

outcomes. Similarly, Osypuk et al. found immigrant Chinese enclaves to be associated positively with diet, but not with physical activity.¹⁷ Studies using thresholds were similarly mixed. Haas et al. observed that Latinos in highly concordant areas ($\geq 40\%$) had less difficulty obtaining care but no difference in financial barriers⁴; Gaskin et al. observed that Latinos in highly concordant areas ($\geq 50\%$) generally had lower access to ambulatory services except for office-based physician services.² Our mixed findings suggest the presence of cultural preferences, possibly including placing a lower value on having a USC and having a more crisis-oriented perspective on health care access.^{18,19} Because of the importance of care continuity, campaigns are needed to educate Asian Americans in highly concordant neighborhoods on the benefits of having a USC.

We observed substantial subgroup variations in associations between concordance level and care access outcomes. Because aggregate analyses would have masked these differences, future disaggregated analyses are essential for understanding subgroups.

Study limitations include potential lack of generalizability because data are from California and several subgroups and analyses were excluded because of small sample size. Analyses in other geographic locations and increased funding and data collection to support future disaggregated studies would address these limitations.

Neighborhood concordance levels are associated with health care access and utilization among Asian Americans. Mixed findings by outcomes and subgroups emphasize the need for detailed exploration of how factors such as social networks, cultural preferences, and availability of linguistically concordant providers influence care access in different Asian subgroups. ■

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References

- Benjamins MR, Kirby JB, Huie SAB. County characteristics and racial and ethnic disparities in the use of preventive services. *Prev Med*. 2004;39(4):704–712.
- Gaskin DJ, Dinwiddie GY, Chan KS, McCleary R. Residential segregation and disparities in health care services utilization. *Med Care Res Rev*. 2012;69(2):158–175.
- Gresenz CR, Rogowski J, Escarce JJ. Community demographics and access to health care among US Hispanics. *Health Serv Res*. 2009;44(5 pt 1):1542–1562.
- Haas JS, Phillips KA, Sonneborn D, et al. Variation in access to health care for different racial/ethnic groups by the racial/ethnic composition of an individual's county of residence. *Med Care*. 2004;42(7):707–714.
- Kirby JB, Taliaferro GS, Zuvekas SH. Explaining racial and ethnic disparities in health care. *Med Care*. 2006;44(5, suppl):164–172.
- US Census Bureau. As the nation ages, seven states become younger, Census Bureau reports. Release no. CB-14-118. Available at: <https://www.census.gov/newsroom/press-releases/2014/cb14-118.html>. Accessed September 15, 2014.
- Humes KR, Jones NA, Ramirez RR. *Overview of Race and Hispanic Origin: 2010*. Washington, DC: US Census Bureau; 2011. Brief no. C2010BR-02.
- Hoefel EM, Rastogi S, Kim MO, Shahid H. *The Asian Population: 2010*. Washington, DC: US Census Bureau; 2012.
- Chang E, Chan KS, Han HR. Factors associated with having a usual source of care in an ethnically diverse sample of Asian American adults. *Med Care*. 2014;52(9):833–841.
- UCLA Center for Health Policy Research. *California Health Interview Survey. CHIS 2007 Adult Public Use File*. [computer file]. Los Angeles; 2009.
- UCLA Center for Health Policy Research. *California Health Interview Survey. CHIS 2005 Adult Public Use File*. [computer file]. Los Angeles; 2010.
- UCLA Center for Health Policy Research. *California Health Interview Survey. CHIS 2009 Adult Public Use File*. [computer file]. Los Angeles; 2011.
- Logan JR, Zhang W, Alba RD. Immigrant enclaves and ethnic communities in New York and Los Angeles. *Am Sociol Rev*. 2002;67(2):299–322.
- Jargowsky PA. *Urban Poverty, Race, and the Inner City: The Bitter Fruit of Thirty Years of Neglect*. Oxford, UK: Rowman & Littlefield; 1998.
- Allen JP, Turner E. Ethnic residential concentrations in United States metropolitan areas. *Geogr Rev*. 2005;95(2):267–285.
- Elliott AC, Woodward WA. *Analysis of Categorical Data. Statistical Analysis Quick Reference Guidebook: With SPSS Examples*. Thousand Oaks, CA: Sage; 2007.
- Osypuk TL, Diez Roux AV, Hadley C, Kandula NR. Are immigrant enclaves healthy places to live? The Multi-Ethnic Study of Atherosclerosis. *Soc Sci Med*. 2009;69(1):110–120.
- Vu HH. Cultural barriers between obstetrician-gynecologists and Vietnamese/Chinese immigrant women. *Tex Med*. 1996;92(10):47–52.
- Han H-R, Kang J, Kim KB, et al. Barriers to and strategies for recruiting Korean Americans for community-partnered health promotion research. *J Immigr Minor Health*. 2007;9:137–146.

Survey of US Correctional Institutions for Routine HCV Testing

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To ascertain HCV testing practices among US prisons and jails, we conducted a survey study in 2012, consisting of medical directors of all US state prisons and 40 of the largest US jails, that demonstrated a minority of US prisons and jails conduct routine HCV testing. Routine voluntary HCV testing in correctional facilities is urgently needed to increase diagnosis, enable risk-reduction counseling and preventive health care, and facilitate evaluation for antiviral treatment. (*Am J Public Health*. 2015;105:68–71. doi:10.2105/AJPH.2014.302071)

There are an estimated 4 to 7 million persons in the United States infected with HCV.^{1,2} Morbidity and mortality from HCV are

increasing and in 2007, death from HCV exceeded that from HIV infection for the first time.^{3,4} Persons who inject drugs are at increased risk for HCV infection and for being incarcerated. Multiple studies have demonstrated high HCV prevalence rates among persons behind bars.⁵⁻⁷ In 2010, the Institute of Medicine (IOM) called for the development of comprehensive viral hepatitis services for incarcerated populations including offering testing, hepatitis B virus vaccination, education, and medical management in partnership with community providers.⁸

Despite the Centers for Disease Control and Prevention (CDC) releasing HCV testing recommendations in 1998 and subsequent recommendations for prevention and control of viral hepatitis within correctional facilities in 2003,⁹⁻¹⁰ recent studies estimate that 50% of persons infected with HCV are unaware of their infection,¹¹⁻¹⁴ thus reducing opportunities for risk-reduction counseling and treatment. In response to this, the CDC updated HCV testing recommendations for the US general population in 2012, which added at least 1-time testing among persons born between 1945 and 1965, now commonly referred to as the “birth cohort” screening recommendations.¹⁵ However, the 2012 recommendations did not provide a specific testing recommendation for incarcerated individuals. Given the increased prevalence of HCV among criminal justice populations, we conducted a survey among US prisons and jails to gain a better understanding of current HCV testing practices within correctional facilities.

METHODS

In 2012, we surveyed Medical Directors of all state prison systems and 40 of the largest US jails. The survey included 5 items regarding HCV testing to determine if facilities provided any HCV testing, and if so, what approaches were used (routine including opt-in, opt-out, and mandatory; inmate request; physician order; and court or facility order). Routine testing was defined as providing a screening test to all persons in custody who are not known to be HCV-infected; definitions for opt-in, opt-out, and mandatory testing were provided. In the survey instructions, we acknowledged that within a correctional system, there may be

different testing policies between facilities. Therefore, we requested that survey responses should describe the most common practice within the system. An introductory e-mail describing the project included a unique link to the survey. Nonresponders were asked to complete the interview by telephone.

RESULTS

Forty-three of the 50 state prisons (86%) and 23 of the 40 jails (58%) responded (Table 1). The majority of prisons and jails provided HCV testing when requested by an inmate or ordered by a physician and among the systems reporting HCV testing, 60% and 35% of prisons and jails, respectively, provided HCV testing when court or facility-ordered. Only 11 prisons and 1 jail facility provided routine HCV testing to inmates. The jail facility provided HCV testing on an opt-in basis, and among the prison systems, routine testing was conducted using opt-in (n = 3), opt-out (n = 3), and mandatory (n = 5) approaches.

DISCUSSION

Despite the high prevalence of HCV among incarcerated populations and the fact that expanded HCV testing would yield significant numbers of new diagnoses,¹⁶ few facilities in this study conducted routine HCV testing. HCV testing among high prevalence populations improves cost-effectiveness.¹⁷ HCV testing that depends on recognition of risk by health care providers and reporting of risk by inmates is inadequate and will not decrease the burden of undiagnosed infection.¹⁸ A more comprehensive approach to HCV, as recommended by the IOM, is urgently needed that includes routine voluntary HCV testing for all inmates. The success of routine HCV testing in the Pennsylvania state prison system was recently reported.¹⁹

We acknowledge that there are barriers to HCV testing in this population, including the cost of antibody screening, confirmatory testing, and the need to provide medical care and treatment to persons identified as having chronic infection. Furthermore, routine HCV testing in jails presents additional challenges because of the transient nature of the jailed population,²⁰ which may limit the delivery of test results and referral for treatment

evaluation. However, treatment options for HCV infection are increasing with the development of new direct-acting antivirals.^{21,22} We need to incentivize correctional systems to screen for, treat, and cure this disease, and sufficient resources and training must be made available. Treatment has been successfully delivered within prisons,²³⁻²⁶ and incarceration may be the ideal time to treat some individuals who lack stable and adequate health care in the community. There are multiple benefits to HCV diagnosis even if treatment is not feasible, including risk-reduction counseling, vaccination for hepatitis A virus and hepatitis B virus when appropriate, and evaluation for antiviral treatment either within the correctional setting or in the community following release in partnership with community health care providers.

We urge the CDC to develop policy guidance for correctional facilities that calls for routine voluntary HCV screening for all persons with undiagnosed HCV status. Testing must be linked to counseling, primary health care including vaccination for hepatitis A and B, and evaluation for HCV treatment. Investment in HCV treatment networks that include correctional providers and community partners must be developed in conjunction with expanded testing. To remove the financial disincentives to HCV testing within correctional facilities, this investment needs to be coupled with a reallocation of health care resources that removes the financial burden of HCV treatment from the public safety domain and incorporates the cost into a broader public health strategy. ■

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TABLE 1—Survey Results Regarding HCV Testing in US Prisons and Jails: 2012

Survey Question	Prisons (n = 43), No. (%)	Jails (n = 23), No.(%)
Do the facilities under your jurisdiction provide any HCV testing to persons in custody?		
All facilities	40 (93.0)	18 (78.3)
Some facilities	2 (4.7)	2 (8.7)
No	0 (0.0)	3 (13.0)
Don't know	1 (2.3)	0 (0.0)
What approaches are used to determine when HCV testing is provided to persons in custody? (approaches not mutually exclusive)		
Routine testing	11 (25.6)	1 (4.3)
Inmate request	32 (74.4)	13 (56.5)
Physician order	41 (95.3)	19 (82.6)
Court or facility order	25 (58.1)	7 (30.4)
Other	2 (4.7)	0 (0.0)
Not applicable	1 (2.3)	3 (13.0)
Is the routine HCV program in effect in all facilities or some facilities?		
All facilities	9 (20.9)	1 (4.3)
Some facilities	2 (4.7)	0 (0.0)
Not applicable	32 (74.4)	22 (95.7)
On what basis is the routine HCV testing offered in facilities under your jurisdiction?		
Opt-in	3 (7.0)	1 (4.3)
Opt-out	3 (7.0)	0 (0.0)
Mandatory	5 (11.6)	0 (0.0)
Not applicable	32 (74.4)	22 (95.7)
When is routine HCV testing provided to inmates? (approaches not mutually exclusive)		
Upon entrance	11 (25.6)	1 (4.3)
Upon exit	2 (4.7)	0 (0.0)
Not applicable	32 (74.4)	22 (95.7)

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Human Participant Protection

This research was reviewed by the institutional review boards of The Miriam Hospital and Abt Associates.

References

1. Armstrong GL, Wasley A, Simard EP, McQuillan GM, Kuhnert WL, Alter MJ. The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med.* 2006;144:705–714.

2. Chak E, Talal AH, Sherman KE, Schiff ER, Saab S. Hepatitis C virus infection in USA: an estimate of true prevalence. *Liver Int.* 2011;31(8):1090–1101.

3. Davis GL, Alter MJ, El-Serag H, Poynard T, Jennings LW. Aging of hepatitis C virus (HCV)-infected persons in the United States. *Gastroenterology.* 2010;138:513–521.

4. Ly KN, Klevens RM, Jiles RB, Ward JW, Holmberg SD. The increasing burden of mortality from viral hepatitis in the United States between 1999 and 2007. *Ann Intern Med.* 2012;156(4):271–278.

5. Larney S, Kopinski H, Beckwith CG, et al. Incidence and prevalence of hepatitis C in prisons and other closed settings: Results of a systematic review and meta-analysis. *Hepatology.* 2013;58:1215–1224.

6. Macalino GE, Vlahov D, Sanford-Colby S, Patel S, Sabin K, salas C, Rich JD. Prevalence and incidence of HIV, hepatitis B virus, and hepatitis C virus infections among males in Rhode Island prisons. *Am J Public Health.* 2004;94(7):1218–1223.

7. Solomon L, Flynn C, Muck K, Vertefeuille J. Prevalence of HIV, syphilis, hepatitis B, and hepatitis C among entrants to Maryland correctional facilities. *J Urban Health.* 2004;81(1):25–37.

8. Institute of Medicine. Hepatitis and liver cancer. A national strategy for prevention and control of hepatitis

B and C. Available at: <http://www.iom.edu/reports/2010/hepatitis-and-liver-cancer-a-national-strategy-for-prevention-and-control-of-hepatitis-b-and-c.aspx>. Accessed October 22, 2013.

9. Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. *MMWR Recomm Rep.* 1998;47(No. RR-19):1–39.

10. Weinbaum C, Lyerla R, Margolis; Centers for Disease Control and Prevention. Prevention and Control of Infections with Hepatitis Viruses in Correctional Settings. *MMWR Recomm Rep.* 2003;52(No. RR-1): 1–36.

11. Roblin DW, Smith BD, Weinbaum CM, Sabin M. Hepatitis C virus screening practices and prevalence in a managed care organization. *Am J Manag Care.* 2011; 17:548–555.

12. Southern WN, Drainoni ML, Smith BD, et al. Hepatitis C testing practices and prevalence in a high-risk urban ambulatory care setting. *J Viral Hepat.* 2011;18: 474–481.

13. Spradling PR, Rupp L, Moorman AC, et al. Hepatitis B and C virus infection among 1.2 million persons with access to care: factors associated with testing and infection prevalence. *Clin Infect Dis.* 2012;55:1047–1055.

14. Volk ML, Tocco R, Saini S, Lok AS. Public health impact of antiviral therapy for hepatitis C in the United States. *Hepatology*. 2009;50:1750–1755.
15. Smith BD, Morgan RL, Beckett GA, et al. Recommendations for the Identification of Chronic Hepatitis C Virus Infection Among Persons Born During 1945–1965. *MMWR Recomm Rep*. 2012;61(RR-4):1–32.
16. Spaulding AC, Thomas DL. Screening for HCV infection in jails. *JAMA*. 2012;307(12):1259–1260.
17. Sroczynski G, Esteban E, Conrads-Frank A, et al. Long-term effectiveness and cost-effectiveness of screening for hepatitis C virus infection. *Eur J Public Health*. 2009;19:245–253.
18. Macalino GE, Dhawan D, Rich JD. A missed opportunity: Hepatitis C screening of prisoners. *Am J Public Health*. 2005;95(10):1739–1740.
19. Mahowald M, Larney S, Scharff N, et al. The Burden of Hepatitis C Infection in Pennsylvania State Prisons and Implications for Treatment. Conference on Retroviruses and Opportunistic Infections; March 3-6, 2014; Boston, MA. Abstract 630.
20. Spaulding AC, Perez SD, Seals RM, Hallman MA, Kavasey R, Weiss PS. Diversity of release patterns for jail detainees: implications for public health interventions. *Am J Public Health*. 2011;101(Suppl 1):S347–S352.
21. Aghemo A, De Francesco R. New horizons in hepatitis C antiviral therapy with direct-acting antivirals. *Hepatology*. 2013;58(1):428–438.
22. Vachon ML, Dieterich DT. The era of direct-acting antivirals has begun: the beginning of the end for HCV? *Semin Liver Dis*. 2011;31(04):399–409.
23. Maru DS, Bruce RD, Basu S, Altice FL. Clinical outcomes of hepatitis C treatment in a prison setting: feasibility and effectiveness for challenging treatment populations. *Clin Infect Dis*. 2008;47(7):952–961.
24. Farley J, Vasdev S, Fischer B, Haydon E, Rehm J, Farley TA. Feasibility and outcome of HCV treatment in a Canadian federal prison population. *Am J Public Health*. 2005;95(10):1737–1739.
25. Martin CK, Hostetter JE, Hagan JJ. New opportunities for the management and therapy of hepatitis C in correctional settings. *Am J Public Health*. 2010;100(1):13–17.
26. Allen SA, Spaulding AC, Osei AM, Taylor LE, Cabral AM, Rich JD. Treatment of chronic hepatitis C in a state correctional facility. *Ann Intern Med*. 2003;138(3):187–190.