

ORIGINAL ARTICLE

Scope of Practice Intentions Among Family Medicine Residents for Integrated Care of HIV and Hepatitis C Infection in People With Opioid Use Disorder

Kento Sonoda, MD, AAHIVS^{a,b}; Zachary J Morgan^c; Lars E. Peterson, MD, PhD^{c,d}

AUTHOR AFFILIATIONS:

^aDepartment of Family and Community Medicine, Saint Louis University, Saint Louis, MO

^bDepartment of Medicine, University of Pittsburgh Medical Center Presbyterian, Pittsburgh, PA

^cAmerican Board of Family Medicine, Lexington, KY

^dDepartment of Family and Community Medicine, College of Medicine, University of Kentucky, Lexington, KY

CORRESPONDING AUTHOR:

Kento Sonoda, Department of Family and Community Medicine, Saint Louis University, Saint Louis, MO, kento.sonoda.md@gmail.com

HOW TO CITE: Sonoda K, Morgan ZJ, Peterson LE. Scope of Practice Intentions Among Family Medicine Residents for Integrated Care of HIV and Hepatitis C Infection in People With Opioid Use Disorder. *Fam Med.* 2025;57(1):41–47. doi: [10.22454/FamMed.2024.703890](https://doi.org/10.22454/FamMed.2024.703890)

PUBLISHED: 12 November 2024

KEYWORDS: delivery of health care, hepatitis C, HIV infections, scope of practice

© Society of Teachers of Family Medicine

ABSTRACT

Background and Objectives: Because deaths from opioid overdoses have increased in the United States, family physicians are needed who can provide integrated care for a patient with HIV, hepatitis C, and opioid use disorder. We sought to describe the individual and residency characteristics of graduating family medicine residents who intend to practice such integrated care.

Methods: We used 2017–2021 data from the American Board of Family Medicine Initial Certification Questionnaire. Our primary outcomes were individual and residency characteristics of resident graduates who intended to provide integrated care. We used logistic regression to assess independent associations with providing integrated care.

Results: The response rate was 100% with 18,479 total respondents. After exclusions, our final sample size was 10,660 (57.7%) respondents. Of those, 782 (7.3%) respondents intended to practice integrated care. Using regression analyses, we found that resident graduates who intended to provide integrated care were more likely to be male, non-Hispanic or Latinx. After residency, they were more likely to intend to practice at a federally qualified health center, Indian Health Service, or nonfederal government clinic.

Conclusions: Only 7% of residency graduates reported their intention to provide integrated care for people with opioid use disorder after residency. In response to a surging opioid crisis, policymakers, residency educators, and residency funders/sponsors should increase the workforce of family physicians who can provide this integrated care.

INTRODUCTION

People who inject drugs are at higher risk not only for opioid overdose but also for blood-borne infections, including human immunodeficiency virus (HIV) and hepatitis C virus (HCV) infections. In fact, injection drug use has been the most common risk factor for HCV infection and the second most common for HIV infection following sexual transmission.^{1–3}

The HIV and HCV care continua have been challenging, especially among patients with a substance use disorder (SUD).^{3–5} A collaborative, multidisciplinary model approach did not improve linkage to care for HCV in patients with SUD in the outpatient setting.⁶ Qualitative interviews with HIV and SUD care practitioners revealed challenges in communication across disciplines and transportation as barriers for HIV care among people living with HIV with comorbid SUD.⁷ Of people living with HIV with SUD, those with high levels of medical mistrust and low education background had lower odds of early linkage to care.⁸ Furthermore, in the United States, approxi-

mately 1.2 million people live with HIV and 2.5 million people live with current HCV (RNA positive), indicating the need for family physicians who can manage these conditions, especially given the limited access to infectious disease physicians in rural communities.^{9–11} To address those barriers, family physicians are well positioned to care for patients with HIV and HCV along with buprenorphine treatment for opioid use disorder (OUD), referred to as “integrated care” in the rest of our paper.

Prior research has described the suitability and characteristics of family physicians who provide each service,^{12–16} but no study has examined family physicians who provide integrated care. We sought to describe the individual and residency characteristics of graduating family medicine residents who intended to practice integrated care. We also compared the intended scope of practice between respondents who intended to provide integrated care and those who did not.

METHODS

Data Source

We used 2017–2021 data from the American Board of Family Medicine (ABFM) initial certification questionnaire.¹⁷ The questionnaire is completed by graduating residents 3 to 4 months prior to the examination date as a required component of registration. The questionnaire asks whether, after residency, respondents intend to provide “buprenorphine treatment,” “pharmacological management of HIV/AIDS,” and “pharmacological management of Hepatitis C,” as well as asks about a series of services and procedures, future practice type, and participation in loan repayment programs. Race and ethnicity were self-reported by the residents in response to a select-the-best-answer question. Standard demographics (age, gender, degree type, medical school location) were obtained from the ABFM administrative data sets. We obtained county-level data on 2018 overdose mortality, derived from Centers for Disease Control and Prevention data, from the HepVu website.¹⁸

Our primary outcome was whether the respondent said yes to intending to provide each of buprenorphine, HIV, and HCV treatments. We categorized respondents by whether they currently participated or planned to participate in incentive programs, including the public service loan forgiveness program and J-1 visa waiver. Rural residency status was assigned based on the Rural Medical Training Collaborative list. We measured community need for OUD treatment at the county level for the residency according to the opioid mortality rate (per 100,000 people) and categorized the need into high (≥ 30 per 100,000) or low (< 30).¹⁹

Participants

Because our study focused on integrated care of OUD, HIV, and HCV in the ambulatory setting, we limited our sample to graduating family medicine residents who intended to primarily provide outpatient continuity care. We excluded those who selected “unknown” in response to the question about their intended practice site after residency. We included only those from residencies with matching OUD mortality data.

Analysis

First, we conducted bivariate analyses using χ^2 tests to compare the characteristics and scope of practice of those who intended to provide integrated care and those who did not. We then performed a single logistic regression analysis to assess independent associations of personal, future practice, and residency characteristics with providing integrated care.

We used SAS version 9.4 (SAS Institute) for all analyses. The American Academy of Family Physicians Institutional Review Board approved this study.

RESULTS

The response rate was 100% with 18,479 total respondents. Of the total respondents, we included 15,764 who reported that they planned on providing continuity care, and then from those, we excluded 4,958 respondents who did not know their intended practice site after residency. We also excluded 223

respondents whose residency did not have matching opioid overdose mortality data. After the exclusions, our final sample size was 10,583 (57.3%) of 18,479 respondents. Among respondents in our study, the average age was 32.1 years, 54.7% were female, 25.2% graduated from an osteopathic medical school (ie, DO), and 25.3% were international medical graduates. White and non-Hispanic people accounted for 64.4% and 91.0% of our final sample, respectively (Table 1).

Only 7.3% (774 out of 10,583) of residency graduates reported an intention to practice integrated care, 8.3% (883 out of 10,583) reported their intention to practice either HIV or HCV care in addition to OUD care, and 12.1% (1,283 out of 10,583) reported intending to provide only OUD care without HIV and HCV care (Table 2). In regression analyses, resident characteristics associated with lower odds of providing integrated care included female (adjusted odds ratio [AOR]=0.80; 95% CI, 0.66–0.98), DO (AOR=0.54; 95% CI, 0.35–0.82), international medical graduate (AOR=0.71; 95% CI, 0.53–0.93), Hispanic or Latinx (AOR=0.54; 95% CI, 0.36–0.80), or younger age. After residency, future practice sites with higher odds of providing integrated care included federally qualified health center or look-alike (AOR=2.27; 95% CI, 1.72–3.00), Indian Health Service (AOR=2.44; 95% CI, 1.16–5.10), and nonfederal government clinic (AOR=1.82; 95% CI, 1.05–3.16). Residency characteristics associated with more graduates intending to provide integrated care included rural program (AOR=1.55; 95% CI, 1.08–2.22), location in the Northeast (AOR=1.61; 95% CI, 1.17–2.22) or West (AOR=1.79; 95% CI, 1.34–2.38), and higher county-level opioid overdose mortality rate (AOR=1.51; 95% CI, 1.15–1.98). Intentions to provide prenatal care, behavioral care, intrauterine device insertion or removal, point of care ultrasound, chronic pain care, and osteopathic manipulative treatment were all positively associated with intention to provide integrated care (Table 3).

DISCUSSION

Despite the increasing need for family physicians who can provide comprehensive care of OUD and injection drug use-related blood-borne infections, only 7% of family medicine residency graduates in recent years reported their intention to provide such integrated care. Training in a county with higher opioid overdose mortality increased the odds of family physicians who planned to manage all three services. Family medicine residencies likely adjusted their curricula in response to community needs, and residents were then exposed to more patients requiring integrated care.

Our study revealed individual and residency characteristics of graduating family medicine residents who intended to provide integrated care of HIV and HCV for people with OUD. Our findings are important because family physicians play a critical role in taking care of people with OUD by providing integrated care for common comorbid conditions, including behavioral health and blood-borne infections. The Health Resources and Services Administration encourages an integrated care model of behavioral health and primary care for OUD to meet patients' needs for pain management and

psychological care.²⁰ Expanding training of integrated care in family medicine residencies can play a critical role in effectively meeting the increasing need for a workforce to provide such care in response to the surge of opioid overdose deaths. Family physicians are well positioned to address common barriers to caring for patients with HCV and HIV, including social determinants of health, transportation issues, and stigma. Additionally, an integrated care model fits with care for OUD because that care often involves sensitive matters, and most people living with HIV prefer integrated primary and HIV care.^{10,13}

Previous work found that only 0.53% of ABFM-certified family physicians were certified in addiction medicine, and they were more likely to work in underserved or academic settings.¹⁶ Those family physicians were more likely to manage comorbid HCV and HIV/AIDS, which is consistent with our study findings. However, given their small numbers, those family physicians alone cannot be relied on to meet societal needs.

Our study had several limitations. First, this study assessed only intended scope of practice, so it may not reflect on actual provision of integrated care. Second, we used county-level data for overdose mortality rate, HCV mortality rate, and HIV prevalence; however, the data may not reflect the patient population residencies serve. Our study findings may not represent the residency characteristics contributing to intended scope of practice covering all three services. Third, our study could show only associations rather than causation given the cross-sectional study design.

CONCLUSIONS

In summary, the importance of family physicians' potential role in providing integrated care of HIV and HCV among people with OUD needs to be highlighted and emphasized by our specialty as a way for family medicine to address a growing societal need. In response to the surging need for this integrated care, policymakers, residency educators, and residency funders/sponsors should increase the workforce of family physicians who can provide this integrated care to meet community needs.

Financial Support

Dr Sonoda received financial support from the American Board of Family Medicine Foundation.

Presentations

This study was presented at the Society of Teachers of Family Medicine Annual Spring Conference, May 7, 2024, Los Angeles, California.

REFERENCES

- Centers for Disease Control and Prevention. Viral Hepatitis Surveillance Report. CDC. 2022. <https://www.cdc.gov/hepatitis/statistics/2022surveillance/index.htm>.
- Williams IT, Bell BP, Kuhnert W, Alter MJ. Incidence and transmission patterns of acute hepatitis C in the United States. *Arch Intern Med*. 1982;171(3):242–248.
- Centers for Disease Control and Prevention. Monitoring Selected National HIV Prevention and Care Objectives by Using HIV Surveillance Data United States and 6 Territories and Freely Associated States, 2022. CDC. 2024. <https://www.cdc.gov/hiv-data/nhss/national-hiv-prevention-and-care-outcomes.html>.
- Erickson A, Becker M, Shaw S, Kasper K, Keynan Y. Substance use and its impact on care outcomes among HIV-infected individuals in Manitoba. *AIDS Care*. 2015;27(9):168–169.
- Jiang X, Parker RL, Vouri SM. Cascade of hepatitis C virus care among patients with substance use disorders. *Am J Prev Med*. 2021;61(4):576–584.
- Grau-López L, Marcos-Fosch, Daigre C, C. Barriers to linkage to care in hepatitis C patients with substance use disorders and dual diagnoses, despite centralized management. *Therap Adv Gastroenterol*. 2021;14:17562848211016563.
- Claborn K, Hill R, Kioumarsis A. Improving linkage and retention in treatment among people living with HIV and comorbid substance use. *AIDS Care*. 2022;34(10):282–283.
- Summers NA, Colasanti JA, Feaster DJ. Predictors for poor linkage to care among hospitalized persons living with HIV and co-occurring substance use disorder. *AIDS Res Hum Retroviruses*. 2020;36(5):406–414.
- Centers for Disease Control and Prevention. Estimated HIV Incidence and Prevalence in the United States. CDC. 2024. <https://www.cdc.gov/hiv-data/nhss/estimated-hiv-incidence-and-prevalence.html>.
- Hall EW, Bradley H, Barker LK. Estimating hepatitis C prevalence in the United States 2017–2020. *Hepatology*. 2024.
- Maamari J, Chen Z, Motairek I, Al-Kindi S, Fleisher J. Mapping proximity to infectious disease physicians across the United States. *Open Forum Infect Dis*. 2024;11(5):208.
- Tran TT. Hepatitis C: who should treat hepatitis C virus? the role of the primary care provider. *Clin Liver Dis (Hoboken)*. 2018;11(3):66–68.
- Cheng QJ, Engelage EM, Grogan TR, Currier JS, Hoffman RM. Who provides primary care? An assessment of HIV patient and provider practices and preferences. *J AIDS Clin Res*. 2014;5(11):366.
- Tong ST, Hochheimer CJ, Peterson LE, Krist AH. Buprenorphine provision by early career family physicians. *Ann Fam Med*. 2018;16(5):443–446.
- Sonoda K, Morgan ZJ, Peterson LE. HIV care by early-career family physicians. *Fam Med*. 2021;53(9):760–765.
- Tong ST, Morgan ZJ, Bazemore AW, Eden AR, Fitzgerald RM, Peterson LE. Practice patterns of family physicians with and without addiction medicine board certification. *J Am Board Fam Med*. 2021;34(4):814–819.
- Peterson LE, Fang B, Phillips RL, Avant R, Puffer JC. The American Board of Family Medicine's data collection method for tracking their specialty. *J Am Board Fam Med*. 2019;32(1):89–95.
- HepVu. 2024. <https://hepvu.org>.
- The RTT Collaborative. 2024. <https://rttcollaborative.net>.
- Behavioral health and primary care integration. *Health Resources and Services Administration*. 2024. <https://bphc.hrsa.gov/qualityimprovement/clinicalquality/behavioral-health-primary-care-integration>.

TABLE 1. Characteristics of Graduating Family Medicine Residents Who Intended to Provide Care for HIV, Hepatitis C, and Opioid Use Disorder, 2017– 2021

	Intended to Provide Integrated Care		P value
	“Yes”, n (%)	“No”, n (%)	
Total	774	9,809	
Resident characteristics			
Age (in years)			<.0001
<35	588 (76.0)	8,028 (81.8)	
35+	186 (24.0)	1,781 (18.2)	
Gender			.3601
Female	406 (52.5)	5,347 (54.5)	
Male	362 (46.8)	4,451 (45.4)	
Nonbinary	3 (0.4)	10 (0.1)	
Prefer not to answer	2 (0.3)	1 (0.0)	
Prefer to self-describe	1 (0.1)	0 (0.0)	
Degree type			<.0001
MD	642 (82.9)	7,274 (74.2)	
DO	132 (17.1)	2,535 (25.8)	
Location of medical training			<.0001
United States	647 (83.6)	7,265 (74.1)	
International medical graduate	127 (16.4)	2,544 (25.9)	
Race			<.0001
White	519 (67.1)	6,286 (64.1)	
Asian	107 (13.8)	1,993 (20.3)	
Black or African American	65 (8.4)	688 (7.0)	
Other	83 (10.7)	842 (8.6)	
Ethnicity			.0768
Hispanic or Latinx	56 (7.2)	895 (9.1)	
Non-Hispanic	718 (92.8)	8,914 (90.9)	
Postresidency practice site			<.0001
Hospital-/health system-owned medical practice	179 (23.1)	3,727 (38.0)	
Independently owned medical practice	50 (6.5)	1,219 (12.4)	
Managed care / HMO practice	18 (2.3)	377 (3.8)	
Academic health center / faculty practice	117 (15.1)	1,320 (13.5)	
Federally qualified health center or look-alike	251 (32.4)	1,168 (11.9)	
Rural health clinic	69 (8.9)	749 (7.6)	
Indian Health Service	18 (2.3)	63 (0.6)	
Government clinic, nonfederal	28 (3.6)	190 (1.9)	
Federal	23 (3.0)	569 (5.8)	
Workplace clinic	9 (1.2)	322 (3.3)	
Other	12 (1.6)	105 (1.1)	
Any incentive program			<.0001
Yes	565 (73.0)	5,993 (61.1)	
No	209 (27.0)	3,816 (38.9)	

Abbreviations: HIV, human immunodeficiency virus; HMO, health maintenance organization; HCV, hepatitis C virus; IUD, intrauterine device

Table 1, Continued

	Intended to Provide Integrated Care		P value
	“Yes”, n (%)	“No”, n (%)	
Residency characteristics			
Rural medical training program			.0079
Yes	58 (7.5)	515 (5.3)	
No	716 (92.5)	9,294 (94.7)	
Residency region			<.0001
Midwest	155 (20.0)	2,970 (30.3)	
Northeast	172 (22.2)	1,532 (15.6)	
South	131 (16.9)	3,144 (32.1)	
West	316 (40.8)	2,163 (22.1)	
Overdose mortality rate			.6042
Low (<30)	631 (81.5)	7,922 (80.8)	
High (30 or higher)	143 (18.5)	1,887 (19.2)	
HCV mortality rate			.6939
Low (<6)	567 (73.3)	7,249 (73.9)	
High (6 or higher)	207 (26.7)	2,560 (26.1)	
HIV prevalence rate			.5928
Low (<500)	607 (78.4)	7,611 (77.6)	
High (500 or higher)	167 (21.6)	2,198 (22.4)	
Intended scope of practice (plan to provide after residency)			
Prenatal care	591 (76.4)	4,338 (44.2)	<.0001
Delivering babies	269 (34.8)	1,920 (19.6)	<.0001
Behavioral health care	603 (77.9)	5,100 (52.0)	<.0001
Pediatric outpatient care	686 (88.6)	7,584 (77.3)	<.0001
Adult hospital care	423 (54.7)	4,075 (41.5)	<.0001
Intensive care	102 (13.2)	817 (8.3)	<.0001
IUD insertion and removal	726 (93.8)	7,528 (76.7)	<.0001
Point of care ultrasound	417 (71.6)	2,551 (42.4)	<.0001
Chronic pain	663 (85.7)	4,119 (42.0)	<.0001
Osteopathic manipulative treatment	158 (20.4)	2,137 (21.8)	.3723

TABLE 2 Number and Combination of Intended Services

Number of intended services	n (%)
0 services	6,209 (58.7)
1 service	2,262 (21.4)
HIV	557 (5.3)
HCV	422 (4.0)
OUD	1,283 (12.1)
2 services	1,338 (12.6)
HIV + HCV	455 (4.3)
HIV + OUD	341 (3.2)
HCV + OUD	542 (5.1)
3 services HIV + HCV + OUD	774 (7.3)

Abbreviations: HIV, human immunodeficiency virus; HCV, hepatitis C virus; OUD, opioid use disorder

TABLE 3. Adjusted Associations With Intention to Provide Integrated Care and Resident, Residency Training, and Intended Future Practice

	Adjusted odds ratio (95% CI)	P value
Resident characteristics		
Age (in years)		
35+	1.55 (1.23–1.95)	.0002
<35		
Gender		
Female	0.80 (0.66–0.98)	.0304
Male		
Degree type		
DO	0.54 (0.35–0.82)	.0038
MD		
Location of medical training		
International medical graduate	0.71 (0.53–0.93)	.0146
United States / Canadian		
Race		
Asian	0.80 (0.61–1.07)	.1300
Black or African American	1.20 (0.82–1.74)	.3511
Other	0.96 (0.68–1.36)	.8282
White		
Ethnicity		
Hispanic or Latinx	0.538 (0.36–0.80)	.0021
Non-Hispanic		
Postresidency practice site		
Independently owned medical practice	0.86 (0.57–1.29)	.4567
Managed care / HMO practice	1.04 (0.56–1.91)	.9073
Academic health center / faculty practice	1.07 (0.78–1.48)	.6625
Federally qualified health center or look-alike	2.27 (1.72–3.00)	<.0001
Rural health clinic	1.13 (0.78–1.64)	.5296
Indian Health Service	2.44 (1.16–5.10)	.0182
Government clinic, nonfederal	1.82 (1.05–3.16)	.0344
Federal	0.51 (0.30–0.88)	.0145
Workplace clinic	0.92 (0.43–2.00)	.8343
Other	2.10 (0.99–4.50)	.0545
Hospital-/health system-owned medical practice		
Any incentive program		
Yes	1.22 (0.97–1.53)	.0842
No		

Note: The adjusted odds ratios control for all variables in the table.

Abbreviations: CI, confidence interval; HMO, health maintenance organization

Table 3, Continued

Residency characteristics		
Rural medical training program		
Yes	1.55 (1.08–2.22)	.0165
No	Reference	
Residency region		
Midwest	0.74 (0.54–1.00)	.0514
Northeast	1.61 (1.17–2.22)	.0033
West	1.79 (1.34–2.38)	<.0001
South	Reference	
Overdose mortality rate		
High (30 or higher)	1.51 (1.15–1.98)	.0027
Low (<30)	Reference	
HCV mortality rate		
High (6 or higher)	0.67 (0.53–0.85)	.0011
Low (<6)	Reference	
HIV prevalence rate		
High (500+ / 100k)	1.29 (1.01–1.65)	.0431
Low (0–<500 / 100k)	Reference	
Intended scope of practice (plan to provide after residency vs no intention)		
Prenatal care	2.13 (1.67–2.73)	<.0001
Delivering babies	0.96 (0.75–1.22)	.7171
Behavioral health care	1.84 (1.47–2.32)	<.0001
Pediatric outpatient care	0.97 (0.72–1.31)	.8303
Adult hospital care	1.05 (0.84–1.30)	.6796
Intensive care	1.07 (0.77–1.49)	.6771
IUD insertion and removal	2.03 (1.41–2.94)	.0002
Point of care ultrasound	2.13 (1.72–2.63)	<.0001
Chronic pain	5.02 (3.88–6.50)	<.0001
Osteopathic manipulative treatment	1.42 (0.95–2.14)	.0913

Note: The adjusted odds ratios control for all variables in the table.
Abbreviations: CI, confidence interval; HMO, health maintenance organization; IUD, intrauterine device