progression (see the California Adult Tuberculosis Risk Assessment User Guide for this list).
 - Interferon Gamma Release Assay is preferred over Tuberculin Skin Test for non-U.S.-born persons ≥ 2 years old
- Immunosuppression**, current or planned
HIV infection, organ transplant recipient, treated with TNF-alpha antagonist (e.g., infliximab, etanercept, others), steroids (equivalent of prednisone ≥ 15 mg/day for ≥ 1 month) or other immunosuppressive medication
- Close contact** to someone with infectious TB disease during lifetime

Treat for LTBI if LTBI test result is positive and active TB disease is ruled out.

- None**; no TB testing is indicated at this time.

Place of Birth collected upon patient registration to assist with TB risk stratification.



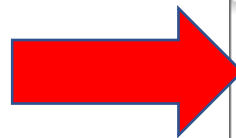
12/10/2020 11:10 AM : "NEMS Patient Assessment" x

Member Service Patient Assessment

Demographics

Place of Birth (Country)	<input type="text" value="China"/>	Region of Birth (Region or City)	<input type="text" value="Beijing"/>
Race	<input type="text" value="Asian"/>	Ethnicity	<input type="text" value="Declined to specify"/>
		Ethnicity Details	<input type="text" value="Chinese, Japanese"/>

A place of birth outside of the US, Canada, Australia, New Zealand, or western/northern Europe will automatically notify provider patient is at-risk and to complete the risk assessment to indicate any prior history of TB and/or order TB screening test if not previously ordered.



12/17/2020 12:47 PM : "**Intake" x

Care Team Contagion Risk HCC Pt Type: (B)+DY

Specialty Internal Medicine Visit Type Office Visit

Intake | Histories | SOAP | Finalize | Checkout

Standing Orders | Adult Immunizations | Screening Summary | My Plan | Procedures | Order Management

Care Guidelines 14 Ins1: Ins2: Ins3: Patient Status (EPM):

General Make Today's Encounter Confidential

Established patient New patient | Historian: Enable HCC for this patient

Incomplete visit

Provider Alerts

Patient does not have TB Risk Assessment and is at risk due to place of birth

NEW/Simplified EHR Annual TB Risk Assessment Form

NEMS TB Annual ✕

Annual TB Risk Assessment Place of Birth: Region of Birth: Year in US:

Name: Adult Test DOB: 02/29/1992 MRN: 000001052853

TB Screening and Treatment History (REQUIRED)

1. Have you ever had a positive TB skin or blood test? Yes No/Unsure
If yes, did you complete preventive treatment? Yes No/Unsure

2. Have you ever had active TB disease? Yes No/Unsure
If yes, did you complete treatment (6 months or longer)? Yes No/Unsure

TB Risk Factors All Negative

1. Have you spent at least 1 month outside of the US, Canada, Australia, New Zealand, or Western/Northern Europe? Yes No

2. Are you immunosuppressed (e.g. HIV, organ transplant recipient) or currently on/ plan to start immunosuppressive medications (e.g. TNF-alpha antagonist, steroids equivalent of prednisone > 15 mg/d for > 1 month)? Yes No

3. Have you had close contact to someone with infectious TB disease? Yes No

4. Are you on hemodialysis for end stage renal disease? Yes No

5. Have you stayed in a homeless shelter? Yes No

Last TB Risk Assessment: 10/26/2017 Not At Risk

AT RISK

NOT AT RISK

X-Ray Orders

Date Ordered	Status	Order

TB Screening (skin/blood) and IGRA History

Status	Order	Completed Date	Interpretation
result received	PPD 0.1 mL ID	03/14/2018	positive
completed	PPD 0.1 mL ID	/ /	negative

QFT Lab Results (In House)

Order	Date	Result

Outside TB Screening (skin/blood) Results, QFT Results or T-Spot Results

TB QFT T-Spot

Date	Result	Interpretation
<input type="text" value="/ /"/>	<input type="text"/>	<input type="text"/>

Estimated order date



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1520 Stockton Street, San Francisco, CA 94133
2574 San Bruno, San Francisco, CA 94134
82 Leland Avenue, San Francisco, CA 94134
1450 Noriega Street, San Francisco, CA 94122
1400 Noriega Street, San Francisco, CA 94122
(415) 391-9686 | (650) 550-3923 | (408) 573-9686 | www.nems.org

2308 Taraval Street, San Francisco, CA 94116
1033 Clement Street, San Francisco, CA 94118
211 Eastmoor Avenue, Daly City, CA 94015
1715 Lundy Avenue #108-116, San Jose, CA 95131
1870 Lundy Avenue, San Jose, CA 95131

Date [REDACTED]

Date of QFT Test

檢驗日期: [REDACTED]

NEMS Provider

醫生姓名: Amy Tang MD

Dear [REDACTED]

The result of your QuantiFERON test (QFT) was **ABNORMAL**. The test result showed that you may have been exposed to tuberculosis. It is important for you to follow up with your primary care provider for additional testing.

Please call us at the phone number listed below to schedule an appointment to see your primary care provider to discuss about additional testing.

Thank you for choosing North East Medical Services (NEMS) for your care.

尊敬的東北會員，

我們想通知您最近在東北醫療中心所做的QuantiFERON測試(結核菌測試，簡稱QFT)的結果**不正常**。這意味著您可能受到結核菌感染。跟您的主診醫生作進一步檢驗是非常重要的。

請致電以下的電話號碼預約時間和您的主診醫生討論進一步的檢驗。

NEMS Assess Plan Details

Assessment | **My Plan** | Instruction | Labs

Plan Details

1. Nonspecific reaction to tuberculin skin test without active tuberculosis

Provider Details: **LTBI Additional Info** | My Phrases | Common Phrases

Provider note go here.
LTBI discussed: Already Treated. Done outside

LTBI Treatment Info

Last Discussed Date: 05/01/2017

Will Rx Today
 Pt Refused Tx, risks and benefits discussed
 Already Treated (Report this only if you are confident that duration and treatment was appropriately done).
 Tx not indicated
 Refer to PCP for Evaluation
 Other

Comment :
Done outside

Cancel

1. Last LTBI discussed

- Date indicates if LTBI treatment is necessary
- Patients who are +LTBI, but don't have a "Last LTBI discussed" date will require the following steps

2. LTBI Additional Info

- Clicking on "Additional Info" will open up the "LTBI Treatment Info" box

3. LTBI Treatment Info

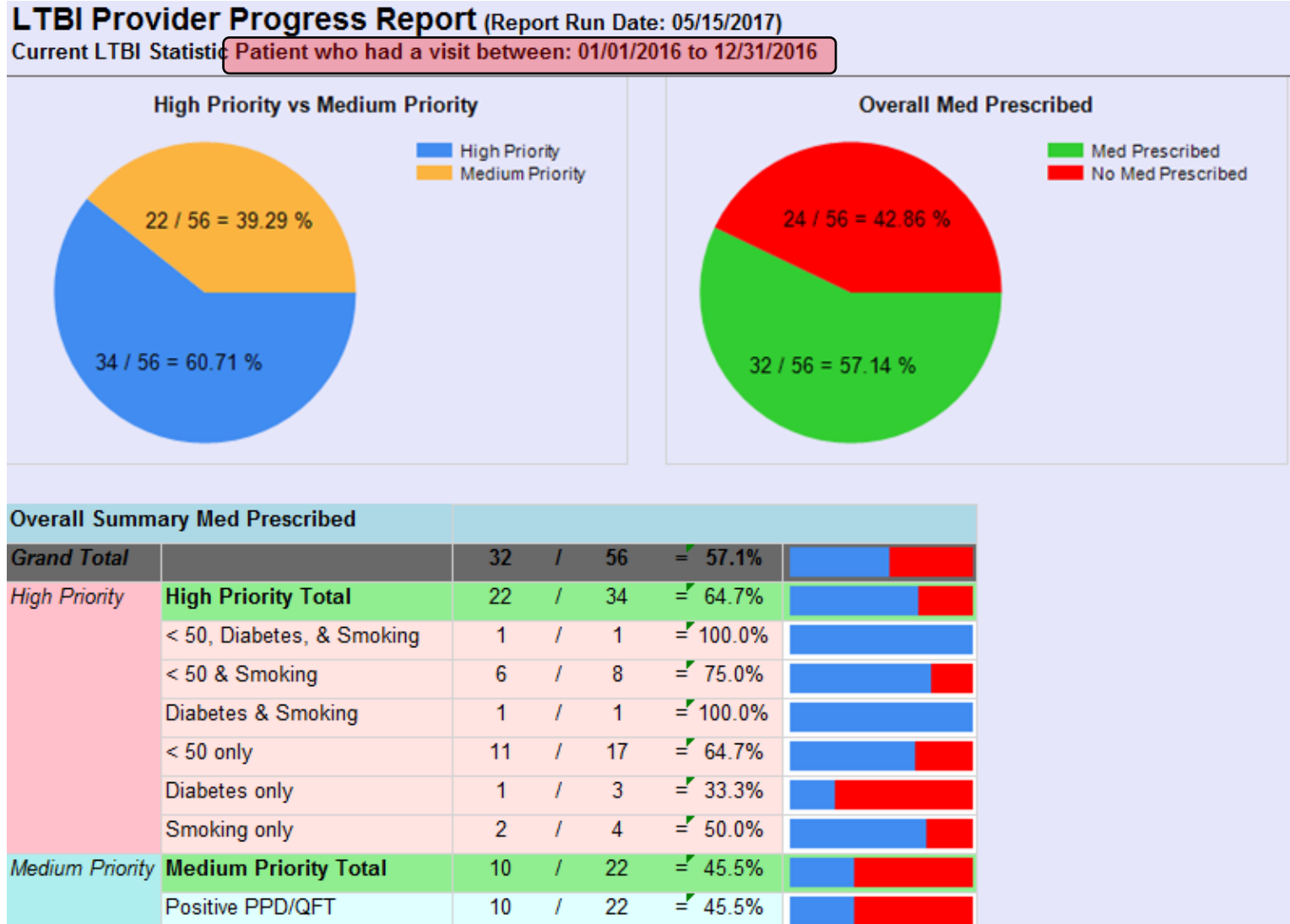
- LTBI Treatment Info box will display all the necessary follow-up statuses to help providers keep track of LTBI patients.
- Status Options:
 - Will Rx Today
 - Pt Refuse Tx, risks and benefits discussed
 - **Already Treated** (Report this only if you are confident that duration and treatment was appropriately done)
 - Refer to PCP for Evaluation
 - Other:

4. Provider Note


- Once LTBI Treatment Info is filled out, the provider note will display the LTBI Treatment Info's selected status

Individualized Provider Report


Patients who had visits between 01/1/16-12/31/16




Annual TB Provider Education by Local Public Health Department



UPDATES IN LTBI TREATMENT



Susannah Graves, MD, MPH
Director, TB Prevention and Control Program, SFDPH
Assistant Adjunct Professor, Infectious Diseases, UCSD



POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

Latent Tuberculosis Infection (LTBI) 101

Janice Louie, MD, MPH, Medical Director
Rocio Agraz-Lara, RN, PHN, Nurse Manager
San Francisco Tuberculosis Control and Prevention Program
2019



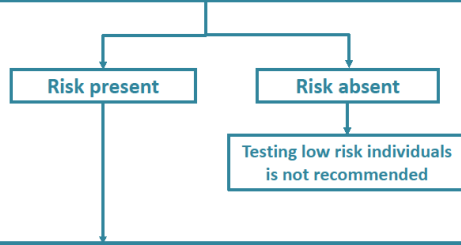
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NEMS providers receive TB Free California's LTBI treatment workflow algorithm, especially useful to new providers to reference

Prevent Tuberculosis (TB) in 4 Steps: A Guide for Medical Providers

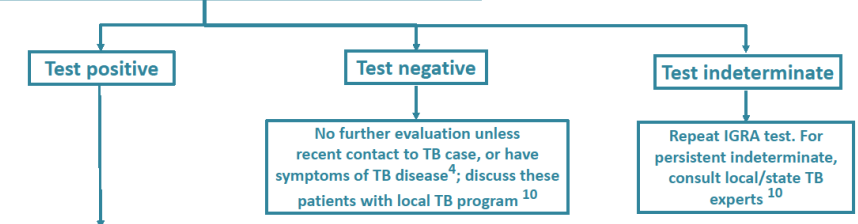
1 Identify patients at risk for TB Infection

- Use California TB Risk Assessment ¹



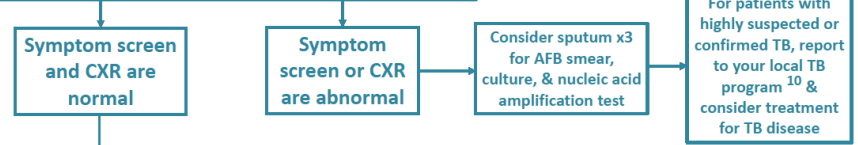
2 Test patients for TB Infection

- Use interferon gamma release assay (IGRA) for patients age ≥ 2 years ^{2,3}



3 Evaluate for TB disease

- Use TB symptom screen⁴, physical exam, and chest x-ray (CXR)⁵
- Do not treat for latent TB infection (LTBI) until TB disease is excluded



4 Treat LTBI to prevent TB disease

- Evaluate for pregnancy⁶ and relevant medical conditions⁷
- Check baseline liver function tests (LFT) for select populations⁸
- Use 3 or 4 month LTBI treatment regimens whenever possible⁹

TB 101

TB disease: TB is transmitted through the air and infects the lungs, but can spread to other organs. People with TB disease usually have symptoms such as cough, fever, or weight loss, and are often highly infectious. *One in ten people with TB disease will die.*

Latent TB infection (LTBI): asymptomatic infection with TB bacteria. Although persons with LTBI feel well and are not infectious, they can develop TB disease months or years after being infected.

80% of TB disease in California comes from progression of untreated LTBI.

We can prevent TB cases by finding and treating people with LTBI.



Promoting TB Awareness Among Our Patients

1 in 7  **Asian Americans** in California
is living with
**TUBERCULOSIS (TB)
infection**

Keep your family safe.
Find out your TB status!

在加州, 每 **7**  位 **美籍亞裔** 中就有 **1** 位
**感染
肺結核 (TB)**

保護您的家人
確認您是否有肺結核感染

Center for
Tuberculosis

UCSF

University of California
San Francisco

NEMS' TB partners



POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

DISEASE PREVENTION & CONTROL



Hepatitis B at NEMS

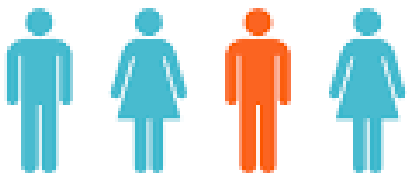


1 in 3 adult patients at NEMS were infected with hepatitis B in their lifetime and are at risk for hepatitis B reactivation and liver complications if immunosuppressed



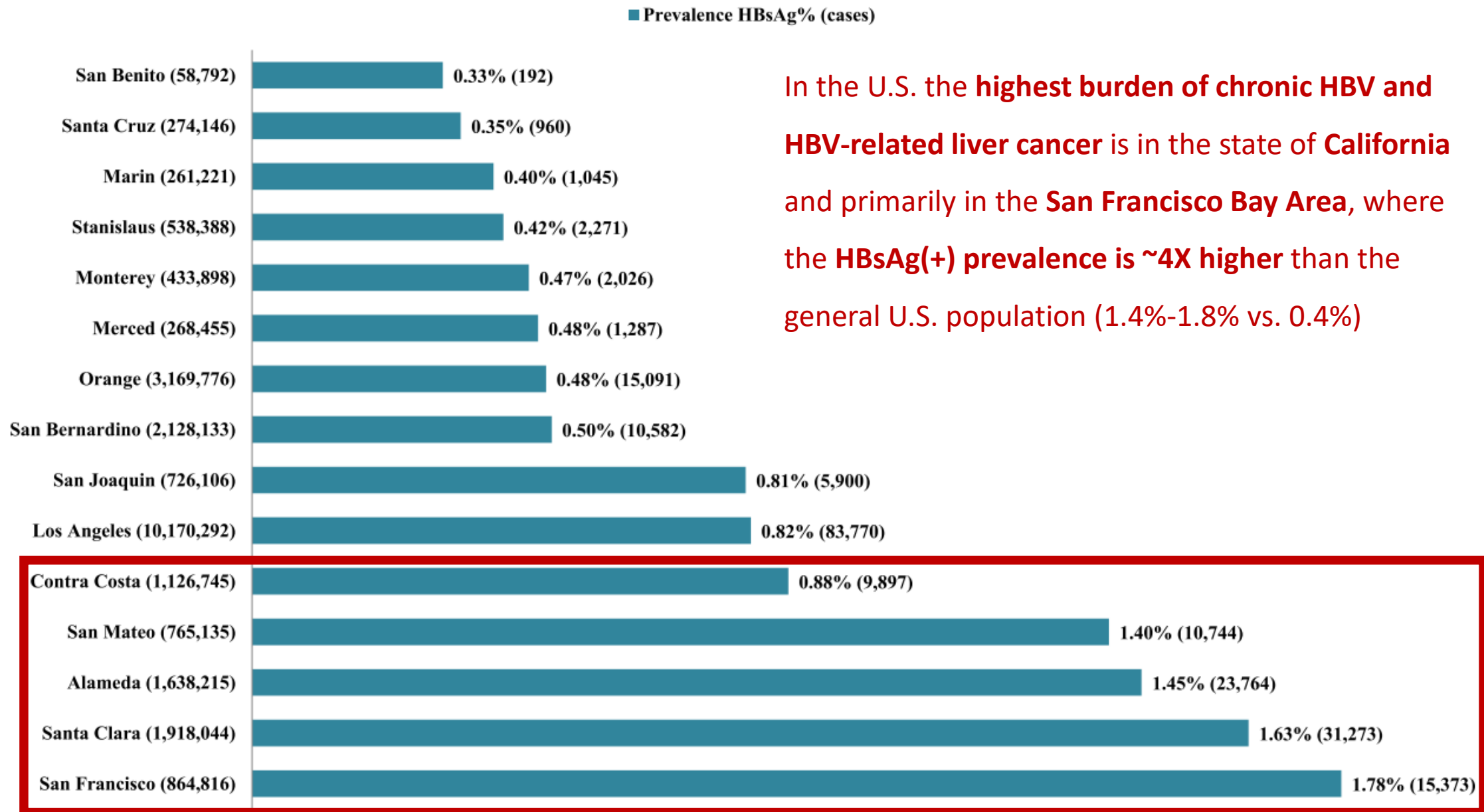
1 in 12 of adult patients at NEMS have chronic hepatitis B infection

- Many did not know they were infected until tested by NEMS provider
- Globally, only 1 in 3 persons with chronic hepatitis B are aware of their diagnosis



1 in 4 persons with chronic hepatitis B will suffer liver complications such as liver cancer or cirrhosis if unmonitored or untreated

1 in 4 pregnant women with hepatitis B in San Francisco receive their prenatal care at NEMS



In the U.S. the **highest burden of chronic HBV and HBV-related liver cancer** is in the state of **California** and primarily in the **San Francisco Bay Area**, where the **HBsAg(+) prevalence is ~4X higher** than the general U.S. population (1.4%-1.8% vs. 0.4%)

Fig. 1 HBsAg prevalence and number of chronic hepatitis B cases in 15 counties in the State of California

Hepatitis B/C Microelimination at NEMS

Screen	Vaccinate	Prevent	Mitigate
Screen all adult patients for HBV and HCV status	Vaccinate all HBV susceptible patients	Prevent HBV perinatal transmission	Minimize/prevent liver complications through routine monitoring, liver cancer surveillance, liver fibrosis staging, and treatment of patients with chronic HBV and HCV infection
Educate			
Educate providers on HBV/HCV care and patients about HBV/HCV transmission and risk factors			
Advocate			
Advocate for policies to increase screening, vaccination and affordable treatment			

NEMS Hepatitis B/C Universal Adult Screening

Screen

Screen all adult patients for HBV and HCV status

Why screen all adult patients at NEMS for hepatitis B and C?

Hepatitis B

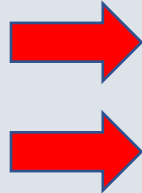
- USPSTF 2020: Test adolescents and adults at increased risk for infection
- > 90% of our patients are Asian or Pacific Islander and estimated > 80% foreign-born (based on preferred language)
- High HBV burden among adults at NEMS: 8% HBsAg+ (current infection) and 36% anti-HBc+ (ever infected)
- Test for **current or prior infection –OR- need for vaccination** (only ~25% U.S. adults are vaccinated)

Hepatitis C

- USPSTF 2020: One-time, routine, opt out HCV testing for asymptomatic adults aged 18 to 79 years (Grade B)

EHR Clinical Guidelines

Next Gen Clinical Guidelines reminder for **one-time HBV and HCV screening** for all patients 18 years or older



NEMS Care Guidelines Paged

Detailed document Reviewed, updated Reviewed, no change Last update/detailed doc: //

Panel Control: Toggle Cycle

Grid View Clinical Guidelines History

8 Patient's guidelines: Health Maintenance

Clinical Guidelines

Show: Orderables Recommended care (non-medication) Additional: //

Guideline	Next Due	Status	Last Completed	Comments
<input type="checkbox"/> Depression screening <i>(q1 Year, 12 Years and up)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> Domestic Violence Screening <i>(q1 Year, 19 Years and up)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> Hepatitis B Screening <i>(Once, 18 Years- 79 Years)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> Hepatitis C Screening <i>(Once, 18 Years- 79 Years)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> Influenza vaccine <i>(q1 Year, 6 Months and up)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> TB Risk Assessment <i>(q1 Year, 0yrs and up)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> Td vaccine <i>(q10 Years, 19 Years and up)</i>	⚠ 05/04/2020	due	//	[comments]
<input type="checkbox"/> Tdap <i>(Once, 11 Years and up)</i>	⚠ 05/04/2020	due	//	[comments]

Add Orderable Add/Update Reminders Page 1 of 2 Place Order Add/Update Save & Close

HBV Vaccinations at NEMS

2-dose (Heplisav-B) vaccine for non-pregnant adults*

3-dose (Engerix) HBV vaccines for high-risk pregnant women

Birth dose for all infants, complete HBV vaccine series for all infants/children

Hep B immune globulin and post-vaccination serologic testing for infants born to Hep B Moms

Prevent

Prevent HBV
perinatal
transmission

Departmental HBV Champions

Rena Hu, MD, Ob/Gyn
Cami Le, MD, Pediatrics

HBV Provider Site Champions

Sandar Htun, MD, Eastmoor
Priscilla Tang, NP, Stockton
Jason Owyang, NP, Noriega
Connie Tran, NP, San Bruno

Perinatal HBV Care Management Specialist

Lixin Zhang, CPSP Provider & GI/UM Specialist

NEMS Hep B Moms Program

Perinatal HBV education and care coordination

Household contacts testing for HBV

Linkage to care with a NEMS HBV provider before and after pregnancy and HBV antiviral treatment to prevent mother-to-child transmission of HBV

Timely HBV immunoprophylaxis, complete HBV vaccinations, and post-vaccination serology testing for infants born to Hep B Moms.

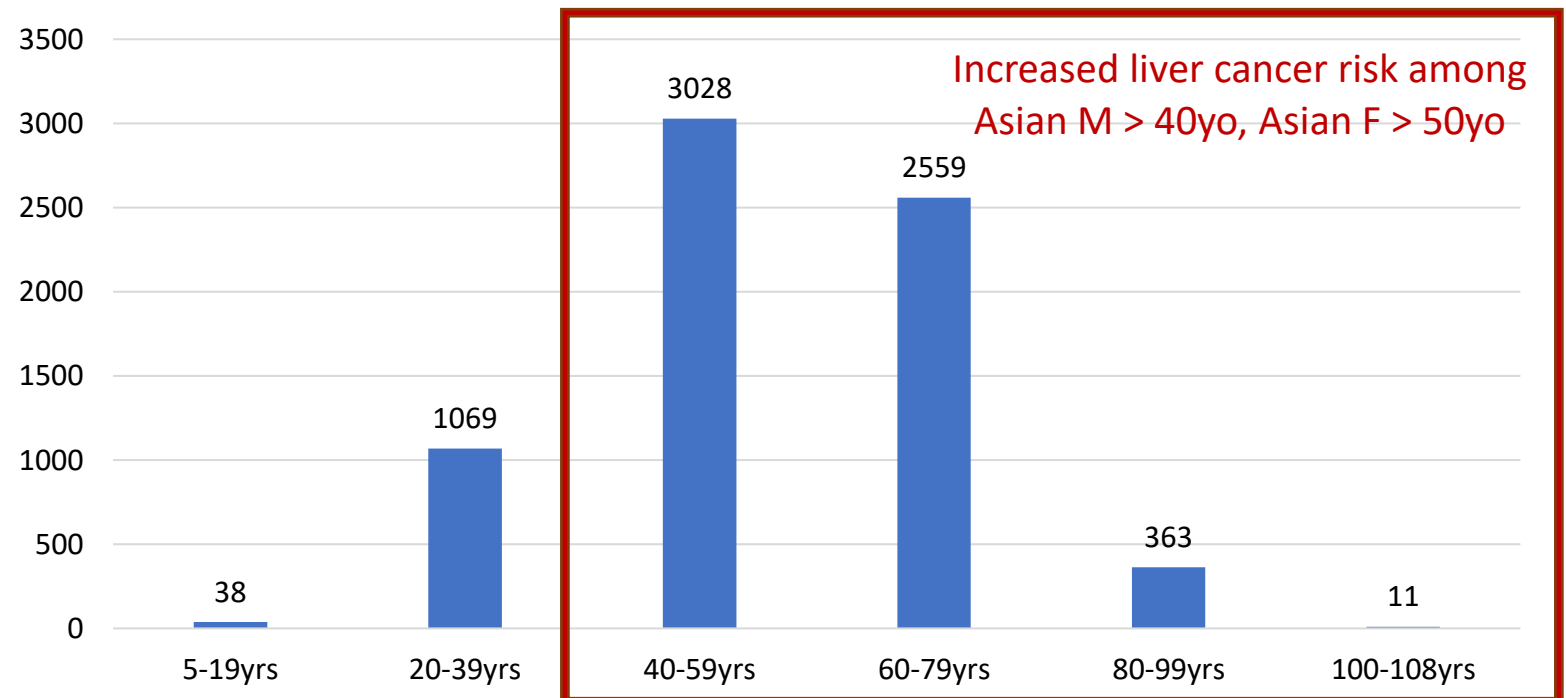
Hepatitis B Registry

- **~7000** patients with HBsAg(+), HBV DNA positive, or ICD-code B18.1 chronic hepatitis B
 - 96% Asian; 51% female
- **~3175** with a medical visit within the last year
- **~60** with a prenatal visit within the last year

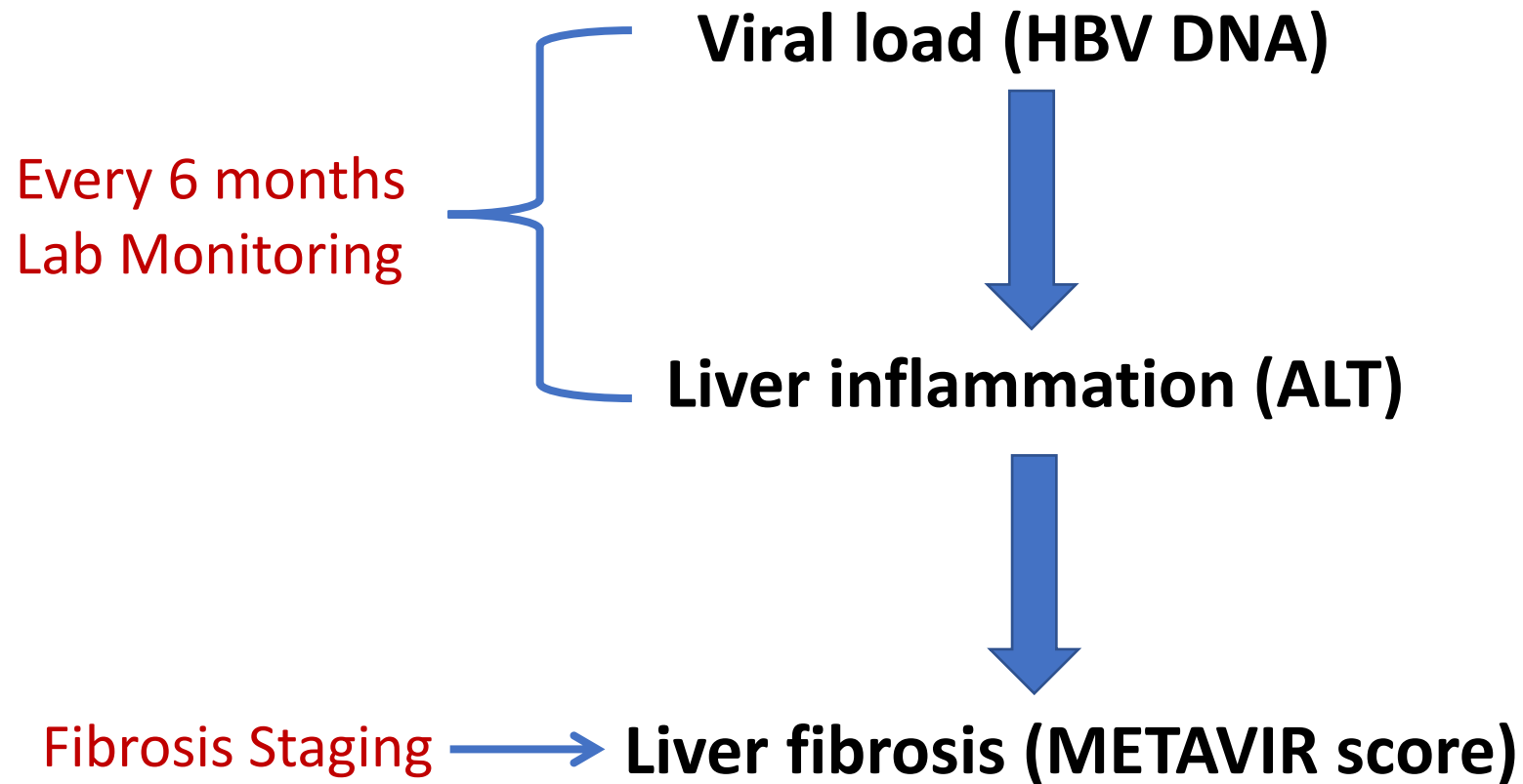
Mitigate

Minimize/prevent liver complications through routine monitoring, liver cancer surveillance, liver fibrosis staging, and treatment of patients with chronic HBV infection

#HBV Patients by Age (range 5 to 108 years)



How do we risk-stratify patients for HBV complications?

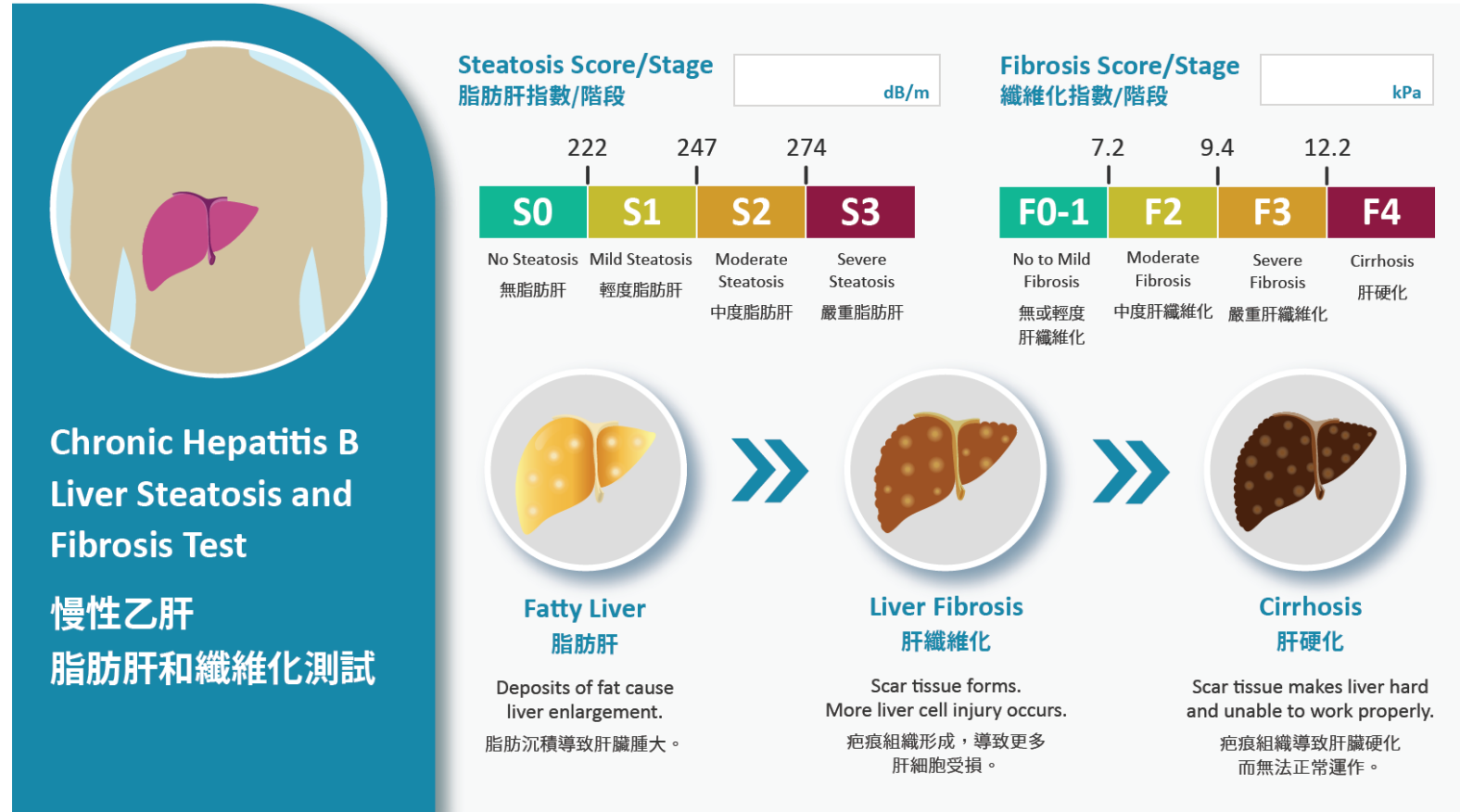


NEMS Liver Fibrosis Staging Program



- Fibroscan Clinic twice monthly at Stockton Clinic
- No longer need to refer to CPMC/UCSF for Fibroscan

- All viral hepatitis B and C patients recommended to have baseline fibrosis assessment
- Can also consider Fibroscan for patients with NAFLD/NASH, alcoholic liver disease/steatosis, persons with elevated ALT of unknown etiology, diabetes

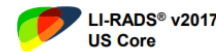


Hepatitis B Liver Cancer Surveillance Program

NEMS Radiology began using **Ultrasound Liver Imaging Reporting And Data System (US LI-RADS)** in Fall 2020 to standardize liver cancer surveillance recommendations

Liver US recommended every 6 months (twice yearly) for HBV and HCV patients with cirrhosis and HBV Asian M > 40yo, Asian F > 50yo, or family history liver cancer.

However, only ~30% of M > 40 and F > 50 in NEMS' HBV Registry have had at least 1 liver imaging study in the last year



US Category

US Visualization Score

Last Viewed

Algorithm

Step 1. Assign US LI-RADS® Category

[Screening](#) or [surveillance](#) US in patient at high risk for HCC ^a

US category

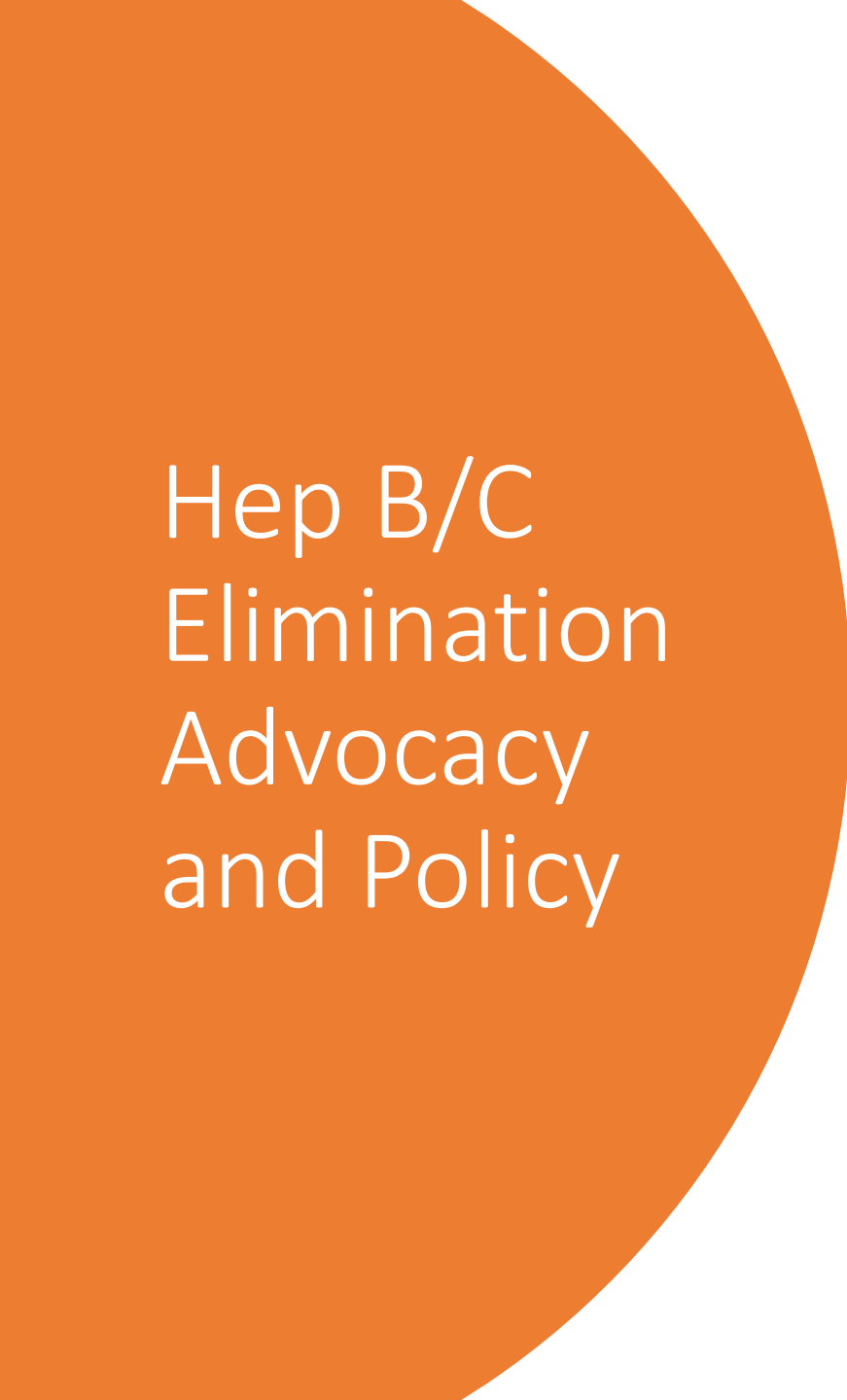
US-1	Negative
US-2	Subthreshold
US-3	Positive

Category	Concept	Definition
US-1 Negative	No US evidence of HCC	No observation OR Only definitely benign observation(s)
US-2 Subthreshold	Observation (s) detected that may warrant short-term US surveillance	Observation (s) < 10 mm in diameter, not definitely benign
US-3 Positive	Observation (s) detected that may warrant multiphase contrast-enhanced imaging	Observation (s) ≥ 10 mm in diameter, not definitely benign OR New thrombus in vein

Educate
Educate
providers on
HBV/HCV care
and patients
about
HBV/HCV
transmission
and risk
factors


The screenshot shows a web browser window with the URL <https://www.hepatitisb.uw.edu/page/primary-care-workgroup/guidance>. The page header includes the 'HEPATITIS B ONLINE' logo and navigation tabs for 'Quick Reference', 'Self Study', 'Hepatitis B Primary Care Guidance', 'HBV Medications', 'HBV Vaccines', and 'Tools & Calculators'. The main content area features the title 'Hepatitis B Management: Guidance for the Primary Care Provider' and a 'Download as PDF - 125KB' button, which is highlighted by a red arrow. Below the title, there is a 'Tip' and a 'Last updated February 25, 2020' note. The main text describes the purpose of the document and provides information about the HBV Primary Care Workgroup and the University of Washington. A sidebar on the right lists various medical specialties and their members, including 'HBV Primary Care Workgroup', 'HEPATOLOGY', 'INFECTIOUS DISEASES', 'PHARMACY', and 'PRIMARY CARE'. A 'Suggested citation' is provided at the bottom of the main text area.

HBV ECHO hosted by SF Hep B Free—Bay Area, case-based learning sessions between Bay Area HBV specialists and primary care providers



Hep B/C Elimination Advocacy and Policy

California AB 789 (Low/Gibson) Hep B and C Screening and Referral to Care

- This bill requires routine hep B and C screening in primary care healthcare settings and referral to care as appropriate
- 

Where we fall short on reaching hepatitis B and C elimination goals

Liver cancer surveillance ultrasounds

HBV and HCV treatment, referral out and lost to f/u

HBV household contacts and community screening

HBV vaccination, not vaccinating all susceptible, incomplete vaccinations

NEMS' Hepatitis B Partners

