

Nate C. Apathy, PhD

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Academic Appointments

Postdoctoral Fellow , Health Services Research Perelman School of Medicine, University of Pennsylvania Advisor: Rachel M. Werner, MD PhD (AHRQ T32 Training Grant)	July 2020 – Present
Associate Fellow , Leonard Davis Institute of Health Economics	Aug. 2020 – Present
Affiliated Research Scientist , Regenstrief Institute	Aug. 2020 – Present
Adjunct Faculty , Health Policy & Management Richard M. Fairbanks School of Public Health, Indiana University	Aug. 2020 – Present

Education

PhD, Health Policy & Management Richard M. Fairbanks School of Public Health Dissertation: <i>Health information exchange use in primary care</i> Committee: Christopher A. Harle, PhD (co-chair); Joshua R. Vest, PhD (co-chair) Justin Blackburn, PhD; Julia Adler-Milstein, PhD; Brian E. Dixon, PhD	Indiana University, 2020 Indianapolis, IN
BS, Business Administration (summa cum laude) Major: Economics Minor: Behavioral and Cognitive Neuropsychology	Creighton University, 2011 Omaha, NE

Previous Employment

Department of Health Policy & Management Fairbanks School of Public Health (IUPUI) Predoctoral Fellow, Population & Public Health Informatics (NLM T15) Graduate Research Assistant to Christopher A. Harle, PhD	August 2016 – June 2020 Aug. 2017 – June 2020 Aug. 2016 – June 2020
Cerner Corporation , Kansas City, MO	July 2011 – April 2016

Grants

Post-Doctoral Fellow, R33DA046085. (R21/R33). Nudging Primary Care Providers toward Guideline-Recommended Opioid Prescribing through Easier and More Convenient EHR Information Design. National Institute on Drug Abuse (NIDA). \$2,223,377. 2017-2022. PI: Christopher A. Harle, PhD

Peer-Reviewed Publications

1. Rotenstein, LR; **Apathy, NC**; Landon, B; Bates, DW. Satisfaction with the Electronic Health Record Among Physicians in Physician-Owned vs Non-Physician Owned Practices. *JAMA Network Open*. 2022;5(4).
2. **Apathy, NC**; Hare, AJ; Fendrich, S; Cross DA. Early Changes in Billing and Notes after the Evaluation and Management Guideline Change. *Annals of Internal Medicine*. 2022;175(4).
3. **Apathy, NC**; Holmgren, AJ; Werner, RM. Growth in health information exchange with ACO market penetration. *American Journal of Managed Care*. 2022;28(1).

4. Nguyen, OT; Turner, K; **Apathy, NC**; Magoc, T; Hanna, K; Merlo, LJ; Harle, CA; Thompson, LA; Berner, ES; Feldman, SS. Primary care physicians' electronic health record proficiency and efficiency behaviors and time interacting with electronic health records. *Journal of the American Medical Informatics Association*. 2022;23(2).
5. Werner, RM; Templeton, Z; **Apathy, NC**; Skira, MM; Konetzka, RT. Trends in post-acute care in US nursing homes: 2001 to 2017. *Journal of the American Medical Directors Association*. 2021;22(12).
6. **Apathy, NC**; Holmgren, AJ; Adler-Milstein, J. A Decade Post-HITECH: Critical Access Hospitals have EHRs but Struggle to Keep Up with Other Advanced Functions. *Journal of the American Medical Informatics Association*. 2021;28(9).
7. **Apathy, NC**; Vest, JR; Adler-Milstein, J; Blackburn, J; Harle, CA. Practice and market factors associated with provider volume of health information exchange. *Journal of the American Medical Informatics Association*. 2021;28(7).
8. Baxter, SL; **Apathy, NC**; Cross, DA; Sinsky, C; Hribar, ME. Measures of electronic health record use in outpatient settings across vendors. *Journal of the American Medical Informatics Association*. 2021; 28(5).
9. Taylor, HL; **Apathy, NC**; Vest, JR. Health information exchange use during dental visits. *AMIA Annual Symposium Proceedings*. 2020 Nov. *Student Paper Competition Finalist*
10. **Apathy, NC**; Everson, J. High rates of partial participation in the first year of the Merit-Based Incentive Program. *Health Affairs*. 2020;39(9).
11. **Apathy, NC**; Harle, CA; Vest, JR; Morea, JG; Menachemi, N. Use of electronic health records on days off: Comparing physicians to other EHR users. *Journal of General Internal Medicine*. 2020;36(4).
12. Holmgren, AJ; **Apathy, NC**. Evaluation of Prescription Drug Monitoring Program Integration With Hospital Electronic Health Records by US County-Level Opioid Prescribing Rates. *JAMA Network Open*. 2020;3(6).
13. Holmgren, AJ; **Apathy, NC**; Adler-Milstein, J. Barriers to Hospital Public Health Reporting and Implications for the COVID-19 Pandemic. *Journal of the American Medical Informatics Association*. 2020;27(8).
14. **Apathy, NC**; Holmgren, AJ. Opt-in consent policies: potential barriers to hospital health information exchange. *American Journal of Managed Care*. 2020;26(1).
15. Comer, AR; **Apathy, NC**; Waite C; Bestmann Z; Bradshaw J; Burchfield E; Harmon B; Legg R; Meyer S; O'Brien P, Sabec M; Sayeed J; Weaver A; D'Cruz L; Bartlett S; Marchand M; Zepeda I; Finnell, JT; Grannis, S; Silverman, RD; Embi, PJ. E-scooters: Assessing the Threat to Public Health and Safety in Setting Policies. *Chronicles of Health Impact Assessment*. 2020;5(1).
16. Holmgren, AJ; **Apathy, NC**. Hospital adoption of API-enabled patient data access. *Healthcare: The Journal of Delivery Science and Innovation*. 2019;8.
17. Balio, CP; **Apathy, NC**; Danek, R. Health information technology and accountable care organizations: synthesis of the literature and future directions. *eGEMs (Generating Evidence & Methods to improve patient outcomes)*. 2019;7(1):24.
18. **Apathy NC**; Yeager VA. Examining Training Motivations Among Public Health Workers. *Journal of Public Health Management and Practice*. 2019;25(2), Public Health Workforce Interests and Needs Survey 2017: S157 –65.
19. Harle, CA; **Apathy, NC**; Cook, RL; Danielson, EC; Dilulio, J; Downs, SM; Hurley, RW; Mamlin, BW; Militello, LG; Anders, S. Information Needs and Requirements for Decision Support in Primary Care: An Analysis of Chronic Pain Care. *AMIA Annual Symposium Proceedings*. 2018 Nov.
20. **Apathy, NC**; Menser, T; Keeran, L; Ford, EW; Harle, CA; Huerta, TR. Trends and gaps in awareness of direct-to-consumer genetic tests from 2007-2014. *American Journal of Preventive Medicine*. 2018 Jun 1;54(6).
21. Mosa, AS; Yoo, I; **Apathy, NC**; Ko, KJ; Parker, JC. Secondary Use of Clinical Data to Enable Data-Driven Translational Science with Trustworthy Access Management. *Missouri Medicine*. 2015;112(6)

Research in Progress

Apathy, NC; Hare, AJ; Fendrich, S; Cross DA. What gives? Changes in clinical documentation composition as physicians shorten notes. (Under Review)

Apathy, NC; Rotenstein, LR; Bates, DW; Holmgren, AJ. Documentation dynamics: Note composition, burden, and physician efficiency. (Under Review)

Apathy, NC; Sanner, LM; Adams, MCB; Mamlin, B; Grout, R; Fortin, S; Hillstrom, J; Saha, A; Teal, E; Vest, JR; Menachemi, N; Hurley, R; Harle, CA; Mazurenko, O. Assessing the use of a clinical decision support tool for pain management in primary care. (Under Review)

Apathy, NC; Holmgren, AJ; Cross, DA. The effects of physician documentation support. (In Preparation)

Apathy, NC; Holmgren, AJ; Greenstein, S. Innovation spillovers from government investment in information technology: evidence from the HITECH Act. (In Preparation)

Apathy, NC; Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. User-level patterns of health information exchange use. (In Preparation)

Rule, A; Holmgren, AJ; **Apathy, NC.** Differences in the Use of Voice Recognition in the Ambulatory Setting Across Primary Care, Medical, and Surgical Specialties. (Under Review)

Holmgren, AJ; **Apathy, NC.** Assessing the Impact of Patient Access to Electronic Health Information on Clinician Electronic Health Record Documentation. (Under Review)

Cross, DA; Holmgren, AJ; **Apathy, NC.** Variation in EHR Use Within and Across Organizations. (In Preparation)

Mazurenko, O; Sanner, LM; **Apathy, NC;** Mamlin, BW; Menachemi, N; Adams, MCB; Hurley, RW; Erazo, SF; Harle, CA. Recruiting primary care providers electronically as research subjects during the COVID-19 pandemic. (Under Review)

Rotenstein, LR; **Apathy, NC;** Bates, DW; Landon, B. Specialty and Gender Variation in Staff Support for Documentation: A Nationwide, Cross-Sectional Analysis. (Under Review)

Rotenstein, LR; **Apathy, NC;** Holmgren, AJ; Bates, DW. Physician documentation phenotypes and EHR time. (Under Review)

Book Chapters

Dixon, BE; Rahrkar, S; & **Apathy, NC.** Health Information Exchange. In: Magnuson, JA; Dixon, BE, editors. *Public Health Informatics and Information Systems*, 3rd edition. Springer London. August 2020.

Patents

Harle, CA; Mamlin, B; Hurley, RW; **Apathy, NC;** Downs, SM; Dilulio, J. *Methods and Systems for Risk Assessment and Risk Prediction in Opioid Prescriptions and Pain Management Treatment*. US Patent Appln. No. 2021/0050113A1. Pub. Date Feb 18, 2021.

Research Interests

Health Information Technology
Health Information Exchange

Health IT Policy
Health IT Use & Quality Measurement

Population Health Informatics
Health Economics

Invited Speaking

National Academy of Medicine [Clinician Wellbeing Convening on Reducing Documentation Burden](#), Jan. 2022
The Practice of Medicine: MIPS and the Social Determinants of Health, Oct. 2020 [Health Affairs Event](#)

Honors & Awards

Delta Omega (Public Health Honors Society)	April 2020
Med About Data Hackathon (Haifa, Israel) – Second Place	March 2019
IUPUI University Fellowship	Aug. 2016 – Jul. 2017
Population Health Leadership Development Program	Jan. 2015 – Dec. 2015
Cerner Masters Award	Aug. 2014

Peer-Reviewed Conference Presentations & Papers

1. Mazurenko, O; Sanner, LM; **Apathy, NC**; Mamlin, BW; Menachemi, N; Adams, MCB; Hurley, RW; Erazo, SF; Harle, CA. Recruiting primary care providers electronically as research subjects during the COVID-19 pandemic. *Annual Meeting of the Academy of Management*. August 2022.
2. **Apathy, NC**; Hare, AJ; Fendrich, S; Cross DA. Early Changes in Billing and Notes after Modifications to Evaluation & Management Visit Guidelines. *American Society of Health Economists Annual Conference*. June 2022.
3. **Apathy, NC**; Hare, AJ; Fendrich, S; Cross DA. What gives? Changes in clinical documentation composition as physicians shorten notes. *AcademyHealth Annual Research Meeting*. June 2022.
4. **Apathy, NC**; Sanner, LM; Cistola, A; Hurley, RW; Adams, MCB; Harle, CA; Mazurenko, O. Assessing the Use of a Clinical Decision Support Tool for Pain Care Information in Primary Care. *AcademyHealth Annual Research Meeting*. June 2022.
5. Cross, DA; **Apathy, NC**; Holmgren, AJ. Variation in EHR Use Within and Across Organizations. *AcademyHealth Annual Research Meeting*. June 2022.
6. Rotenstein, LR; **Apathy, NC**; Holmgren, AJ; Bates, DW. Physician documentation phenotypes and EHR time. *AcademyHealth Annual Research Meeting*. June 2022.
7. Kuznetsova, M; **Apathy, NC**; Holmgren, AJ. Association between Proximity to a Regional Extension Center and Adoption of Advanced Information Technology Functions by Critical Access Hospitals. *AcademyHealth Annual Research Meeting*. June 2022.
8. **Apathy, NC**; Yan, X; Moore, C; Holmgren, AJ; Sinha, A. New Frontiers in Audit Log Data Research. *American Medical Informatics Association Clinical Informatics Conference*. May 2022.
9. **Apathy, NC**; Hare, AJ; Fendrich, S; Cross DA. Early Changes in Billing and Notes after Modifications to Evaluation & Management Visit Guidelines. *American Medical Informatics Association Clinical Informatics Conference*. May 2022.
10. **Apathy, NC**; Hare, AJ; Fendrich, S; Cross DA. What gives? Changes in note composition as physicians shorten notes. *American Medical Informatics Association Clinical Informatics Conference*. May 2022.
11. **Apathy, NC**; Rotenstein, LR; Bates, DW; Holmgren, AJ. EHR Documentation Tools and Physician Efficiency. *American Medical Informatics Association Clinical Informatics Conference*. May 2022.
12. Rotenstein, LR; **Apathy, NC**; Holmgren, AJ; Bates, DW. EHR Documentation Patterns and Time on the EHR Across Specialties: A National, Cross-Sectional Study. *American Medical Informatics Association Clinical Informatics Conference*. May 2022.
13. **Apathy, NC**; Sanner, LM; Cistola, A; Hurley, RW; Adams, MCB; Harle, CA; Mazurenko, O. Assessing the Use of a Clinical Decision Support Tool for Pain Care Information in Primary Care. *American Medical Informatics Association Clinical Informatics Conference*. May 2022.
14. **Apathy, NC**; Holmgren, AJ; Greenstein, S. Spillover Effects from the HITECH Act on Innovation in Medical Informatics. *American Medical Informatics Association Annual Symposium*. Nov 2021.

15. **Apathy, NC**; Holmgren, AJ; Adler-Milstein, J. Meaningful Use and the Digital Divide After a Decade. *AcademyHealth Annual Research Meeting*. June 2021.
16. **Apathy, NC**; Holmgren, AJ; Werner, RM. Growth in Health Information Exchange with ACO Market Penetration. *AcademyHealth Annual Research Meeting*. June 2021.
17. **Apathy, NC**; Holmgren, AJ; Werner, RM. Growth in Health Information Exchange with ACO Market Penetration. *AHRQ NRSA Trainees Research Conference*. June 2021.
18. **Apathy, NC**; Holmgren, AJ; Greenstein, S. Innovation spillovers from government investment in information technology: evidence from the HITECH Act. *Conference on Health Information Technology & Analytics*. Oct 2020.
19. **Apathy, NC**. Team-based measures of health information exchange. *Kentucky Bluegrass and Indiana Chapters of HIMSS Annual Conference*. July 2020.
20. **Apathy, NC**; Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. Health information exchange in primary care: use among teams. *National Library of Medicine Informatics Training Conference*. June 2020.
21. **Apathy, NC**; Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. Factors related to primary care use of health information exchange. *AcademyHealth Annual Research Meeting*. June 2020.
22. **Apathy, NC**; Roberts, A; Hayden, R; Harle, CA; Vest, JR. Visualizing patient-level risk factors from clinical risk prediction algorithms. *American Medical Informatics Association Clinical Informatics Conference*. May 2020.
23. **Apathy, NC**; Vest, JR; Menachemi, N; Morea, JG; Harle, CA. Differing patterns in frequency of electronic health records documentation among clinicians following the replacement of a legacy EHR system. *American Medical Informatics Association Annual Symposium*. Nov. 2019
24. **Apathy, NC**; Yeager, VA. Training Motivations Among Public Health Workers. *American Public Health Association Annual Meeting*. Nov. 2019.
25. **Apathy, NC**. Association between physician usage of health information exchange and quality measures. *National Library of Medicine Informatics Training Conference*. June 2019
26. **Apathy, NC**; Vest, JR; Menachemi, N; Morea, JG; Harle, CA. Impact of Transitioning from a Homegrown to a Commercial EHR on User Satisfaction. *AcademyHealth Annual Research Meeting*. June 2019
27. **Apathy, NC**; Everson, J. Variations in Primary Care Provider Competition Indices across Commonly Used Data Sources. *AcademyHealth Annual Research Meeting*. June 2019
28. **Apathy, NC**; Harle, CA. Patient consent policies for state health information exchange and level of provider exchange. *American Medical Informatics Association Annual Symposium*. Nov. 2018
29. **Apathy, NC**. Measurement of Health Information Exchange & Interoperability. *National Library of Medicine Informatics Training Conference*. June 2018
30. Balio, CP; **Apathy, NC**; Wiley, K; Holmes, A. The association between usual source of care at a patient-centered medical home and high-expense service utilization. *AcademyHealth Annual Research Meeting*. June 2018
31. Harle, CA; Anders, S; **Apathy, NC**; Cook, RL; Danielson, EC; Dilulio, J; Downs, SM; Hurley, RW; Mamlin, BW; Militello, LG. Designing a user-centered electronic health record decision support system for guideline-concordant opioid prescribing. *AcademyHealth Annual Research Meeting*. June 2018
32. **Apathy, NC**; Vest, JR; Menachemi, N; Putz, JW; Morea, JG; Harle, CA. Differing patterns of satisfaction and perception among clinical and non-clinical users following replacement of a legacy EHR system. *American Medical Informatics Association Annual Symposium*. Nov. 2017
33. **Apathy, NC**; Vest, JR; Menachemi, N; Harle, CA. Changes in user perceptions of their electronic health record following the replacement of a legacy system: a longitudinal analysis. *AcademyHealth Annual Research Meeting*. June 2017

34. Bako, AT; **Apathy, NC**; Vest, JR; Harle, CA. User concerns following replacement of a legacy electronic health record: A longitudinal qualitative study. *AcademyHealth Annual Research Meeting*. June 2017
35. **Apathy, NC**; Balio, CP; Danek, RL. Underrepresentation of health information technology studies in the context of accountable care organizations: Using the HSRProj database. *AcademyHealth Annual Research Meeting*. June 2017
36. **Apathy, NC**; Mosa, AS; & Ko, KJ. Protecting Patient Data and Maintaining Site Autonomy: Managing Project Access in a Multi-Site i2b2 Database. *American Medical Informatics Association Annual Symposium*. Nov. 2014

Professional Memberships

American Medical Informatics Association (AMIA)	2013 – Present
AcademyHealth	2016 – Present
American Public Health Association	2019 – Present
Health Information & Management Systems Society (HIMSS)	2016 – 2021

Web Applications

Economics Seminar Diversity	RShiny Dashboard w/ ggplot2	v2.0.0 deployed August 2019
<i>Interactive visualizations of invited seminar speakers to examine representation of female and under-represented minority economists at university economics departments</i>		
CHF Risk Prediction Tool (Demo)	RShiny, randomForest, & ggplot2	v1.2.1 deployed March 2019
<i>Interactive visualization of risk scores for CHF at the population level, with option to view individual level risk factors underlying low, rising, or high-risk prediction</i>		
Opioid Prescribing Rate Visualization Tool	RShiny, ggplot2, & leaflet	v2.0.0 deployed August 2018
<i>Interactive mapping visualization of CDC prescribing rates and changes over time by county and state</i>		
EHR Survey Response Visualizer	RShiny & ggplot2	v2.0.0 released Dec 2018
<i>Interactive tool to analyze responses to a user satisfaction survey administered during an electronic health record transition at a large public safety net hospital</i>		

Teaching

H320: Health Systems Administration	Guest Lecturer	Fall 2019
H325: Health Information Technology Management & Policy	Instructor (<i>rating: 4.7/5</i>)	Fall 2018, Fall 2019
E335: Chronic Disease Epidemiology	Guest Lecturer	Spring 2018
H628: Healthcare Information Systems	Teaching Assistant	Spring 2017, Spring 2019

Editorial Experience

Peer Review: *Health Affairs; Milbank Quarterly; Health Services Research; American Journal of Managed Care; Journal of General Internal Medicine; Journal of the American Medical Informatics Association; Applied Clinical Informatics; Journal of Medical Internet Research; Digital Health, Risk Management & Healthcare Policy; Health Policy & Technology; PLoS One; International Journal of Health Economics & Management; Medical Care*

International Conference on Information Systems, 2019 & 2021	Conference Submission Review
AcademyHealth Annual Research Meeting, 2019-2021	Theme Reviewer & Session Chair
<i>Digital Technologies, Data, and Data Science Theme</i>	
AMIA Annual Symposium	Conference Submission Review
AMIA Informatics Summits	Conference Submission Review

Leadership & Service

AMIA Advancing Health Equity & Antiracism in Healthcare Subcommittee, Member	Fall 2021 – Current
Leonard Davis Institute Associate Fellows Bootcamp: Intro to R, Instructor	November 2021
Summer Undergraduate Minority Research Scholars Program, R Tutor	Summer 2021
NLM and Support for Health Services Research, Invited Panelist	August 2020
National Research Network Audit Log Measures Workgroup, Co-Chair	Spring 2020 – Current
AMIA Annual Symposium, Session Moderator	Fall 2019
Collaborating Across Borders VII Conference, Session Moderator	Fall 2019
Indiana State Department of Health R Training Workshop, Instructor	July 2019
AMIA Policy Response Team, ONC Notices of Proposed Rulemaking <i>Draft Federal Health IT Strategic Plan</i>	Spring 2020
<i>21st Century Cures, Information Blocking</i>	Spring 2019
NLM Informatics Training Conference, 2018 & 2019 <i>Student Planning Committee Co-Chair</i>	Nov. 2018 – June 2019
<i>Student Planning Committee Member</i>	Jan. 2018 – June 2018
AcademyHealth Student Competition: Identifying Gaps in HSR, Judge	April 2018
hsR: Using R for Health Services Research, Workshop Instructor	Spring 2018
AcademyHealth Student Chapter at IUPUI, President & Co-Founder	Feb. 2017 – March 2019

Press Coverage

Early Changes in Billing and Notes after the Evaluation and Management Guideline Change, *Annals of IM*
[HealthDay News](#), Feb 2022 | [Medical Xpress](#), Feb 2022 | [Science Magazine](#), Feb 2022

To alleviate EHR burdens, teamwork makes the dream work, [HealthcareIT News](#), Dec. 2021

Care Team EHR Documentation Support May Alleviate Clinician Burden, [EHRIntelligence.com](#), Dec. 2021

Critical access hospitals lag behind in advanced EHR use functions, [Healthcare IT News](#), Jul. 2021

Half of Providers Don't Utilize Health Information Exchange, [EHRIntelligence.com](#), Mar. 2021

Barriers to Hospital Public Health Reporting and Implications for the COVID-19 Pandemic, *JAMIA*
[Healthcare IT News](#), Oct. 2020 | [Becker's Hospital Review](#), May 2020
[Healthcare IT News](#), May 2020 | [Healthcare Dive](#), May 2020

What the Fax? [Tradeoffs podcast episode](#), May 12, 2020

Opt-In Health Information Exchange Drive Administrative Burden, [EHRIntelligence.com](#), Jan. 2020

API growing pains. [POLITICO Morning eHealth](#), Sept. 2019

IUPUI PhD student unpacks the impact scooters are having on Indianapolis, [FOX59 Indianapolis](#), April 2019

Researcher's data shows how Indianapolis is using scooters. [IndyStar](#), Mar. 2019

Lyft warns it may never make any money. [Oversharing](#), Mar. 2019