Health and Justice

CASE STUDY

Open Access

Offering is not enough: an attempt to increase infectious diseases testing at a large county jail in Massachusetts

Emily D. Grussing[1,2], Taisuke Sato[1], Alyssa Cabrera[3] and Alysse G. Wurcel[1,2*]

Abstract

Background Eliminating infectious diseases epidemics requires resources for testing, prevention, and treatment in jails. The 2022 Centers for Diseases Control and Prevention guidelines recommend offering hepatitis C virus (HCV), HIV, and STI testing at jail intake. Currently, the impact of offering testing at intake in jails has only been analyzed in the context of multi-modal strategies to increase testing. There is a lack of real-world data about the impact of offering testing at jail intake as a strategy to increase testing. In May 2022, Plymouth County Correctional Facility in Massachusetts added questions to their intake form offering HIV, HCV, syphilis, gonorrhea, and chlamydia testing. The goal of this project was to assess frequency of testing before and after the addition of infectious diseases testing questions to the intake form.

Case presentation Data about infectious diseases testing completion per month were compared between February-April 2022 and May 2022-June 2023. The transition from rapid to venipuncture HIV testing was also compared between September 2021-June 2023. Data was assessed in monthly intervals. The median number of urine tests decreased from 39 to 28, and the median number of blood tests decreased from 21 to 15 after testing was offered during intake.

Conclusion There were no significant trends in the run chart after the intervention. Although offering testing at intake is one important part of healthcare in jails, intake testing should be supported with other systems including access to phlebotomy, facilitated movement from the housing areas to the medical unit, and stigma reduction tools.

Keywords Intake testing, Carceral health, HIV, HCV, Syphilis, Jail, Infectious disease

Background

The key to ending the HIV and Hepatitis C Virus (HCV) epidemics is to increase testing, diagnosis and linkage to treatment. (Kay et al. 2016; Yehia et al. 2014). The CDC recommends testing all people who are incarcerated for HIV, HCV and sexually transmitted infections (STIs) (i.e., gonorrhea, chlamydia, and syphilis) at intake to carceral facilities. (CDC, 2022; Control, 2022) Two-thirds of incarcerated people meet standards for substance use disorder/dependence, (Bronson 2017) and risks for HIV, HCV, and STIs are increased in this population. (Bick,

*Correspondence:
Alysse G. Wurcel
Alysse.Wurcel@bmc.org
[1] Department of Medicine, Division of Geographic Medicine and Infectious Disease, Tufts Medical Center, 800 Washington St, Boston, MA 02111, USA
[2] Tufts University School of Medicine, 145 Harrison Ave, Boston, MA 02111, USA
[3] Tufts Clinical and Translational Science Institute, Tufts Medical Center, 800 Washington St, Boston, MA 02111, USA

2007; Binswanger et al., 2009; Maruschak 2012; Mertz et al. 2002).

Most jails and prisons use venipuncture HIV, HCV, and syphilis testing but several jails and prisons have successfully implemented rapid HIV/HCV testing. (Beckwith et al., 2007; Beckwith et al. 2011; Beckwith et al. 2016; Simonsen et al. 2015; Zaller et al. 2016. Barriers to blood draws include administrative and staffing challenges, especially when blood is drawn in a jail and needs to be transported to a laboratory. Beckwith et al. 2011). Oral testing is available for HIV and HCV testing, although most jails do not have this available. (Beckwith et al. 2016). Gonorrhea and chlamydia testing can be done on urine samples as well as rectal or throat samples. Intake has been shown to be the ideal time to increase infectious diseases testing. (Beckwith et al. 2011; Dang et al., 2021; Ly et al., 2018; Nijhawan et al. 2018; Silberstein et al., 2000). Opt-out infectious diseases testing both increases overall frequency of testing and decreases racial disparities in testing. (Feld et al. 2023; Levano et al. 2023; Maner et al. 2022; Montoy et al. 2016). Unlike opt-in testing, which requires explicit agreement to perform testing, opt-out testing informs individuals that they will be tested unless they decline. The Federal Bureau of Prisons recommends opt-out testing for HCV for all incarcerated people, (Guidance, 2018) and a recent court ruling has mandated opt-out HCV testing in all Massachusetts (MA) prisons, (Conti 2018) but this ruling does not apply to jails in MA.

In Massachusetts, medical intake is an interaction with a nurse who asks a lists of questions about medical and psychiatric history, confirms outside medications, and triages acute healthcare needs.[15,16]In 2018, 85% of jails in Massachusetts offered HIV and 50% offered HCV testing at intake. (Wurcel et al. 2021). The goal of this study was to measure the change in HIV/HCV tests performed by adding a question offering HIV and HCV testing to the nursing intake in one jail.

Case presentation

Methods

Plymouth County Correctional Facility, located in southeastern Massachusetts, has an average daily population of about 600 people. (Correction 2021; Corrections 2022, 2023). A public health organization visited the jail 3-5 times a month since 2013 through a contract paid by the Massachusetts Department of Public Health (MA-DPH). Prior to the research study, people incarcerated in the jail would request testing. The public health organization performed oral HIV tests on site and collected urine samples which were sent to the MA-DPH for gonorrhea and chlamydia testing. For HCV and syphilis, clinicians ordered venipuncture testing, which was sent to a diagnostic laboratory service. Clinicians also had the ability to send HIV testing through venipuncture, which would also be processed at the diagnostic laboratory, but they were directed to refer people to oral testing. There were changes to the contract in February 2022, broadening the scope of services offered by the public health organization to include venipuncture for HIV/HCV/syphilis and urine tests for gonorrhea and chlamydia and send all specimens to the MA-DPH. Oral HIV testing was available if blood could not be drawn.

Intake changes

On May 2, 2022, the following questions were added to the intake form at PCCF: (1) "Do you want to be tested for HIV?," (Camplain et al.) "Do you want to be tested for Hepatitis C?," and (Yehia et al.) "Do you want to be tested for Sexually Transmitted Diseases?" were added to the nursing intake form. If someone answered "Yes" to any of these questions, they would be placed on a list to be called for appointments with Health Imperatives. If the person arrived for testing, they were asked for written consent for HIV testing. Then, one tube of blood is drawn for HIV, HCV, and syphilis testing, and a urine sample is collected for chlamydia and gonorrhea testing. At the end of the visit, the person who is incarcerated is informed that there will only be follow-up if any of their tests returned positive; if everything returned negative, there would be no follow-up or additional communication. Notably, we did not use "opt-out" methods of asking about infectious diseases because at the time, most jails did not use opt-out methods and discussions with key stakeholders felt that the opt-out method was complicated in a carceral setting. This is consistent with previous research showing questions about the ethicality of asking opt-out infectious diseases in carceral settings (Ly et al. 2018).

Statistical analysis

We wanted to study changes in HIV/HCV tests completed as the primary outcome of interest. As urine, chlamydia, and gonorrhea testing was a constant test offered during this time by Health Imperatives, we used this as a comparator. Data on the number of tests completed and positive was provided to the research team from September 2021 to June 2023. Run charts were used to interpret the count-type data from before and after the addition of infectious diseases testing to the nursing intake form. Run charts are preferred for analyzing changes over time with quality improvement studies.(Patrick W. Brady, 2017) Weeks where HI did not visit the jail were excluded from the analysis, as there was no opportunity for testing on those weeks. The Tufts Health Science Institutional

Review Board deemed this study Not Human Subjects Research.

Results

From September 2021 to January 31, 2022, 84 oral rapid HIV tests were completed. Between February 1, 2022 and May 31, 2012, 293 blood tests for HIV and HCV were completed and 523 urine tests were completed for chlamydia and gonorrhea. After offering testing to all at intake, the median number of urine tests per month decreased from 39 to 28, and the median number of blood tests decreased from 21 to 15 (see Fig. 1). The median number of HIV tests per month stayed the same when it was changed from rapid to serum (21). There were no shifts or trends observed from the run chart, meaning all variation was deemed to be common cause variation and not due to any meaningful change.

Discussion and conclusion

We found no increases in HIV/HCV testing following the addition of questions offering testing at intake. Overall, the number of tests done per week was low, with an average of 31 for urine tests and 18 for blood tests done per month in a facility with an average daily population of 600 people. This equates to, on average, of less than 1% of daily population receiving urine-based testing and less than 0.5% receiving serum-based testing. Similar pilot studies that have offered these tests at intake or release have reported testing completion rates between 60% and 98%.[10,12,26] Our findings suggest that the addition of intake questions for HIV and HCV testing may be necessary, but not sufficient, to improve access to testing.

We hypothesize that several other barriers exist preventing testing. An estimated 36% of people who are arrested are intoxicated at the time of their arrest, (Greenfeld 1998) and it is possible that the people at intake being asked questions about testing are either still under the influence of drugs or alcohol or in withdrawal. They may not be fully able to engage in questions about infectious diseases testing. Our colleagues say that about 10% of people who agree to testing ultimately decide not to pursue it. The largest barrier is seeing people who agreed to testing in a timely manner. Health Imperatives staff report that they sometimes only one to two people will come to their appointments every week. People who are incarcerated may either not know why they are being called to medical or are busy doing other things as part of their day, like education or work. Offering testing at the same time as intake could get around the issue, however the process of nursing intake is already full of several tasks and questions. In addition, nursing intake may occur when phlebotomy services are not available. Reviewing the chart with Health Imperatives about the dip in testing in January/

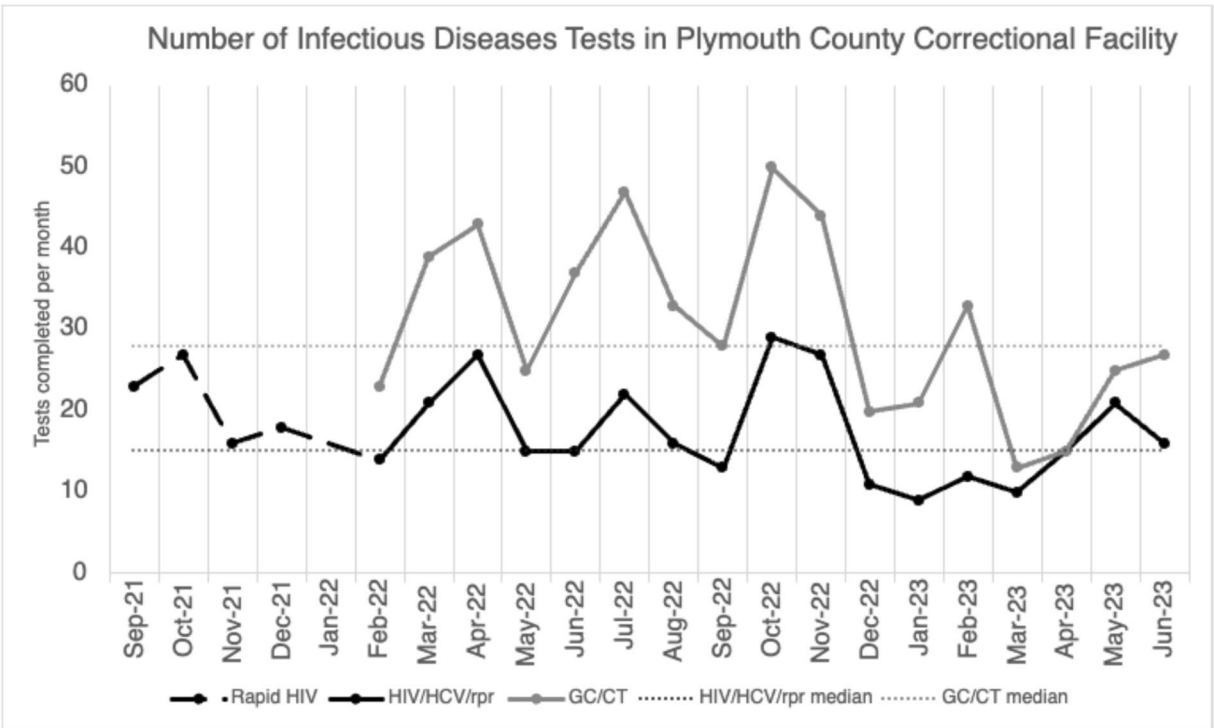

Fig. 1 Number of infectious diseases tests completed in Plymouth County Correctional Facility (PCCF) from September 2021-June 2023

February 2023, we learned they experienced staff transitions and decreased visits to the jail during these months. Consistent staffing of the public health workforce on the front lines has been reported as a barrier in several studies (Piske et al. 2024; Sabharwal et al. 2010; Mitchell et al. 2015).

Potential next steps include process mapping the sequence of events between agreeing to and completing testing with HI to identify barriers and potential solutions. To gain the perspective on the experience and attitudes towards infectious diseases testing, interviews post-intake or post-release should also be conducted with people who are incarcerated. It would also be important to survey people who completed testing to understand their motivations and what facilitated their testing. An implementation science study should also be conducted to verify the contextual factors that could be used to effect behavioral change. The verbiage of the questions in our study was opt-in. Opt-out language has been proven to be effective at increasing testing uptake, (Beckwith et al. 2011; de la Flor et al. 2017) so the questions should be changed to opt-out.

We recognize limitations to our study, including a single-site location and access to only the number of tests completed. Despite these limitations, we offer our work as a lesson that the addition of HIV/HCV testing to intake alone may not improve testing rates.

Acknowledgements
Not applicable.

Authors' contributions
AGW, EDG, AC performed data analysis, manuscript writing, and revisions. TS contributed to diagram design and manuscript revisions All authors read and approved the final manuscript.

Funding
This work was supported by the National Institutes of Health [K08HS026008-01 A] and by generous donations to the Tupper Research Fund at Tufts Medical Center.

Data availability
The data that support the findings of this study was provided by the Massachusetts Department of Public Health. Restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available.

Declarations

Ethics approval and consent to participate
All of the data collection involved in this project was approved by Tufts University's Institutional Review Board (IRB) and other appropriate oversight entities.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

Received: 25 March 2024 Accepted: 31 October 2024
Published online: 15 March 2025

References

Beckwith, C. G., Bazerman, L., Cornwall, A. H., Patry, E., Poshkus, M., Fu, J., & Nunn, A. (2011). An evaluation of a routine opt-out rapid HIV testing program in a Rhode Island jail. *Aids Education and Prevention, 23*(3 Suppl), 96–109. https://doi.org/10.1521/aeap.2011.23.3_supp.96

Beckwith, C. G., Kurth, A. E., Bazerman, L. B., Patry, E. J., Cates, A., Tran, L., Noska, A., & Kuo, I. (2016). A pilot study of rapid hepatitis C virus testing in the Rhode Island Department of Corrections. *J Public Health (Oxf), 38*(1), 130–137. https://doi.org/10.1093/pubmed/fdv023

Beckwith, C. G., Atunah-Jay, S., Cohen, J., Macalino, G., Poshkus, M., Rich, J. D., Flanigan, T. P., & Lally, M. A. (2007). Feasibility and acceptability of rapid HIV testing in jail. *AIDS Patient Care STDS*, *21*(1), 41–47. https://doi.org/10.1089/apc.2006.006

Bick, J. A. (2007). Infection control in jails and prisons. *Clin Infect Dis, 45*(8), 1047–1055. https://doi.org/10.1086/521910

Binswanger, I. A., Krueger, P. M., & Steiner, J. F. (2009). Prevalence of chronic medical conditions among jail and prison inmates in the USA compared with the general population. *J Epidemiol Community Health*, *63*(11), 912–919. https://doi.org/10.1136/jech.2009.090662

Bronson, J. S., Jessica (2017). *Drug Use, Dependence, and Abuse Among State Prisoners and Jail Inmates, 2007–2009* (Special Report, Issue. B. o. J. Statistics. https://bjs.ojp.gov/content/pub/pdf/dudaspji0709.pdf

Camplain, R., Lininger, M. R., Baldwin, J. A., & Trotter, R. T., 2. (2021). Cardiovascular Risk Factors among Individuals Incarcerated in an Arizona County Jail. *International Journal Of Environmental Research And Public Health, 18*(13). https://doi.org/10.3390/ijerph18137007

CDC. (2022). *Testing, vaccination, and treatment for HIV, viral Hepatitis, TB, and STIs*. Recommendations and Guidance. Issue. https://www.cdc.gov/correctionalhealth/rec-guide.html

Conti, K. (2018). *Prisoners, mass. reach settlement agreement for treatment of hepatitis C*. The Boston Globe. https://www.bostonglobe.com/metro/2018/03/09/prisoners-state-reach-settlement-agreement-for-treatmenthepatitis/erSSmeAdUttvADwC2F6aXI/story.html

Control, C. D. (2022). *At-A-Glance: CDC Recommendations for Correctional and Detention Settings*. Retrieved Nov 28, 2022 from https://www.cdc.gov/correctionalhealth/rec-guide.html

Correction, M. D. (2021). *Quarterly Report on the Status of Prison Capacity, Third Quarter 2021*. https://www.mass.gov/doc/prison-capacity-third-quarter-2022/download

Corrections, M. D. (2022). *Quarterly Report on the Status of Prison Capacity, Third Quarter 2022*. Massachusetts State Library. https://www.mass.gov/doc/prison-capacity-third-quarter-2022/download

Corrections, M. D. (2023). *Quarterly Report on the Status of Prison Capacity, First Quarter 2023*. https://www.mass.gov/doc/prison-capacity-first-quarter-2023/download

Dang, C. M., Pao, J., Taherzadeh, D., & Nijhawan, A. E. (2021). Paired Testing of Sexually Transmitted Infections With Urine Pregnancy Tests in Incarcerated Women. *Sex Transm Dis, 48*(8S), S20–S25. https://doi.org/10.1097/OLQ.0000000000001456

de la Flor, C., Porsa, E., Nijhawan, A. E., & Dec, N. (2017). Opt-out HIV and hepatitis C testing at the Dallas county jail: uptake, prevalence, and demographic characteristics of testers. *Public Health Reports, 132*(6), 617–621. https://doi.org/10.1177/0033354917732755

Feld, S., Steele, J., Klinedinst, S., Delgadillo, H., Garcia, J., Hinojosa, L., & Winters, A. (2023). Implementing opt-out HIV testing in the Alameda county jails. *Journal of Correctional Health Care : The Official Journal of the National Commission on Correctional Health Care, 29*(2), 156–162. https://doi.org/10.1089/jchc.20.05.0032

Greenfeld, L. A. (1998). *Alcohol and Crime: An Analysis of National Data on the Prevalence of Alcohol Involvement in Crime*. B. o. J. Statistics. https://bjs.ojp.gov/content/pub/pdf/ac.pdf

Kay, E. S., Batey, D. S., & Mugavero, M. J. (2016). The HIV treatment cascade and care continuum: updates, goals, and recommendations for the future. *AIDS Res Ther, 13*, 35. https://doi.org/10.1186/s12981-016-0120-0

Levano, S. R., Epting, M. E., Pluznik, J. A., Philips, V., Riback, L. R., Zhang, C., Aseffa, B., Kapadia, A. R., Bowden, C. J., Jordan, B., O'Donovan, E., Spaulding, A.

C., & Akiyama, M. J. (2023). HIV testing in jails: comparing strategies to maximize engagement in HIV treatment and prevention. *PLoS One, 18*(6), e0286805. https://doi.org/10.1371/journal.pone.0286805

Ly, W., Cocohoba, J., Chyorny, A., Halpern, J., Auerswald, C., & Myers, J. (2018). Perspectives on integrated HIV and hepatitis C virus testing among persons entering a Northern California jail: a pilot study. *J Acquir Immune Defic Syndr, 78*(2), 214–220. https://doi.org/10.1097/QAI.0000000000001664

Maner, M., Omori, M., Brinkley-Rubinstein, L., Beckwith, C. G., & Nowotny, K. (2022). Infectious disease surveillance in U.S. jails: Findings from a national survey. *PLoS One, 17*(8), e0272374. https://doi.org/10.1371/journal.pone.0272374

Maruschak, L. M. (2012). *HIV in Prisons, 2001–2010*. U.S. Department of Justice. https://bjs.ojp.gov/content/pub/pdf/hivp10.pdf

Mertz, K. J., Voigt, R. A., Hutchins, K., Levine, W. C., & Jail, S. T. D. P. M. G. (2002). Findings from STD screening of adolescents and adults entering corrections facilities: implications for STD control strategies. *Sexually Transmitted Diseases, 29*(12), 834–839. https://doi.org/10.1097/00007435-200212000-00016

Mitchell, S. G., Willett, J., Swan, H., Monico, L. B., Yang, Y., Patterson, Y. O., Belenko, S., Schwartz, R. P., & Visher, C. A. (2015). Defining Success: Insights From a Random Assignment, Multisite Study of Implementing HIV Prevention, Testing, and Linkage to Care in U.S. Jails and Prisons. *AIDS Educ Prev. 27*(5), 432-45. https://doi.org/10.1521/aeap.2015.27.5.432

Montoy, J. C., Dow, W. H., & Kaplan, B. C. (2016). Patient choice in opt-in, active choice, and opt-out HIV screening: randomized clinical trial. *Bmj, 532*, h6895. https://doi.org/10.1136/bmj.h6895

Nijhawan, A. E., Iroh, P. A., & Porsa, E. (2018). Acceptability of HIV Testing among Jail inmates when combined with a blood test for tuberculosis. *Journal of Correctional Health Care : The Official Journal of the National Commission on Correctional Health Care, 24*(2), 120–126. https://doi.org/10.1177/1078345818762107

Patrick, W., Brady, M. J. T., Ambroggie, L., Schondelmeyer, A. C., & Shaughnessy, E. E. (2017). Displaying and Analyzing Quality Improvement Data. *Journal of Pediatric Infectious Diseases Society*. https://pubmed.ncbi.nlm.nih.gov/29040644/

Piske, M., Nosyk, B., Smith JC, Yeung, B., Enns, B., Zang, X., Sullivan, P. S., Armstrong, W. S., Thompson, M. A., Daniel, G., & Del, Rio. C. (2024). Ending the HIV Epidemic in Metropolitan Atlanta: a mixed-methods study to support the local HIV/AIDS response. *J Int AIDS Soc. 27*(7), e26322. https://doi.org/10.1002/jia2.26322

Prisoners, M. reach settlement agreement for treatment of hepatitis C. *Boston Globe*. https://www.bostonglobe.com/metro/2018/03/09/prisoners-state-reach-settlement-agreement-for-treatment-hepatitis/erSSmeAdUttvADwC2F6aXI/story.html

Sabharwal, C. J., Muse, K. H., Alper, H., Begier, E., McNeill, M., Galeta, G., Huang, K., Franklin, W., & Parvez, F. (2010). Jail-based providers' perceptions of challenges to routine HIV testing in New York City jails. *J Correct Health Care. 16*(4), 310-321. https://doi.org/10.1177/1078345810378842

Silberstein, G. S., Coles, F. B., Greenberg, A., Singer, L., & Voigt, R. (2000). Effectiveness and cost-benefit of enhancements to a syphilis screening and treatment program at a county jail. *Sexually Transmitted Diseases*, *27*(9), 508–517. https://doi.org/10.1097/00007435-200010000-00004

Simonsen, K. A., Shaikh, R. A., Earley, M., Foxall, M., Boyle, C., Islam, K. M., Younger, H., Sandkovsky, U., Berthold, E., & Margalit, R. (2015). Rapid HIV Screening in an urban Jail: How testing at exit with linkage to community care can address perceived barriers. *The Journal of Primary Prevention, 36*(6), 427–432. https://doi.org/10.1007/s10935-015-0408-1

Wurcel, A. G., Chen, G., Zubiago, J. A., Reyes, J., & Nowotny, K. M. (2021). Heterogeneity in jail nursing medical intake forms: a content analysis. *Journal of Correctional Health Care : The Official Journal of the National Commission on Correctional Health Care, 27*(4), 265–271. https://doi.org/10.1089/jchc.20.04.0018

Yehia, B. R., Schranz, A. J., Umscheid, C. A., & Lo Re, V., 3. (2014). The treatment cascade for chronic hepatitis C virus infection in the United States: a systematic review and meta-analysis. *PLoS One, 9*(7), e101554. https://doi.org/10.1371/journal.pone.0101554

Zaller, N. D., Patry, E. J., Bazerman, L. B., Noska, A., Kuo, I., Kurth, A., & Beckwith, C. G. (2016). A pilot study of rapid hepatitis C testing in probation and parole populations in Rhode Island. *Journal of Health Care for the Poor and Underserved, 27*(2A), 214–223. https://doi.org/10.1353/hpu.2016.0049

Publisher's Note