OMB No. 0925-0001 and 0925-0002 (Rev. 09/17 Approved Through 03/31/2020)

BIOGRAPHICAL SKETCH

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NAME: Martin, Natasha K

eRA COMMONS USER NAME (credential, e.g., agency login): EPXNM1

POSITION TITLE: Associate Professor, Division of Infectious Diseases and Global Public Health, Department of Medicine, UCSD

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

| INSTITUTION AND LOCATION | DEGREE(if applicable) | Completion DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| Stanford University | B.Sc | 06/2003 | Mathematics, biology |
| University of Oxford  | DPhil | 12/2009 | Mathematical biology |
| University of Bristol | Post-doc | 1/2015 | Infectious disease and economic modeling |

**A. Personal Statement**

Dr. Natasha Martin is an infectious disease economic modeler who develops dynamic transmission models to evaluate the impact and cost-effectiveness of public health interventions. She is currently an Associate Professor in the Division of Infectious Diseases and Global Public Health, Department of Medicine at the University of California San Diego and holds an honorary senior lecturer position in the School of Social and Community Medicine, University of Bristol. She is also the co-director of the Biostatistics and Modeling Core of the University of California San Diego Center for AIDS Research (UCSD CFAR). She has worked for 20 years developing mathematical models of disease progression and transmission in both communicable and non-communicable diseases, with >100 publications. For the past ten years, her primary research has focused on modeling HIV and hepatitis C virus (HCV) and transmission and prevention among high-risk groups such as people who inject drugs (PWID), men who have sex with men (MSM), and female sex workers. She is a leading researcher on modeling HCV treatment as prevention and HCV elimination strategies. She is currently the principal investigator (PI) of a joint NIAID/NIDA-funded R01 using epidemic modeling and cost-effectiveness techniques to optimize HIV prevention portfolios among people who inject drugs in 108 countries worldwide (R01AI147490), as well as a University of California Office of the President grant on SARS-CoV-2 modeling of hospital resource need. Her modeling work informed the WHO guidelines “When to start ART in people living with HIV (2013)”, and her work on the impact and cost-effectiveness of HCV treatment among people who inject drugs informed the WHO guidelines on “Hepatitis C testing, care, and treatment (2014, 2018)” and WHO “Global Health Sector Strategy on Viral Hepatitis 2016-2021”. She is an executive board member of the International Network on Hepatitis Care in Substance Users, and an associate editor for two journals: *International Journal of Drug Policy* and *Addiction.*

She has a strong record in training and mentorship. She has completed supervising 12 trainees at the undergraduate, graduate, and postdoctoral levels, among whom 4 are underrepresented minorities. Since arriving in the US (2015), she has completed mentoring for four postdoctoral researchers, all who obtained NIH K01 fellowships or the prestigious NIDA DP2 AVENIR award and who are faculty members at UCSD and Johns Hopkins University. She also completed mentoring of one doctoral student who is now a postdoctoral scholar at UCSD (Dr. Marquez). Currently, Dr. Martin mentors one postdoctoral researcher, two doctoral candidates, and four undergraduates, and has ample time to devote to training.

**B. Positions and Honors**

**Positions and Employment**

2009-2011 Research Assistant, School of Social and Community Medicine, University of Bristol

2011-2013 Research Associate, School of Social and Community Medicine, University of Bristol

2013-2015 Research Fellow/Lecturer, School of Social and Community Medicine, University of Bristol

2015- Associate Professor, Division of Global Public Health, Department of Medicine, University of California San Diego

Honorary Positions

2009-2014 Honorary Research Fellow, London School of Hygiene and Tropical Medicine

2009-2011 Academic Visitor, Centre for Mathematical Biology, University of Oxford

2015- Honorary Senior Lecturer, School of Social and Community Medicine, University of Bristol

Professional Affiliations

2016- Executive Board Member and Treasurer, International Network of Hepatitis Care In Substance Users

Awards

2014 European Association for the Study of the Liver Conference, Young Investigator Bursary Award

2014 American Association for the Study of the Liver (AASLD) Conference Presidential Poster of Distinction

2015 European Association for the Study of the Liver Conference, Young Investigator Bursary Award

2015 American Association for the Study of the Liver (AASLD) Conference Presidential Poster of Distinction

2016 Selected as a “HCV Changemaker” by *The Economist* magazine

**C. Contributions to Science**

**Modeling the impact of integrated HIV care on health in substance using populations**. Achieving the UNAIDS and End the HIV Epidemic goals of reducing incidence requires integration of HIV and other health services which can provide important synergies in terms of health outcomes. Our epidemic modeling has explored the potential synergies of an integrated approach to HIV treatment and prevention on reducing the incidence of HIV and other health harms such as suicide, cardiovascular disease, hepatitis C virus, and overdose.

1. Borquez A, Rich K, Farrell M, Degenhardt L, McKetin R, Tran L, Cepeda J, Silva-Santisteban A, Konda K, Caceres CF, Kelly S, Altice R, **Martin NK**. Integrating pre-exposure prophylaxis and harm reduction among men who have sex with men and transgender women to address intersecting harms associated with stimulant use: a modeling study. *J Int AIDS Soc*. 2020 (in press)
2. Cepeda JA, Borquez A, Magana C, Vo A, Rafful C, Rangel G, Medina-Mora ME, Strathdee S, **Martin NK**. Modeling integrated antiretroviral treatment and harm reduction services on HIV and overdose among peope who inject drugs in Tijuana, Mexico. *J Int AIDS Soc*. 2020 (in press)
3. Macgregor L, Desai M, **Martin NK**, Nicholls J, Hickson F, Weatherburn P, Hickman M, Vickerman P. Scaling up screening and treatment for elimination of hepatitis C among men who have sex with men in the era of HIV pre-exposure prophylaxis. *EClinicalMedicine*. 2019 Dec 19; 19:100217.

**Cost and cost-effectiveness of blood-borne virus prevention programs among underserved populations.** In settings with limited resources or budget constraints, policymakers need to understand how and when to best allocate resources towards prevention interventions. My work utilizes cost analyses and dynamic cost-effectiveness models which include both individual benefits as well as prevention of onwards transmission. I have used these methods to evaluate the potential cost-effectiveness of case-finding and treatment programs among underserved populations such as prisoners, migrants, and people who inject drugs. In particular, my work on the cost-effectiveness of HCV case-finding and treatment interventions has informed the WHO guidelines on hepatitis C testing, care, and treatment (2013)), and a UK National Institute for Clinical Excellence (NICE) public health guidance on interventions to improve hepatitis case-finding among high risk populations.

1. Lim A, Walker JG, Mafirakuvera N, Khalid GG, Qureeshi H, Mahmood H, Trickey A, Fraser H, Aslam K, Falq G, Fortas C, Zahid H, Naveed A, Auat R, Saeed Q, Davies CF, Mukandavire C, Glass N, Maman D, **Martin NK**, Hickman M, May MT, Hamid S, Loarec A, Averhoff F, Vickerman P. Effects and cost of different strategiesto eliminate hepatitis C virus transmission in Pakistan: a modeling analysis. *Lancet Glob Health*. 2020 Mar;8(3):e440-e450.
2. Burgos JL, Cepeda J, Kahn J, Mittal ML, Meza E, Palacios Lazos RR, Calderon Vargas P, Vickerman P, Strathdee S, **Martin NK**. Cost of provision of opioid substitution therapy provision in Tijuana, Mexico*. Harm Reduct J.* 2018;15(1):28.
3. **Martin NK**, Hickman M, Miners A, Hutchinson SJ, Taylor A, Vickerman P. Cost-effectiveness of increasing HCV case-finding for people who inject drugs in specialist addiction services and prisons. *BMJ Open*, 2013;3:e003153.
4. [Panovska-Griffiths J](http://www.ncbi.nlm.nih.gov/pubmed/?term=Panovska-Griffiths%20J%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Vassall A](http://www.ncbi.nlm.nih.gov/pubmed/?term=Vassall%20A%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Prudden HJ](http://www.ncbi.nlm.nih.gov/pubmed/?term=Prudden%20HJ%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Lépine A](http://www.ncbi.nlm.nih.gov/pubmed/?term=L%C3%A9pine%20A%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Boily MC](http://www.ncbi.nlm.nih.gov/pubmed/?term=Boily%20MC%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Chandrashekar S](http://www.ncbi.nlm.nih.gov/pubmed/?term=Chandrashekar%20S%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Mitchell KM](http://www.ncbi.nlm.nih.gov/pubmed/?term=Mitchell%20KM%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Beattie TS](http://www.ncbi.nlm.nih.gov/pubmed/?term=Beattie%20TS%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [Alary M](http://www.ncbi.nlm.nih.gov/pubmed/?term=Alary%20M%5BAuthor%5D&cauthor=true&cauthor_uid=25271808), [**Martin NK**](http://www.ncbi.nlm.nih.gov/pubmed/?term=Martin%20NK%5BAuthor%5D&cauthor=true&cauthor_uid=25271808)**,** and [Vickerman P](http://www.ncbi.nlm.nih.gov/pubmed/?term=Vickerman%20P%5BAuthor%5D&cauthor=true&cauthor_uid=25271808). Optimal allocation of resources in female sex worker targeted HIV prevention interventions: model insights from Avahan in South India. *PLoS ONE*, 2014;9(10):e107066.

**Epidemic modeling of HIV and overdose prevention among substance using populations**. Epidemic modeling can inform treatment and prevention interventions for blood-borne viruses such as HIV and hepatitis C virus (HCV), as well as fatal overdose. My epidemic modeling work has examined the potential impact of existing and scaled-up levels of harm reduction and treatment, on HIV and overdose epidemics among substance using populations.

1. Farrell M, **Martin NK**, Stockings E, Borquez A, Cepeda JA, Degenhardt L, Ali R, Tran LT, Rehm J, Torrens M, Shoptaw S, McKetin R. Responding to global stimulant use: challenges and opportunities. *Lancet*. 2019 Nov 2; 394(10209):1652-1667.
2. Cepeda JA, Eritsyan K, Vickerman P, Lyubimova A, Shegay M, Odinokova V, Beletsky L, Borquez A, Hickman M, Beyrer C, **Martin NK**. [Potential impact of implementing and scaling up harm reduction and antiretroviral therapy on HIV prevalence and mortality and overdose deaths among people who inject drugs in two Russian cities: a modelling study.](https://www.ncbi.nlm.nih.gov/pubmed/30033374) *Lancet HIV.* 2018; S2352-3018(18)30168-1.
3. Bekker LG, Alleyne G, Baral SD, Cepeda J, Daskalakis D, Dowdy D, Dybul M, Eholie S, Esom K, Garnett G, Grimsrud A, Hakim J, Havlir D, Isbell MT, Johnson L, Kamarulazaman A, Kasaie P, Kazatchkine M, Kilonzo N, Klag M, Klein M, Lewin S, Luo C, Makofane K, **Martin NK**, Mayer K, Millett G, Ntusi N, Pace L, Pike C, Piot P, Pozniak A, Quinn TC, Rockstroh J, Ratevosian J, Ryan O, Sippel S, Spire B, Soucat A, Starrs A, Strathdee S, Thomson N, Vella S, Schechter M, Vickerman P, Weir B, Beyrer C. [Advancing global health and strengthening the HIV response in the era of the Sustainable Development Goals: the International AIDS Society-Lancet Commission.](https://www.ncbi.nlm.nih.gov/pubmed/30032975) *Lancet*. 2018 Jul 28;392(10144):312-358.
4. Borquez A, Beletsky L, Nosyk B, Strathdee S, Madrazo A, Abramovitz D, Rafful C, Morales M, Cepeda J, Panagiotoglou D, Krebs E, Vickerman P, Boily MC, Thomson N, **Martin NK**. [The effect of public health-oriented drug law reform on HIV incidence in people who inject drugs in Tijuana, Mexico: an epidemic modelling study.](https://www.ncbi.nlm.nih.gov/pubmed/30122559) *Lancet Public Health*. 2018 Sep;3(9):e429-e437.

**Modeling the role of incarceration on HIV and HCV transmission among people who inject drugs.** There is increasing evidence that criminalization of drug use and incarceration of drug users may fuel the transmission of HIV and related infections. My work has utilized mathematical models of HIV and HCV to explore the role incarceration and other structural drivers can play in elevating both sexual and injecting risks among substance using populations.

1. Altice FL, Azbel L, Stone J, Brooks-Pollock E, Smyrnov P, Dvoriak S, Taxman FS, El-Bassel N, **Martin NK**, Booth R, Stover H, Dolan K, Vickeman P. The perfect storm: incarceration and the high-risk environment perpetuating transmission of HIV, hepatitis C virus, and tuberculosis in Eastern Europe and Central Asia. *Lancet*. 2016; 388(10050):1228-48.
2. Stone J, Fraser H, Lim AG, Walker JG, Ward Z, MacGregor L, Trickey A, Abbott S, Strathdee SA, Abramovitz D, Maher L, Iversen J, Bruneau J, Zang G, Garfein RS, Yen YF, Azim T, Mehta SH, Milloy MJ, Hellard ME, Sacks-Davis R, Dietze PM, Aitken C, Aladashvili M, Tsertsvadze T, Mravčík V, Alary M, Roy E, Smyrnov P, Sazonova Y, Young AM, Havens JR, Hope VD, Desai M, Heinsbroek E, Hutchinson SJ, Palmateer NE, McAuley A, Platt L, **Martin NK**, Altice FL, Hickman M, Vickerman P. [Incarceration history and risk of HIV and hepatitis C virus acquisition among people who inject drugs: a systematic review and meta-analysis.](https://www.ncbi.nlm.nih.gov/pubmed/30385157) *Lancet Infect Dis*. 2018; S1473-3099(18)30469-9.
3. Stone J, **Martin NK**, Hickman M, Hutchinson SJ, Aspinall E, Taylor A, Munro A, Dunleavy K, Peters E, Bramley P, Hayes PC, Goldberg DJ, Vickerman P. [Modelling the impact of incarceration and prison-based hepatitis C virus (HCV) treatment on HCV transmission among people who inject drugs in Scotland.](https://www.ncbi.nlm.nih.gov/pubmed/28257600) Addiction. 2017;112(7):1302-1314.
4. **Martin NK**, Hickman M, Miners A, Hutchinson SJ, Taylor A, Vickerman P. Cost-effectiveness of increasing HCV case-finding for people who inject drugs in specialist addiction services and prisons. *BMJ Open*, 2013;3:e003153.

**Complete List of Published Work:**

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/48104799/?sort=date&direction=descending>

**D. Additional Information: Research Support and/or Scholastic Performance**

Ongoing Research Support

R00RG2496

University of California Office of the President Martin NK (PI) 4/2020-10/2020

**Forecasting hospital bed resources needed to address the COVID-19 outbreak in California counties**

Develop and validate a mechanistic modelling tool to forecast COVID related hospital resource need (hospital beds, ICU beds, and ventilators) and mortality for each CA county, with a focus on resource need for key vulnerable populations.

Role: PI

R01 AI147490

NIAID/NIDA Martin NK (PI) 7/2019-6/2023

**Optimizing HIV prevention portfolios targeting people who inject drugs using dynamic economic modeling**

To determine the most effective and cost-effective HIV prevention portfolios among people who inject drugs in 108 countries worldwide, using dynamic economic epidemic modeling.

Role: PI

R01 AI145555

NIAID Mehta S (PI) 7/2019-6/2024

**Integrating HCV services into HIV programs for people who inject drugs in India**

To assess impact and cost-effectiveness of integrated HIV/HCV testing and treatment among PWID in India.

Role: Subcontract PI, Co-investigator

NU38PS004650 Rosenberg E (PI) 9/2019-9/2024

CDC

**Modeling HIV, Viral Hepatitis, STI, and TB to improve public health – CAMP 2.0: The Coalition for Applied Modeling for Prevention**

To build on the existing work done by the Emory Coalition for Applied Modeling for Prevention (CAMP) to develop economic and disease transmission models to inform resource prioritization and implementation of interventions targeting HIV, viral hepatitis, sexually transmitted diseases, and tuberculosis in the United States.

Role: Subcontract PI, Co-investigator

R01DA049644

NIDA Strathdee S (PI) 4/2020-1/2025

**Ethno-epidemiology of HCV, HIV and Overdose associated with Drug Markets and Drug Tourism**

To assess the impact of drug markets and drug tourism on HIV, HCV, and overdose in the U.S./Mexico border region.

Role: Co-investigator

5 P30 AI036214 Richman D (PI) 4/2018-3/2023

NIDA

**University of California, San Diego, Center for AIDS Research**

Role: Co-Director, Biostatistics and Modeling Core

**Completed Research Support**

R01 DA037773

NIDA Martin NK (PI) 4/2015-12/2018

**Modeling Structural Determinants of HIV Epidemic Trajectories Among Substance Users and Other Populations**

To model the impact and cost-effectiveness of scaled-up existing and novel HIV prevention interventions among high risk groups (female sex workers, men who have sex with men, and people who inject drugs) in Tijuana, Mexico, and to explore the impact of structural drivers such as policing/incarceration and forced sex work on the HIV epidemic.

Role: Contact PI (multiple PIs: N Martin, S Strathdee, P Vickerman)