GAPS IN HEPATITIS B SCREENING AND MONITORING

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Outline

• Gaps in HBV screening and preventative care
  • HBV knowledge especially in at risk populations
  • Patient related factors influencing HBV testing and vaccination
  • Initiatives to increase public HBV awareness especially among at-risk populations
  • Provider knowledge, attitudes, perceived barriers towards HBV care

• Gaps in HBV disease monitoring and management
  • Adherence to recommended guidelines
  • Factors associated with recommended HBV disease monitoring and management

• Potential strategies to addressing gaps in HBV prevention and care
Patterns of immigration in US affects HBV prevalence in various regions and can influence HBV awareness

- Chronic HBV prevalence estimated at 10-15% among API immigrants
  - APIs are estimated to account for over 40% of CHB cases in US
  - A significant proportion are unaware of HBV status


- In 2006, in a study by the SFDPH, 84% of 2,238 probable HBV infections in SF county were in the API population, 80% of whom were foreign born

Screening and prevention of HBV is critical to reduction of HBV-related morbidity and mortality

- Identification of those with HBV is critical to prevention and disease progression

- HBV therapy is highly effective
  - Improves/reverses liver fibrosis
  - Can reduce complications of cirrhosis including hepatocellular carcinoma

Wong et al. Hepatology 2013;58:1537-47
The majority of Americans with CHB are undiagnosed and untreated

CHB Diagnosis and Treatment in the US

- 2 million\(^1\)
- 600,000\(^2\)
- 50,000\(^2\)

Number (millions)

Total with CHB  |  Aware of their infection  |  Receiving treatment

Factors influencing HBV care

- **Patient-related**
  - Knowledge
  - Attitudes
  - Language fluency
  - Cultural
  - Perceived barriers

- **Provider-related**
  - Knowledge
  - Attitudes
  - Perceived barriers

- **Systems or resource-related**
  - Low income
  - Insufficient health coverage or access to care
  - Underutilization of health resources
IOM 2010: Call To Action

• Lack of HBV and HCV knowledge & awareness in healthcare and social-service providers, public, and policy makers
• Inadequate public resources devoted to prevention, control and surveillance programs

• Recommendations:
  • Improved surveillance for HBV and HCV
  • Improved knowledge and awareness among providers, public (especially at-risk people)
  • Improved HBV vaccine coverage
  • Improved viral hepatitis service and access to those services

Guidelines for HBV screening and management are now aligned

• The 2009 American Association for the Study of Liver Diseases (AASLD) incorporated CDC screening recommendations but also identified additional risk groups for screening
  • Provided guidance for screening, monitoring, and treatment
  • Screening immigrants from regions of intermediate-to-high HBV prevalence, US-born persons whose parents are from regions of high HBV endemicity, and persons with high-risk behaviors, among others

• 2014 U.S. Preventive Services Task Force recommendations on HBV screening became consistent with AASLD guidelines

• Recently released AASLD guidelines in November 2015, focuses on CHB therapy
  • In compliance with IOM standards for trustworthy practice guidelines and uses GRADE approach

http://www.uspreventiveservicestaskforce.org/uspstf12/hepb/hepbdraftrec.htm
Gaps in HBV screening and vaccination especially among at-risk populations

- Many studies predominantly among Asian and Pacific Islander populations in US have shown that HBV screening rates are suboptimal (35-65%) and HBV knowledge is limited.

Examples:
- Among Laotians immigrants in Minnesota
  - 58% did not know about HBV
  - 11% reported screening, 8% were vaccinated (14% had 3 doses)
  - Screening and vaccination were associated with knowledge of HBV

- Survey of Chinese American immigrants in internal medicine clinic in Chinatown Chicago
  - 60% identified as HBV carrier, limited knowledge of transmission, chronicity of infection and therapy
  - Having a family member with HBV and higher HBV knowledge was associated with lower HBV-related stigma
  - HBV education can reduce stigma associated with HBV

Certain patient factors influence HBV screening and vaccination

- Survey of 1704 Vietnamese Americans in Northern California and Washington DC
  - Only ~60% had HBV testing and 26% had HBV vaccination
  - Younger age, US residence >10 yrs, less Vietnamese fluency, lower income and believing HBV can be deadly were associated with less testing
  - Having had HBV vaccine, having discussed HBV with family/friends and employer request for testing was associated with more testing
  - Physician recommendations (4 times higher) and respondent request for HBV testing (8 times higher) were strongly associated with receipt of testing


- Street and telephone interviews of SF Asians (86% Chinese) through Hep B Free campaign
  - High level of trust in physicians and provider recommendation was number one cited reason for testing

Certain patient factors influence HBV screening and vaccination

- Survey of Pacific Islanders in Southern California
  - Reported receipt of health information from physicians and mostly trust this source
  - Additional motivation and also healthcare access appeared to be influential in testing


- Focus groups among Vietnamese, Chinese, and Korean Americans in Houston, TX
  - Diet, nutrition, fatigue, stress was misidentified as HBV causes and improving these factors misidentified as prevention methods
  - Information was sought from providers and fellow community members and internet
  - More patient education both traditional but also through media (internet) may be necessary to clarify these misunderstandings

Hwang J, J Community Health;37:1091-1100
Use of Sociocultural Health Behavior Model to identify theoretically based constructs most influential in HBV screening

- Among 718 Chinese Americans: younger persons, males, and less than high school education were less likely to be screened.
- The enabling factor (health insurance and access to a usual provider) was most important in predicting HBV screening.
- Only 21% without health insurance, 21% who had a physician to visit, and 18% of those who had not visited a doctor in the last year received HBV test.

Ma G, et al. *BMC Infectious Diseases* 2015, 15:120
Patient education improves rates of HBV screening rates especially in at-risk populations

- Randomized controlled community-based study of a lay health worker intervention in 260 Hmongs (in-home education and patient navigation)
- 3.5 time higher odds of self-reported HBV test receipt (24% vs 10%)
- Higher knowledge, female gender, and having seen a doctor in past year was associated with higher rates of testing
- Most common cited reason for testing was a doctor’s recommendation


- Health Within Reach: currently ongoing study/intervention to promote HBV and HCV screening at UCSF
  - Use of mobile technology (4 languages) in providing patient education
Patient education improves HBV knowledge in at-risk populations

- Randomized controlled trial of didactic hepatitis education vs education and motivational interviewing techniques in 440 drug users (2/3 AA or white) on methadone maintenance

- HBV knowledge increased significantly immediately and at 3 month post education

- Education can be integrated in methadone treatment settings

  Larios S, et al., J Subst Abuse Treat. 2014 Apr;46(4):528-31

- Hepatitis care coordination (education and case management) also resulted in increase adherence to HAV and HBV vaccination and HCV clinical evaluation (OR=8.7)

HBV public awareness initiatives in US

San Francisco Hep B Free campaign

- Initiated in 2007
- Goal: increase HBV awareness, testing, vaccination, and treatment among API by building a broad community-wide coalition
- Mass-media and grassroots messaging SF citywide awareness of HBV
HBV public awareness initiatives in US

- **San Francisco Hep B Free campaign**
  - From 2007 to 2009, over 150 organizations contributed ~$1,000,000 in resources
  - 40 educational events to 1,100 providers
  - 50% of PCPs pledged to screen APIs routinely for HBV
  - Community events and fairs reached over 200,000 members of public
  - Of 3,315 API tested at stand-alone screening sites, 6.5% were HBV infected and referred to follow-up care


- Street and telephone interviews (86% Chinese)
- More than half reported hearing about HBV recently
- General HBV awareness was high (85%); majority were unaware of prevention strategies and provider recommendation was number one reason for testing
- Confirmed that increased testing requires both motivating public to test but also compel providers to test high-risk patients

HBV public awareness initiatives in US

• **Dallas Fort Worth (DWF) Hep B Free Project**
  
  - Founded in 2010
  - Goal: increase HBV awareness and knowledge through culturally appropriate education sessions and provide free HBV testing, vaccination and linkage to care as needed
  - 98 Vietnamese Americans received 30-min education by a bilingual gastroenterologist
  - 100% of HBV naïve patients received vaccination series at no cost, and over 75% of HBV infected patients were linked to medical care
  - Knowledge level about HBV risk factors, consequences, treatment option significantly increased

HBV public awareness initiatives in US

- Hep B United: A national campaign
  - In May 2012, Hepatitis B Foundation, Association of Asian Pacific Community Health Organizations, with support from HHS Office of Minority Health launched Hep B United
  - National network of community-based coalitions across US to raise HBV awareness, promote testing, vaccination, monitoring especially in at risk population

- Strategies focused on:
  - Educating providers and communities,
  - Improving testing and linkage to care,
  - Eliminating perinatal HBV transmission

WHAT ABOUT THOSE INFECTED WITH CHB?

Knowledge of transmission, disease and treatment
Limited knowledge of HBV transmission among CHB patients

• Cross sectional survey of a single center university liver clinic
  • 803 US-based family members were identified by 54 patients
  • HBV serostatus of 50% of family members and 28% of immediate family members were not known
  • 50% did not know how they acquired HBV or stated unlikely transmission modes
  • Screening of family members of Asian patients with HBV appears suboptimal


• Online survey of 154 HBV SF patients through college campuses, social networks, online announcements in Asian American communities
  • Lack of knowledge of transmission and fears about HBV transmission
  • Concerns about liver cancer and long term health

Perception and attitudes towards HBV medications among those with CHB

- Survey of 252 Chinese, Korean, and Vietnamese participants in New York, Bay Area, Los Angeles/Orange County:
  - 44% were being treated for HBV
  - Majority (>70%) acknowledged seriousness of liver damage, awareness of effective treatment options
  - However, 39% were reluctant to be on long term therapy due to concerns for side effects
    - Many believed lifestyle and diet would be sufficient to manage disease
  - Long-term risk of kidney damage (38%) and medication costs (23%) had highest importance when choosing CHB treatment
  - Treating physician explanation balancing the relative risks of disease progression versus concerns for side effects are important

Tokes K, et al. JGIM 2013, 29:477-84
Factors influencing HBV knowledge in CHB

- 510 treatment naïve patients enrolled from 6 NA liver centers
- 72% Asians (12% African), median duration of migration 15 years, 43% limited English proficiency, 43% ≤ high school education, mean duration of liver specialty care 6 years
- The overall knowledge score was high at mean of 80%
  - 53% had concerns about therapy
  - Unemployment, low education level, lack of English language fluency, shorter duration of NA residence and Asian race were associated with lower HBV knowledge
- However, willingness to accept HBV therapy was high (88%), suggesting that culturally-tailored educational interventions especially among Asians and recent immigrants with limited English language fluency is critical to reducing health disparity in HBV

Patient education improves HBV knowledge and acceptance of therapy

- A subgroup of 51 CHB patients received formal patient education by a hepatology provider either in English or Chinese.

  Improved knowledge scores post-education:
  - HBV transmission,
  - Disease progression,
  - Prevention of disease progression with therapy and interest in receipt of therapy

- Targeted formal patient education was effective in improving HBV knowledge and willingness to accept therapy in this cohort of predominantly foreign-born Asians.

Burman B, et al. Gastroenterology 2014; 146 (5), S177
GAPS IN HBV SCREENING AND PREVENTATIVE SERVICES

Provider knowledge, attitudes, perceived barriers
Gaps in HBV screening and vaccination practices

• Studies surveying primary care providers have reported suboptimal (35-65%) HBV screening and vaccination rates in at risk populations
  • About 30-40% are unfamiliar with AASLD guidelines

• Reported factors influencing HBV screening includes familiarity with AASLD guidelines (OR 6.4), having provided vaccination in high proportion of eligible patients (OR 2.2)

• Medical training may not adequately prepare physicians in screening and management of CHB

• Barriers cited to HBV screening among providers include patient financial barrier, patient cultural differences, competing priorities, limited knowledge

Said A, Hepatitis Research and Treatment 2014
Suboptimal knowledge and preventative HBV vertical transmission practices among perinatal providers

• 518 perinatal nurses were educated and half surveyed from 8 birthing hospitals in California during 2008-10, 40% were of API background

• 80% had provided care to a pregnant woman with CHB (HBsAg+)

• Only 51% routinely provided educational information about HBV to patients

• Poor adherence to ACIP-recommendations:
  • 17% referred patient to liver specialist or internist for management
  • 25% did not routinely notify patients about importance of newborn vaccination and immunoprophylaxis following birth
  • 19% informed patients about follow-up serologic testing of newborns 34% about testing household and sexual contacts

• HBV knowledge was limited but improved post education (on average 40 min seminars by program staff members) and intentions to educate patients and provide them with educational materials increased (99.5%)

Chao S, et al. JOGNN 2012; 41:494-505
HBV preventative services in a medically underserved API population using both provider and patient data

- Survey of PCPs in SF safety net system (148 PCPs, 44% response rate) and review of record of over 20,000 API adults
- Only 62% had undergone any HBV screening (44% with both HBsAg and HBsAb) and 48% of HBV susceptible were vaccinated
- Most providers were knowledgeable and had favorable attitudes to screening but,
  - 43% were unfamiliar with HBV guidelines;
  - <1/3 screened majority (>75%) of their at-risk patients
  - ~1/3 of patients that were vaccinated were already HBV immune
- About 25% cited lack of clarity of guidelines and difficulty accessing specialty care as barrier
- Favorable provider attitude was positively associated with HBV screening; female patient sex, high number of patients in clinic, and provider barrier scores were negatively associated with screening
- Higher provider perceived barrier also negatively influenced HBV vaccination
- Along with importance of provider attitudes and barriers to HBV screening and vaccination, this study highlighted the influence of competing priorities and practice factors

Electronic physician prompts promotes HBV screening in APIs

• A randomized, controlled trial of EHR prompt (vs usual care) among 76 PCPs caring for 175 adults with Chinese or Vietnamese surnames
  • Had appointments with providers and no history of HBV testing

• HBsAg tests were ordered for 41% of the intervention patients and 1% of the control patients
  • 34% of intervention group and no control patients completed the HBV testing

GAPS IS HBV DISEASE MONITORING AND MANAGEMENT
Lack of awareness or insufficient adherence to CHB management recommendations among providers

- Adequate serologic HBV disease monitoring, performance of liver biopsy to guide treatment decisions, treatment initiation among eligible patients and liver cancer screening is suboptimal
  - Integrated healthcare delivery systems settings
  - Safety net setting serving underserved populations
  - Community primary care settings
  - Community gastroenterology settings

- Poor adherence to AASLD practice guidelines (more primary care setting than specialty)

- Partly due to lack of familiarity with guidelines

Gaps in disease HBV disease monitoring in the underserved populations

- Provider familiarity with AASLD guidelines and patient factors (Asian race and age) were associated with recommended HBV disease monitoring

![Graph showing percent use of HBV monitoring tests over different time periods](image)

- Provider and practice factors (age, knowledge and perceived barriers) were negatively associated with liver cancer screening

Liver cancer screening decreases over time

- In a study of 1647 API patients with CHB, 824 met at-risk criteria for recommended liver cancer screening.

Among patients with HCC, receipt of prior screening improved survival, and this survival benefit was related to better liver function at HCC diagnosis and receipt of curative therapy.

Addressing gaps in HBV screening and management: Summary

• Patient education improves HBV knowledge, screening and vaccination, and willingness to accept anti-HBV therapy

• Provider recommendations is a key factor influencing HBV screening/vaccination
  • Community outreach and healthcare access are also additional motivating factors

• Yet provider adherence to HBV guidelines are suboptimal
  • Targeted HBV education however improves provider knowledge
Addressing gaps in HBV screening and management: Summary

• Culturally appropriate interventions including use of new media and technology especially among those with limited education and language fluency and effort to enhance access to healthcare are needed to improve HBV screening and prevention

• Cultivating positive provider attitudes toward HBV care by reinforcing evidence-based national guidelines are likely to be effective in promoting HBV screening and management

• System changes to streamline testing, specialty referrals, and HBV treatment in order to overcome primary care perceived barriers to HBV care are also important
Addressing gaps in HBV screening and management: Summary

• Data also highlight the importance of engaging primary care providers in development, dissemination, and implementation of evidence-based guidelines and to identify important topic areas and provider groups for targeted educational efforts.

• Given complex interplay of factors influencing HBV care, implementation of systematic HBV quality improvement initiatives may help improve HBV prevention and care.
Thank you!