Commentary: The value of using community simulation modeling to achieve HCV elimination targets in people who inject drugs

Bruce R. Schackman[1], **Zachary F. Meisel**[2,3]

[1]Department of Healthcare Policy & Research, Weill Cornell Medical College, New York, NY

[2]Center for Emergency Care Policy Research, Department of Emergency Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA;

[3]Leonard Davis Institute of Health Economics, and the Penn Injury Science Center, University of Pennsylvania, Philadelphia, PA

Keywords

Hepatitis C; simulation model; people who inject drugs; elimination; cost-effectiveness; implementation

Commentary

Policy makers struggle with incorporating generalized information into their decision making about substance use disorders when they believe their local needs, resources, environments and populations differ from other communities. The study by Barbosa et al. is a compelling example of the value that simulation modeling can bring to substance use policy and resource allocation decisions [1]. In this paper, the authors use a simulation model to examine the synergistic effects of providing medications for opioid use disorder (MOUD), harm reduction services, and HCV screening and treatment on achieving HCV elimination targets among people who inject drugs (PWID) in different areas of the United States [2].

The authors model two specific geographic areas that differ in PWID demographics, illicit drug use patterns, and availability of MOUD and harm reduction services: a rural county in Kentucky and urban San Francisco. Implementing simulation models that are customized to different community characteristics can be time-consuming, but is critical to developing policy recommendations that are responsive to local conditions and constraints. Even if the overall conclusions are robust to differences in community characteristics, as occurred in this case where the full scale-up MOUD, harm reduction, and HCV care for PWID was preferred in both rural and urban settings, buy-in from decision makers often requires using relevant local data whenever possible [3]. The models also show how much additional costs

Concise Statement: Implementing simulation models of hepatitis C elimination that are customized to community characteristics is critical to developing policy recommendations that are responsive to local conditions and constraints.

required to implement the full scale up approach over 10 years differ by jurisdiction: $21.6 million in the rural county versus $872 million in the urban setting. While the lower cost might seem more feasible, it may in fact be a greater hurdle for a financially strapped county government compared to a municipality such as San Francisco with an annual budget of $12.3 billion, including $2.4 billion for public health [4].

These estimated costs do not reflect additional start-up activities that are often required to mobilize a community to address barriers to providing services to PWID, including stigma and lack of available providers. The HEALing Communities Study recently funded by the National Institute on Drug Abuse is seeking to generate evidence about the implementation of interventions for preventing and treating opioid use disorder at the local level [5]. Several of the authors of this article and one of the authors of this commentary are involved in the HEALing Communities Study, which has a substantial economic component that includes simulation modeling. The study will be implemented in selected communities in four states (Kentucky, Ohio, New York, and Massachusetts) allowing for comparisons among a variety of local settings. Because the simulation models will be developed as each community selects and rolls out interventions, there will be opportunities to incorporate model results in "real time" as resource allocation decisions are being made at the local level, as well as to update model inputs with local data as they are collected.

Meaningful engagement between modelers and local decision makers is challenging to implement in practice, but represents a compelling ideal to strive for. Feedback from local officials helps modelers ensure that their results are relevant to decision making, that they balance needs for rigor and timeliness, and that they communicate findings effectively [6]. Interaction with policy makers may have the greatest impact in jurisdictions that have already made a commitment to improve HCV outcomes. For example, local policy makers in New York State and in San Francisco have made commitments towards HCV elimination that build on national efforts [7, 8]. The countries of Australia, Georgia and Iceland have also established strategies to meet global elimination targets [9, 10].

One way that modelers can assist policy makers is when public entities negotiate with pharmaceutical companies to increase the availability of HCV medication. For example, the Australian government worked with pharmaceutical companies to negotiate a fixed payment over five years in exchange for unlimited volume of HCV medication [11]. The states of Louisiana and Washington have recently received Federal approval to negotiate supplemental rebate programs for HCV medications for their Medicaid populations [12–15]. Both states have negotiated for free medication beyond an expenditure cap in exchange for unlimited volume of HCV medication. In order for these "subscription" payment models to support HCV elimination goals during the periods covered by the agreements, policy makers must forecast local HCV treatment need and design programs that maximize treatment uptake. Simulation models can support these efforts. Models that incorporate local characteristics, such as those reported by Barbosa et al, represent one step towards partnerships between modelers and local policy makers that will drive the efficient use of resources to eliminate HCV in PWID.

Acknowledgement:

References

1. Barbosa C, Fraser H, Hoerger TJ, Leib A, Havens JR, Young A et al. Cost-effectiveness of scaling-up HCV prevention and treatment in the United States for people who inject drugs. Addiction 2019.

2. Division of Viral Hepatitis, National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention. Progress Toward Viral Hepatitis Elimination in the United States, 2017 US Department of Health and Human Services, Centers for Disease Control and Prevention, Office of Infectious Diseases, NCHHSTP 2017. Available at: https://www.cdc.gov/hepatitis/policy/PDFs/NationalReport.pdf (accessed 19 August, 2019).

3. Brownson RC, Royer C, Ewing R, McBride TD Researchers and Policymakers: Travelers in Parallel Universes. Am J Prev Med 2006; 30: 164–172. [PubMed: 16459216]

4. Mayor's Breed L. N. 2019–2020 & 2020–2021 Proposed Budget. 2019 Available at: http://sfmayor.org/sites/default/files/CSF_Budget_Book_June_2019_Final_Web_REV2.pdf (accessed 19 August 2019).

5. National Institutes of Health (NIH). HEALing Communities Study HEAL Initiative 2019 Available at: https://www.nih.gov/research-training/medical-research-initiatives/heal-initiative/healing-communities-study (accessed 19 August 2019).

6. Meisel ZF, Mitchell J, Polsky D, Boualam N, McGeoch E, Weiner J et al. Strengthening partnerships between substance use researchers and policy makers to take advantage of a window of opportunity. Subtance Abuse Treat Pr 2019; 14: 12.

7. Armenta A Elimination of Hepatitis C Virus Among People Living with HIV in San Fransisco: Research Results, Recommendations, and Micro-Elimination Implementation Plan. End Hep C SF, 2019 Available at: http://www.endhepcsf.org/wp-content/uploads/2019/07/EHCSF-HIV-HCV-Micro-Elimination-Plan_FINAL-07-24-19.pdf (accessed 19 August 2019).

8. New York State. New York State Hepatitis C Elimination Task Force, 2019 Available at: https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis_c/elimination.htm (accessed 19 August 2019).

9. Mitruka K, Tsertsvadze T, Butsashvili M, Gamkrelidze A, Sabelashvili P, Adamia E et al. Launch of a Nationwide Hepatitis C Elimination Program--Georgia, April 2015. MMWR Morb Mortal Wkly Rep 2015; 64: 753–757. [PubMed: 26203628]

10. Kwon JA, Dore GJ, Grebely J, Hajarizadeh B, Guy R, Cunningham EB et al. Australia on track to achieve WHO HCV elimination targets following rapid initial DAA treatment uptake: A modelling study. J Viral Hepat 2019; 26: 83–92. [PubMed: 30267593]

11. Moon S, Erickson E Universal Medicine Access through Lump-Sum Remuneration — Australia's Approach to Hepatitis C. NEJM 2019; 380: 607–610. [PubMed: 30763190]

12. Gee R Lousiana's Journey Toward Eliminating Hepatitis C, Health Affairs Blog 2019 Available at: https://www.healthaffairs.org/do/10.1377/hblog20190327.603623/full/ (accessed 19 8).

13. Washington State Health Care Authority. Health Care Authority announces AbbVie US LLC as apparently successful bidder for hepatitis C virus treatment drug, 2019 Available at: https://www.hca.wa.gov/about-hca/health-care-authority-announces-abbvie-us-llc-apparently-successful-bidder-hepatitis-c (accessed 19 August 2019).

14. Centers for Medicare & Medicaid Services (CMS). CMS Approves Lousiana State Plan Amendment for Supplemental Rebate Agreements Using a Modified Subscription Model for Hepatitis C Therapies in Medicaid, 2019 Available at: https://www.cms.gov/newsroom/press-

releases/cms-approves-louisiana-state-plan-amendment-supplemental-rebate-agreements-using-modified (accessed 19 August 2019).

15. Centers for Medicare & Medicaid Services (CMS). CMS Approves Washington State Plan Amendment Proposal to Allow Supplemental Rebates involving a "Subscription" Model for Prescription Drug Payment in Medicaid, 2019 Available at: https://www.cms.gov/newsroom/press-releases/cms-approves-washington-state-plan-amendment-proposal-allow-supplemental-rebates-involving (accessed 19 August 2019).