Michelle P. Lin, MD, MPH, MS

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EMPLOYMENT

EMIL EO IME	<u> </u>		
7/13-6/15	Attending Physician Department of Emergency Medicine		Brigham and Women's Hospital Boston, MA
7/13-6/15	Instructor of Emergency Medicine		Harvard Medical School
7/15-present	Attending Physician Department of Emergency Medicine		Mount Sinai Beth Israel New York, NY
7/15-present	Assistant Professor of Emergency Medicine		Icahn School of Medicine at Mount Sinai, New York, NY
EDUCATION	ſ		
June 2005	Bachelor of Arts	Comparative Literary Studies	Northwestern University Evanston, IL
June 2009	Doctorate	Medicine	Northwestern University Chicago, IL
June 2009	Masters	Public Health	Northwestern University Evanston, IL
June 2015	Master of Science	Clinical Epidemiology	Harvard School of Public Health Boston, MA
Post-Doctoral	<u>Training</u>		
7/09-6/13	Internship and Residency	Emergency Medicine	Bellevue Hospital Center NYU School of Medicine, NY
7/13-6/15	Fellowship	Health Policy Research	Brigham and Women's Hospital Boston, MA
Non-Degree Programs			
9/12-11/12	Residency Intensive in Health Policy Director: Fitzhugh Mullan, MD		George Washington University Washington, DC
6/13-8/13	Program in Clinical Effectiveness Director: David Bates, MD, MSc		Harvard School of Public Health Boston, MA
1/2014	Value-Based Healthcare Delivery Intensive Director: Michael Porter, MBA		Harvard Business School Boston, MA
9/14-5/15	Emergency Medicine Quality Improvement Leadership and LEAN Training Program		Brigham and Women's Hospital Boston, MA
6/2015	Leading Innovations in Healthcare & Education Elizabeth Armstrong & Clayton Christensen		Harvard Macy Institute Boston, MA
LICENCIDE & CEDTIFICATION			

LICENSURE & CERTIFICATION

6/2011-current ACLS, PALS, BLS, ATLS certified

2/2013	TeamSTEPPS Patient Safety Program Master Trainer Certification

 $2/13\text{-}6/15 \hspace{1cm} \textbf{Medical License (\#254932), Commonwealth of Massachusetts}$

12/14-current Diplomate, American Board of Emergency Medicine

4/15-current Medical License (#279019), State of New York

HONORS/AWARDS

June 2005	Departmental Honors, Comparative Literary Studies Weinberg College of Arts and Sciences, Northwestern University, Evanston, IL
Jan 2009	Global Health Education & Community Service Scholarship Award Feinberg School of Medicine, Northwestern University, Chicago, IL
June 2009	Graduate of the Honors Program in Medical Education Northwestern University, Chicago, IL
Jan 2013	Partners Centers of Expertise Travel Award, Center for Connected Health Symposium Partners HealthCare, Boston, MA
June 2013	Winning Innovation, Teaching Value and Choosing Wisely Competition Costs of Care and the American Board of Internal Medicine (ABIM) Foundation
Jan 2015	Certificate of Excellence in Teaching Harvard Medical School, Boston, MA
Feb 2015	Partners Centers of Expertise Travel Award, AcademyHealth National Conference Partners HealthCare, Boston, MA
May 2015	Lion's Den research "pitch" competition. Awarded seed funding and mentorship. Society for Academic Emergency Medicine Annual Meeting, San Diego, CA.
June 2015	Best Poster, Patient-Centered Outcomes & Comparative Effectiveness Research Day Brigham and Women's Hospital, Boston, MA
March 2016	Presidential Scholarship for New Health Services Researchers AcademyHealth Annual Research Meeting, Boston, MA
March 2018	Visiting Professor, Department of Emergency Medicine Indiana University School of Medicine, Indiana, IN

OTHER PROFESSIONAL ROLES:

9/13-6/14	Expert Contributor and Question Writer on Patient Safety Topics New England Journal of Medicine Knowledge Plus, Boston, MA
1/14-6/15	Assistant Editor and Founding Editorial Board Member Harvard Public Health Review, Boston, MA
12/15-present	Core Abstract Reviewer, Society for Academic Emergency Medicine Annual Meeting
9/16-present	Peer Reviewer, American Journal of Emergency Medicine
9/16-present	Peer Reviewer, American Journal of Managed Care
12/16-present	Peer Reviewer, Annals of Emergency Medicine
3/17-present	Peer Reviewer, Academic Emergency Medicine
4/17-present	Peer Reviewer, BMJ Quality & Safety and BMJ Open
4/17-present	Peer Reviewer, Circulation: Cardiovascular Quality & Outcomes, Circulation Health Failure
8/17-9/18	External Consultant, Center for Medicare and Medicaid Innovation Division of Advanced Primary Care, Seamless Care Models Group Department of Health and Human Services, Baltimore, MD
3/18-present	Grant Review Committee, American Board of Medical Specialties Visiting Scholars Program
4/18-present	Attending Physician, Mount Sinai NOW Telehealth and Community Paramedicine Programs (one of 8 early adopter clinicians across Mount Sinai Health System)
3/19-present	Abstract Reviewer, American Board of Medical Specialties Annual Conference
3/19-present	Faculty Reviewer, Annual Resident and Fellow Research Day, Icahn School of Medicine at Mount Sinai

RESEARCH PROFILE

As an emergency physician and faculty member at the Icahn School of Medicine at Mount Sinai, I currently spend the majority of my time as an **investigator** in emergency medicine health policy research. My principal research interest is measuring and improving the value and patient-centeredness of emergency care, with a focus on ED care transitions and population health. My current projects aim to examine the impact of alternative payment models on emergency care, identify drivers of variation in ED admission rates, and develop novel patient-centered outcome measures for ED care. I was awarded the AcademyHealth Presidential Scholar Award for New Health Services Researchers in 2016, and my work has been funded by the Emergency Medicine Foundation and the American Board of Medical Specialties. I recently served as an external consultant to the Center for Medicare & Medicaid Innovation on projects to examine the role of acute care and improve risk adjustment in advanced primary care delivery and payment models.

CLINICAL PROFILE

I provide clinical care as an attending physician in the Department of Emergency Medicine at Mount Sinai Beth Israel Medical Center, where I teach and supervise residents in the Mount Sinai Beth Israel Emergency Medicine Residency Program and students at the Icahn School of Medicine at Mount Sinai. As the MSBI Director of Performance Improvement, I lead physician-specific analysis and feedback on ED throughput and productivity metrics on a regular basis.

As an educator, I have given national and local lectures on health policy and alternative payment models as they pertain to emergency medicine. I have been recognized for leading a Clinical Epidemiology and Population Health tutorial as an Instructor at Harvard Medical School. I developed and implemented a novel pilot curriculum on cost-effective diagnostic testing for emergency medicine residents at the NYU School of Medicine that was selected as a winning innovation by the Costs of Care Foundation and the American Board of Internal Medicine Foundation, and I have been invited to speak at national meetings regarding my work.

IMPACT

My scientific contributions have had national, regional, and local impact, as demonstrated by multiple national invited presentations, both as didactics at national conferences (AAMC 2013, SAEM 2014, 2015, 2018, 2019, ABMS 2018), and as invited Grand Rounds (Indiana University Visiting Professor 2018, new York ACEP Research Day Keynote 2018). My publication on "Trends in Emergency Department Visits and Patient Characteristics, 2006-2014." in JAMA Internal Medicine (Dec 2018 PMID: 30326057) has an Altmetric score of 169 (Altmetric impact score in the 99th percentile among over 12 million research outputs, including non-biomedical research https://jamanetwork.altmetric.com/details/49724159). Additionally, my scholarly body of work has a ResearchGate Score of 24.26 (80th percentile among all academic fields, including non-biomedical research).

GRANTS, CONTRACTS, FOUNDATION SUPPORT

Current Grants

8/1/18-6/30/19 "Evaluating ED Clinical Work Intensity and the Shift from Inpatient to Outpatient Care."

Emergency Medicine Foundation Clinical Work Intensity Grant

This project aims to demonstrate increased ED clinical work intensity has improved value by reducing health care utilization and costs that previously occurred in inpatient settings. Role: PI

"Care Fragmentation in Sickle Cell Disease." 7/1/18-6/30/19

> NIH / National Heart, Lung & Blood Institute 3U01HL133997-02S1 Develop and quantify fragmentation of acute care among sickle cell patients using administrative data as a part of a diversity supplement to the New York Sickle City Cell Implementation Science Consortium.

Role: Co-I [PI: Richardson, ISMMS]

5/15/18-4/30/19 "Primary Palliative Care for Emergency Medicine."

NIH/ National Institute for Aging / National Institute for Complementary & Integrative

Health 1UG3AT009844-01

Site lead for a pragmatic, cluster-randomized stepped wedge trial to test the effectiveness of primary palliative care educational initiative incorporating simulation-based workshops on communication in serious illness, clinical decision support, and provider audit and feedback, tailored to diverse contexts across 35 ED sites.

Role: Site PI [PI: Grudzen, NYU]

Past Grants

7/1/13-6/30/15 "Identifying Best Practices to Reduce Hospital Admission from the Emergency Department."

Blue Cross Blue Shield Foundation of Massachusetts

In this project a mixed-methods approach will be used to identify common diagnoses most appropriate for post-ED critical pathways, identify high-performing institutions in Massachusetts, and identify best practices that are translatable to other EDs.

Role: Co- Investigator [PI: Jeremiah Schuur, MD, MHS]

7/1/14-3/31/15 "Identify and Intervene with Emergency Department Super-Users."

Brigham and Women's Provider Organization Care Redesign & Incubator Startup Program The project aims to improve quality and cost associated with acute care for frequent ED users by engaging patients with an ED community health worker and increasing utilization of acute care plans.

Role: Co-PI [with Jeremiah Schuur, MD, MHS]

9/1/14-8/31/15 "Engaging Emergency Physicians in Improving Cost and Quality of ED Care for Frequent Users."

American Board of Medical Specialties Visiting Scholar Award

This project is to educate and engage emergency physicians in an ED-based quality improvement initiative to improve care for patients who frequent the ED.

Role: PI

7/1/15-6/30/16 "A Cost-Effectiveness Analysis of ACEP's Choosing Wisely Recommendations."

Emergency Medicine Foundation Health Policy Scholar Award

This project aims to promote and disseminate ACEP's Choosing Wisely recommendations by performing a cost-effectiveness analysis of two of the recommendations and identifying best practices and barriers to adoption.

Role: PI

7/1/16-6/30/17 "Early Adoption of Alternative Payment Models (APMs) for Emergency Medical Care: A

Mixed Methods Study of Accountable Care Organizations (ACOs)."

Emergency Medicine Foundation Health Policy Research Grant

The aims of this project are to identify 1) how emergency medicine has been integrated into care redesign in ACOs; 2) the extent to which APMs have been adopted for emergency medicine in a nationally representative survey of ACOs; and 3) payment strategies and lessons for adoption from organizations who have incorporated APM for emergency care.

Role: Co-I and Site PI [PI: Dr. Jeremiah Schuur, Brigham and Women's Hospital]

7/1/16-6/30/17 "Anticipated Impact of Alternative Payment Models for Emergency Medicine."

Emergency Medicine Foundation Health Policy Scholar Award

Analyze the financial impact of proposed APMs on hospitals and payers using nationally representative datasets, in collaboration with the American College of Emergency Physicians Alternative Payment Model Task Force.

Role: PI

Unfunded Projects

6/1/16-12/1/16 "Empathy to Reduce Anticipated Negative CT Scanning (ETRACTS)."

The aims of this multicenter pilot study are to 1) identify patients' perceptions of the role of empathy in the decision to perform a CT scan in the ED and 2) develop a clinician-delivered brief narrative (script) for patients undergoing CT scanning of the head, chest or abdomen

that introduces clinician attention to patient affect.

Role: Co-I and Site PI [PI: Jeffrey Kline MD, Indiana University School of Medicine]

6/1/17-current

"Emergency Department Asthma Patient-Reported Outcomes (EDAPRO)."

This pilot study aims to 1) identify patient-important outcomes among ED patients treated for asthma; 2) assess baseline and post-exacerbation asthma impact on functional status and quality of life; and 2) assess the feasibility and acceptability of a patient-reported outcomes survey for outcome measurement for a future study.

Role: PI

8/1/18-6/30/19

"Prospective Validation of a Script Concordance Test for Assessment of Emergency

Medicine Residents' Clinical Reasoning"

The study aims to validate a novel tool to assess clinical reasoning among emergency

medicine residents.

Role: Co-I [PI: Steinberg, ISMMS]

10/1/18-current "The Impact of Women-Focused Professional Organizations on Career Development." Qualitative study to assess the impact of a woman-focused professional organization for academic emergency physicians consisting of semi-structured interviews with past leaders and members of varying career stages.

Role: PI

Pending

7/1/19-6/30/24

"Patient-Reported Outcomes for Acute Asthma Care and Treatment (PROAACT)" NIH / National Heart, Lung & Blood Institute 1K23 HL143042-01

The proposed research will train a physician-scientist to develop a novel instrument to assess patient-reported outcomes after adult ED asthma visits, evaluate the association between patient-reported and clinical outcomes, and improve outcome measurement by acquiring advanced skills in risk adjustment methodology.

Role: PI

TEACHING ACTIVITIES

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs):

2010-2013	ACLS, PALS, and BLS Instructor NYU Emergency Care Institute	10 hours/year x 4 sessions 50 health professionals
2012-2013	Health Policy Education Lecture Series NYU Bellevue Emergency Medicine Residency	1 hour/week x 4 weeks 60 residents
2013	Cost-Conscious Care Curriculum NYU Bellevue Emergency Medicine Residency	1 hour/week x 10 weeks 60 residents
2017-current	Journal Club Lead, Methodology Series Mount Sinai Beth Israel Emergency Medicine Residency	2 hours/week x 6 weeks 40 residents per session
2017-current	Lecturer, Research Methodology for EM Fellows & Residents Icahn School of Medicine at Mount Sinai	2 hours/week x 2 week 20 students per tutorial
2019-current	Co-Director, Emergency Medicine Resident Research Rotation, Icahn School of Medicine at Mount Sinai	

Mentorship of Residents, Clinical Fellows and Research Fellows (post-docs):

Name	Level of Trainee	Roles in Training & Dates	Trainee's Current Status
Martin Casey, MD, MPH	Resident Physician, Class of 2020	Recipient of ABMS Visiting Scholar Award 2018- 2019 (\$12,500). The Association between Costs, Charges, and Revisit Rates among Adult ED Asthma Discharges. Oral presentation at SAEM Annual Meeting 2018, ABMS Annual Conference	Emergency Medicine Resident, Mount Sinai (class of 2020)

		2018, manuscript under review. (Jun 2016- current)	
Padden Glocka, MD	Resident Physician, MSBI, Class of 2018	Cost Analysis of Head CT for ED Syncope Patients. Oral presentation at SAEM Annual Meeting 2017, manuscript in preparation (Dec 2016-June 2018)	Assistant Professor, Medical College of Wisconsin
Dorothy Shi, MD	Resident Physician, MSBI, Class of 2019	Manuscript under review on Trends and Predictors of ED Admissions for Adult Asthma (Jan 2017-current)	2018-19 Chief Resident, MSBI; 2019-20 Ultrasound Fellow, Northwell
Noah Reichman	Undergraduate	Mount Sinai Summer Undergraduate Research Associate, Emergency Department Asthma Patient-Reported Outcomes (EDAPRO) (6-8/17)	Premedical
Alexis Joseph	Undergraduate	T32 Summer Undergraduate Research Associate, Emergency Department Asthma Patient-Reported Outcomes (EDAPRO) (6-8/17)	Premedical
Megan Johnston	Undergraduate	Mount Sinai Summer Undergraduate Research Associate, Patient-Reported Outcomes for Acute Asthma Care and Treatment (PROAACT) (6- 8/18)	Premedical
Patrick Barkaus	Medical Student	Mount Sinai Summer Undergraduate Research Associate, Patient-Reported Outcomes for Acute Asthma Care and Treatment (PROAACT) (6- 8/18)	Medical Student, CUNY (Class of 2020)
Janice Shin, MD	Resident Physician, MSBI Class of 2019	Research mentor on project analyzing shortages of commonly used ED medications nationally (July 2018-current) accepted for oral presentation at SAEM Annual Meeting 2019	2018-19 Chief Resident, MSBI; 2019-20 Simulation Fellow, NYU
Jacqueline Tin, MD	Resident Physician, Class of 2023	Mount Sinai Resident Research Rotation on shortages of commonly used ED medications nationally (July 2018-current) accepted for oral presentation at SAEM Annual Meeting 2019	Emergency Medicine Resident, Mount Sinai (class of 2021)
Elizabeth Linton, MPH	NHLBI Sickle Cell Diversity Supplement Awardee	Acute care fragmentation in sickle cell disease, (June 2018-present)	NHLBI Sickle Cell Diversity Supplement Awardee
Siri Shastry, MD	NHLBI T32 Emergency Care Research Fellow	Research mentor to on projects analyzing trends and prevalence of medication assisted therapy in EDs (August 2018-present) accepted for oral presentation at SAEM Annual Meeting 2019	NHLBI T32 Emergency Care Research Fellow

ADMINISTRATIVE LEADERSHIP APPOINTMENTS

<u>National</u>		
2009-2013	Delegate representing New York State	Committee

2009-2013	Delegate representing New York State, Committee of Interns and Residents - Led clinician advocacy efforts contributing to passage of New York City-wide Earned Sick Time Act in May 2013, impacting 3.4 million employees
2010-2013	National Health Policy Committee, Emergency Medicine Residents Association
2015-2016	Policy Committee, Academic Emergency Medicine Consensus Conference on Shared Decision-Making, Society for Academic Emergency Medicine (SAEM)

2016-current ACEP Quality and Patient Safety Committee

- Measure Review and Nominations Subcommittees

2016-current

ACEP Alternative Payment Model Task Force

- Contributed key intellectual content to the Acute Unscheduled Care Model, recommended for full implementation to the Dept of Health and Human Services by the Physician-Focused Payment Model Technical Advisory Committee, Sept 20, 2018: aspe.hhs.gov/system/files/pdf/255726/ReportToTheSecretary ACEP 10.20.18.pdf

2017-current

Academy for Women in Academic Emergency Medicine

- National Executive Council Member (2019-current)
- Vice President, Communications (2019-current)
- Co-Chair, AWAEM 10-Year Anniversary Task Force (2018-2019): Led organization and dissemination of commemorative interview series of past AWAEM presidents and members at varying career stages across multiple media platforms (digital, podcast, peer-reviewed research) and initiatives to promote member recruitment and engagement

2018-current

National Quality Forum's Chief Complaint-Based Quality of Emergency Care Committee
- Nominated by ACEP to provide expert input and co-author report on development
and implementation of chief-complaint based quality measures for emergency care

2018-current

ACEP Clinical Resource Review Committee

- Develop the process and criteria for review and approval of externally funded ACEP products, Product Oversight & Review Committee operations, including potential consulting groups, such as ACEP expert panels, coalitions, and sections

2018-current

ACEP Clinical Emergency Data Registry Committee

- Vice Chair and Chair-Elect (2018-current)
- Oversee implementation of first and largest quality and data registry for emergency medicine, including measure development and stewardship, data quality and feedback, and member engagement

2019-current

Co-Chair, Social Emergency Medicine Consensus Conference Planning Committee

 Develop agenda, convene stakeholders and obtain funding for Society of Academic Emergency Medicine 2021 Consensus Conference to advance research, policy, advocacy, and clinical agenda around social emergency medicine

2019-current

ACEP Health Information Technology Summit Executive Steering Committee

- Plan agenda and speakers for inaugural emergency medicine health information technology summit.

Regional

2009-2011 Member, Resident Executive Committee Member, New York State ACEP

Local

2006-2007 Student Representative, Patient, Physician & Society Course Review Panel, Northwestern University

2006-2007 Student Representative, Diversity Committee, MPH Program, Northwestern University 2006-2007 Co-Coordinator, Student-Run Free Clinic, Community Health Center, Chicago, IL

2006-2007 Co-President, Students for Mental Health, Northwestern University School of Medicine

2009-2010 Coordinator, NYU Department of Emergency Medicine Website Development Project

2012-2013 Resident Representative, NYU Emergency Department Quality and Safety Committee

2012-2013 Co-Chair and Founding Member, Bellevue Hospital House Staff Patient Safety Committee

2014-2015 Fellow Advisor, Harvard Affiliated Emergency Medicine Residency Public Health and

Health Services Academy, Harvard Medical School

2016-2017 Department Lead and Committee Liaison, Cost-Effective Testing Initiative

Mount Sinai Beth Israel Hospital, Mount Sinai Downtown Campus

2017-current Director of Performance Measurement and Improvement Initiatives

Department of Emergency Medicine, Mount Sinai Beth Israel

- Develop and lead aggregation, measurement, and feedback on provider time and financial performance metrics (ex. length-of-stay, RVUs, admit rates) for all full-time and part-time MSBI departmental faculty

2018-current

MSBI Diversity and Wellness Initiatives: Led and organized inaugural department-wide women in emergency medicine event and faculty social gathering Department of Emergency Medicine, Mount Sinai Beth Israel

PUBLICATIONS:

Peer-Reviewed Manuscripts (PubMed Bibliography)

- 1. Moriates C, Shah N, Levy A, **Lin MP**, Fogerty R, Arora V. The Teaching Value Workshop. MedEdPORTAL; 2014. Available at: www.mededportal.org/publication/9859
- 2. **Lin MP**, Ma J, Bernard KM, Baugh CW, Weissman JH, Schuur JD. Trends and Patient Predictors of Hospital Admission for Atrial Fibrillation Among U.S. EDs 2006- 2011. Am J Emerg Med. 21 Jul 2016. PubMed PMID: <u>27498917</u>.
- 3. Probst MA, **Lin MP**, Lawrence L, Robey-Gavin E, Pendery L, Strayer R. Survey of Emergency Physicians Regarding Emergency Contraception. Am J Emerg Med. 2016 Jun;34(6):1176-8. PMID: 27073136.
- 4. Maughan B, Meisel Z, Venkatesh AK, **Lin MP**, Perry W, Schuur JD, Pines JM, Kizzie-Gillett C, Vaughan W, Grudzen C. Health Policy and Shared Decision Making in Emergency Care: A Research Agenda. Acad Emerg Med. 15 Sep 2016. PMID: <u>27628463</u>
- 5. Probst MA, McConnell JK, Weiss RE, Laurie AL, Yagapen AN, Lin MP, Caterino JM, Shah MN, Sun BC. Estimating the total cost of care for Emergency Department Syncope patients: A comparison of three cost estimation models. West J Emerg Med, 2017 Feb;18(2):253-257. PMID: 28210361
- 6. **Lin MP**, Nguyen T, Probst MA, Richardson LD, Schuur JD. Emergency Physician Knowledge, Attitudes and Behavior regarding ACEP's Choosing Wisely Recommendations: A Survey Study. Acad Emerg Med, 2017 Jun;24(6):668-675. PMID: <u>28164409</u>
- Lin MP, Probst MA, Puskarich MA, Dehon E, Kuehl DR, Wang RC, Hess EP, Butler K, Runyon MS, Wang H, Courtney DM, Muckley B, Hobgood CD, Hall CL, Kline JA. Improving perceptions of empathy in patients undergoing low-yield computerized tomographic imaging in the emergency department. Patient Educ Couns. 2017 Nov 22. pii: S0738-3991(17)30635-3. doi: 10.1016/j.pec.2017.11.012. PMID: 29173841.
- 8. **Lin MP**, Blanchfield BB, Kakoza RM, Price C, Vaidya V, Goldner JS, Higgins M, Lessenich E, Laskowski K, Schuur JD. ED-Based Care Coordination Reduces Cost for Frequent Users. American Journal of Managed Care. 2017 Dec;23(12):762-766. PMID: 29261242
- 9. **Lin MP**, Muhlestein DB, Wiler J, Richardson LD, Carr B, Schuur JD. Engagement of Accountable Care Organizations in Acute Care Redesign: Results of a National Survey. Journal of General Internal Medicine, 2018 June. PMID: 29948805.
- 10. **Lin MP**, Baker O, Richardson LD, Schuur JD. Trends in Emergency Department Visits and Patient Characteristics, 2006-2014. JAMA Intern Med. 2018 Oct 15. doi: 10.1001/jamainternmed.2018.4725. [Epub ahead of print] PubMed PMID: 30326057.
 - Nominated for 2018 AWAEM Outstanding Research Publication Award. Altmetric impact score in the 99th percentile among over 12 million research outputs across all disciplines, including non-biomedical research as per: https://jamanetwork.altmetric.com/details/49724159).
- 11. Lin MP, Natsui S, Sinnette C, Ball A, Weissman J, Schuur JD. Facilitators and Barriers to Reducing Emergency Department Admissions for Patients with Chest Pain. Crit Pathw Cardiol. 2018 Dec;17(4). doi: 10.1097/HPC.0000000000000145. PubMed PMID: 30418250.
- 12. **Lin MP**, Lall M, Samuels-Kalow M, Das D, Linden J, Perman S, Chang A, Agrawal P. The Impact of Women-Focused Professional Organizations on Career Advancement and Retention. Acad Emerg Med, 20 Jan 2019. Epub ahead of print. PMID: 30667132.
- 13. Kline, JA, Lin MP, Hall CL, Puskarich MA, Dehon E, Kuehl DR, Wang RC, Hess EP, Runyon MS,

- Wang H, Courtney DM. Perceptions of empathy and trust of emergency physicians by patients undergoing low value computerized tomographic imaging in the emergency department. In press, Journal of Patient Experience, 2019.
- 14. **Lin MP**, MacDonald LQ, Jin J, Reddy A. Effects of Enhanced Access and Continuity on Quality in the Comprehensive Primary Care Initiative. *Under review*.
- 15. **Lin MP**, Vargas-Torres C, Schuur JD, Shi D, Wisnivesky J, Richardson LD. Trends and Predictors of Hospitalization for Asthma after Adult Emergency Department Visits. *Under review*.
- 16. **Lin MP**, Baker O, Richardson LD, Schuur JD. Trends in ED Admission Rates Vary by Condition, 2006-2014. *Under review*.

Non-Peer Reviewed Publications

- 1. **Lin MP**, Schuur JD. "A Cost-Effective Way to Manage Recurrent Renal Colic." ACEP Now, Volume 33:1. January 2014. Available at: http://www.acepnow.com/article/cost-effective-way-evaluate-patients-recurrent-renal-colic/
- 2. Schuur JD, **Lin MP**. "Avoid the Foley to Improve Patient Comfort and Cost." ACEP Now, Volume 33:2. February 2014. Available at: http://www.acepnow.com/article/avoid-foley-catheters-improve-ed-patients-comfort-reduce-costs/
- 3. Lin MP, Schuur JD. "A High-Value Diagnostic Approach to Low Back Pain." ACEP Now, Volume 33:3. March 2014. Available at: http://www.acepnow.com/article/high-value-diagnostic-approach-low-back-pain/
- 4. **Lin MP**, Schuur JD. "Stop the Coagulation Testing Cascade." ACEP Now, Volume 33:5. May 2014. Available at: http://www.acepnow.com/article/emergency-physicians-can-reduce-unnecessary-coagulation-testing-patients-chest-pain/
- 5. **Lin MP**, Schuur JD. "Blood Culture Testing: Send Selectively to Reduce Cost and Medico-Legal Risk." ACEP Now, Volume 33:9. September 2014. Available at: http://www.acepnow.com/article/blood-culture-testing-send-samples-selectively-lower-costs-medico-legal-risk/3/
- 6. Lin MP. "How the ACA Impacted ED Visits." Guest contribution Policy Prescriptions. September 12, 2016. Available at: http://www.policyprescriptions.org/how-the-aca-impacted-emergency-room-visits/
- 7. **Lin MP**, Schuur JD. "Simplifying ED Sinusitis Care." ACEP Now, Volume 35:10. October 2016. Available at: http://www.acepnow.com/article/emergency-department-sinusitis-care-simplified/
- 8. **Lin MP.** "Narrow Networks Keep Costs Low." Policy Prescriptions: Evidence-Based Health Policy. December 19, 2016. Available at: http://www.policyprescriptions.org/narrow-networks-keep-costs-low/
- 9. **Lin MP.** "Global Budget Cuts Costs but Reduces Access." Policy Prescriptions: Evidence-Based Health Policy. June 12, 2017. Available at: http://www.policyprescriptions.org/global-budget-cuts-costs-but-reduces-access/
- 10. **Lin MP.** "Medicaid Expansion Cuts Hospital Closures." Policy Prescriptions: Evidence-Based Health Policy. April 28, 2018. Available at: http://www.policyprescriptions.org/medicaid-expansion-cuts-hospital-closures/
- 11. **Lin MP**. "Employer-Sponsored Insurance Mirrors Overall Health Spending." Policy Prescriptions: Evidence-Base Health Policy. December 20, 2018. Available at: http://www.policyprescriptions.org/esi-mirrors-overall-health-spending/

Book Chapters

1. **Lin MP**. "Access to Care: Systems-Based Issues." Emergency Medicine Advocacy Handbook, 2nd ed. Chapter 2, pages 23-27. Emergency Medicine Resident Association. Irving, TX, 2013.

INVITED LECTURES/PRESENTATIONS

National

- 1. "Advancing the Stewardship Competency in Physician Training." American Board of Internal Medicine Foundation Meeting, Philadelphia, PA. November 1, 2013. Invited presentation showcasing award-winning Cost-Conscious Care curriculum for >100 attendees.
- 2. "Bringing the Triple Aim into Your Practice: Educating for Quality and Value." Association of American Medical Colleges Annual Meeting, Philadelphia, PA. November 2, 2013. Invited presentation showcasing award-winning Cost-Conscious Care curriculum for >200 attendees.
- 3. "Teaching Emergency Medicine Residents to Choose Wisely: Incorporating Cost-Conscious Practices into Training." Society for Academic Emergency Medicine Annual Meeting, May 2014. Invited presentation showcasing award-winning Cost-Conscious Care curriculum.
- 4. "Teaching Value in Emergency Medicine: A Resident-Based Educational Initiative." Educational Innovation. Society for Academic Emergency Medicine Annual Meeting, May 2014.
- 5. "Improving Post-ED Acute Care." Lion's Den. Society for Academic Emergency Medicine Annual Meeting, May 14, 2015. Invited after competitive application process to "pitch" research idea to senior clinician-investigators. Awarded seed funding and mentorship by Dr. Judd Hollander.
- 6. "Price Transparency in Emergency Care: Current Research and Future Opportunities." Society for Academic Emergency Medicine Annual Meeting, San Diego, CA. May 15, 2015.
- 7. "Alternative Payment Models for Emergency Care." Clinical Decision Making in Emergency Medicine Conference, Ponte Vedra, FL. June 25, 2017. Invited presentation for >200 attendees.
- 8. "Health Policy and Research Jeopardy." Indiana University Grand Rounds and Visiting Professor Series, Indianapolis, IN. March 15, 2018.
- 9. "Career Choices I've Made and Things I Wish I'd Known" Indiana University Grand Rounds and Visiting Professor Series, Indianapolis, IN. March 15, 2018.
- 10. "Mentoring Up and Across: Strategies for Success with Busy Mentors." Society for Academic Emergency Medicine Annual Meeting, Indianapolis, IN. May 16, 2018.
- 11. "Engaging Early-Career Physicians in Specialty Certification and Professional Leadership." American Board of Medical Specialties Annual Conference, Las Vegas, NV. September 25, 2018. Invited presentation for >100 attendees.
- 12. "Assessing Assessment: Exploring Impact and Improvement Opportunities." Invited Moderator for 2017-2018 ABMS Visiting Scholar Presentations. American Board of Medical Specialties Annual Conference, Las Vegas, NV. September 24, 2018.
- 13. "Too Much, Too Little, or Just Right: A New Perspective on Variation in Emergency Care." Accepted for Society for Academic Emergency Medicine Annual Meeting. May 17, 2019.
- 14. "Engagement in QI, Research and Certification from the Early-Career Academic Physician Perspective." American Board of Medical Specialties Annual Conference, Chicago, IL. September, 2019.
- 15. Invited Moderator for 2017-2018 ABMS Visiting Scholar Presentations. American Board of Medical Specialties Annual Conference, Chicago, IL. September, 2019.

Regional

- 1. "The Future of Emergency Care: Impact of Health Policy Reform." New York University School of Medicine, New York, NY. April 26, 2016.
- 2. "Emergency Medicine in an Evolving Health Care System." System-Wide Innovations in Research and Training. Icahn School of Medicine at Mount Sinai, Hatch Auditorium. July 13, 2016.
- "Alternative Payment Models for Emergency Medicine." Mount Sinai Queens Hospital, Queens, NY. May 25, 2017.
- 4. "Choosing Wisely, Better, Faster and More Consciously." Keynote Speaker. New York ACEP Resident Research Conference, November 8, 2017.

- 5. "Emergency Medicine 2027: How You'll Deliver Care and Get Paid in 10 Years." Grand Rounds. Mount Sinai Health System-Wide Conference. Mount Sinai Beth Israel, Podell Auditorium. November 29, 2017.
- 6. "Leveraging Technology to Transform Acute Care." Grand Rounds. Technological Advances in Emergency Medicine. Mount Sinai Health System-Wide Conference. Mount Sinai Beth Israel, Podell Auditorium. November 14, 2018.
- 7. "Building a Career Bridging Health Policy and Academia." Invited Keynote Speaker for Medical School-Wide Undergraduate Health Policy Day. Icahn School of Medicine at Mount Sinai. April 11, 2019.

Peer-Reviewed Abstracts and Poster Presentations

- Lin MP. "Community Health Education and Lifestyle Intervention Project: A Needs Assessment." Field Experience. Community Health Clinic. Department of Preventive Medicine, Northwestern University, Chicago, IL. July 2006.
- 2. **Lin MP**, Osgood R. "A Successful Partnership between Medical Students and a Local Community Clinic." Presented at Loyola University Stritch School of Medicine, Chicago, IL. June 24, 2007.
- 3. **Lin MP**. "Pediatric Emergency Department Utilization: A Descriptive Analysis and 3-Decade Comparison from 1975 to 2005." MPH Culminating Experience, Northwestern University, Chicago, IL. May 8, 2009.
- 4. McCormack R, Lin MP, Brane L, Raven M. "Targeting Screening for Unhealthy Drinking." Presented at the Association for Medical Education and Research in Substance Abuse (AMERSA) National Conference in Bethesda, MD, Nov 4, 2010.
- Lin MP, Laskowski L, Sharma R, Gang M, Lutinger I, Seth R, Manley-Cullen C, Femia R. "Emergency Department Laboratory Testing Utilization Intervention." NYU Langone Medical Center Quality and Safety Day, New York, NY. May 30, 2013.
- 6. Margolis N, Ambrosino M, Baron S, Hiruma M, **Lin MP**. "House Staff Patient Safety Council: Badge Buddies for Adverse Event Reporting." AAMC Integrating Quality Meeting, Chicago, IL. June 7, 2013.
- 7. Schuur JD, Ma J, Baker O, Baugh C, Bernard KB, Greenwood-Ericksen M, Havens J, **Lin MP**, Weissman JS. "Variation in Hospital Admissions after ED visits, Massachusetts 2010-2011." Society for Academic Emergency Medicine Annual Meeting, Dallas, TX. May 15, 2014.
- 8. **Lin MP**, Ma J, Bernard KM, Baugh CW, Weissman JH, Schuur JD. "Trends and Patient Predictors of Hospital Admission for Atrial Fibrillation Among U.S. EDs 2006- 2010." Society for Academic Emergency Medicine Annual Meeting, Dallas, TX. May 16, 2014.
- 9. Lin MP, Ma J, Bernard KM, Baugh CW, Weissman JH, Schuur JD. "Variation and Predictors of Admission for Atrial Fibrillation After ED Visits Among U.S. Hospitals 2010." Society for Academic Emergency Medicine Annual Meeting, Dallas, TX. May 15, 2014. Also presented at the European Society of Emergency Medicine Annual Meeting, Chicago, IL. October 2014.
- 10. **Lin MP**, Schuur JD. "Utilization of Cardiac Enzyme Testing and Relationship to Acute Coronary Syndromes in U.S. Emergency Departments, 2005-2010." American College of Emergency Physicians Scientific Assembly, Chicago, IL. October 28, 2014.
- 11. **Lin MP**, Weissman J, Sinnette C, Greenwood Ericksen M, Bernard KR, Ma J, Schuur JD. "Prioritizing Conditions for Which to Compare ED Admission Rates." American College of Emergency Physicians Scientific Assembly, October 28, 2014.
- 12. **Lin MP**, Lessenich E, Goldner J, Higgins M, Schuur JD. "Effectiveness of a Community Health Worker Intervention to Improve Quality and Reduce Costs for Frequent ED Users." American College of Emergency Physicians Scientific Assembly, Boston, MA. October 26, 2015.
- 13. **Lin MP,** Sinnette C, Ball A, Schuur JD. "Identifying Best Practices and Barriers to Improving Admissions for ED Patients with Chest Pain." American College of Emergency Physicians Scientific Assembly, Boston, MA. October 26, 2015.

- 14. Lin MP, Nguyen T, Richardson LD, Schuur JD. "Emergency Physician's Attitudes and Knowledge of ACEP's Choosing Wisely Recommendations." Oral presentation for Society of Academic Emergency Medicine Annual Meeting, New Orleans, LA on May 10, 2016 and poster presentation for Academy Health Annual Research Meeting Quality and Value Interest Group, Boston, MA on June 25, 2016.
- 15. **Lin MP,** Richardson LD, Schuur JD, Ward MJ. "A Cost Analysis of ACEP's Choosing Wisely Recommendation to Reduce ED Imaging for Non-Traumatic Back Pain." American College of Emergency Physicians Scientific Assembly, Las Vegas, NV. October 17, 2016.
- 16. Lin MP, Probst MA, Hall C, Neumann D, Butler K, Runyon M, Hess E, Kuehl D, Puskarich M, Dehon E, Wang R, Kline JA. "Patient Perceptions of Physician Empathy among ED Patients Undergoing CT Imaging." Society for Academic Emergency Medicine Annual Meeting, Orlando, FL, May 16, 2017.
- 17. Muckley B, Hall C, Kline JA, Hobgood C, Neumann D, Butler K, Hess E, **Lin MP**, Kuehl D, Puskarich M, Wang R, Mohammed M. "Empathy to Reduce Anticipated Negative CT Scanning: ETRACT." Society for Academic Emergency Medicine Annual Meeting, Orlando, FL, May 17, 2017.
- 18. **Lin MP**, Glocka P, Richardson LD, Schuur JD, Probst MA, Sun BC, Ward MJ. "A Cost Analysis of ACEP's Choosing Wisely Recommendation to Reduce Head CT for ED Patients with Syncope." Society for Academic Emergency Medicine Annual Meeting, Orlando FL. May 2017.
- 19. Lin MP, Schuur JD, Pines JM, Richardson LD. Anticipated Impact of Alternative Payment Models for Emergency Medicine. ACEP Scientific Assembly, Washington, D.C., October 30, 2017.
- 20. **Lin MP**, Richardson LD, Carr B, Asplin B, Wiler J, Schuur JD. Acute Care Redesign and Alternative Payment for Emergency Medicine within Accountable Care Organizations: A Qualitative Study. ACEP Scientific Assembly, Washington, D.C. October 30, 2017.
- 21. Schuur JD, Lin MP, Muhlestein DB. Engagement of Accountable Care Organizations in Acute Care Redesign: Results of a National Survey. Annals of Emergency Medicine 70(4):S171. Presented at ACEP Scientific Assembly, Washington, DC, October 30, 2017.
- 22. Lin MP, Vargas-Torres C, Shi D, Wisnivesky J, Schuur JD, Richardson LD. National Trends and Predictors of ED Admission for Adult Asthma Patients 2011-2014. Society for Academic Emergency Medicine Annual Meeting, Indianapolis, IN, May 16, 2018.
- 23. Casey M, Richardson LD, Weinstock M, Lin MP. Cost Variation and Association with Revisits among Emergency Department Visits for Asthma. Society for Academic Emergency Medicine Annual Meeting, Indianapolis, IN, May 16, 2018.
- 24. **Lin MP**, Jin J. Trends in Empanelment, Risk Stratification and Care Management Among Comprehensive Primary Care (CPC) Practices, 2013-2016. AcademyHealth Annual Research Meeting, Seattle, WA, June 25, 2018.
- 25. Lin MP, Richardson LD, Schuur JD. Decrease in Emergency Department Admission Rates Driven by High-Variation, ED-Sensitive Conditions 2006-2014. AcademyHealth Annual Research Meeting, Seattle, WA, June 25, 2018.
- 26. Lin MP, Maughan BC, Medford-Davis L, Harish N, Schuur JD, Richardson LD. Potential Cost-Savings from Reducing Variation in ED Admission Rates Differ by Payer. ACEP Scientific Assembly, October 1, 2018.
- 27. Lin MP, Lall M, Samuels-Kalow M, Das D, Linden J, Perman S, Chang A, Agrawal P. The Impact of Women-Focused Professional Organizations on Career Advancement and Retention. Accepted for poster presentation at Society for Academic Emergency Medicine Annual Meeting, Las Vegas, NV. May, 2018.
- 28. Shastry S, Lin MP. U.S. ED Opioid-Related Visits Increase, While ED Utilization of Medications for Opioid Use Disorder Remains Low, 2011-2016. Accepted for oral presentation at Society for Academic Emergency Medicine Annual Meeting, Las Vegas, NV. May, 2018.
- 29. Tin J, Shin J, Richardson LD, Schuur JD, Lin MP. The Top 20 Most Frequently Used ED Medications were on Shortage within the Past Year. Accepted for oral presentation at Society for Academic Emergency Medicine Annual Meeting, Las Vegas, NV. May, 2018.

Report of Local Teaching and Presentations

- 1. "Valvular Disorders." Department of Emergency Medicine, NYU Medical Center. August 10, 2010.
- 2. "The Affordable Care Act: What It Means and Why You Should Care." Department of Emergency Medicine, NYU Medical Center. October 17, 2012.
- 3. "Cost-Conscious Care: An Introduction to the Why and How of Evidence-Based Decision-Making." Department of Emergency Medicine, NYU Medical Center. February 6, 2013.
- 4. "The Impact of Health Care Reform on Emergency Medicine." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. November 18, 2015.
- 5. "Post-Partum and Late Pregnancy Emergencies, Part 1." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. June 22, 2016.
- 6. "Cost-Effective Diagnostic Testing." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. August 10, 2016.
- 7. "Controversy Rounds: Pan-CT vs. Selective CT." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. September 21, 2016.
- 8. "Post-Partum and Late Pregnancy Emergencies, Part 2." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. September 28, 2016.
- 9. "Controversy Rounds: tPA for Acute Stroke after 3 hours and Platelet Transfusion for Intracranial Hemorrhage." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. November 30, 2016.
- 10. "Research and Health Policy in Emergency Medicine." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. March 1, 2017.
- 11. "Prevalence of Pulmonary Embolism among Syncope Patients and Value of Age-Adjusted D-Dimer Testing." Journal Club. Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. April 19, 2017.
- 12. "Evidence on Fluid Resuscitation and Bundled Care in Sepsis." Journal Club. Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. December 20, 2017.
- 13. "Peripartum Emergencies." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. January 24, 2018.
- 14. "Literature Watch: Recent Evidence in ED Analgesia" Department of Emergency Medicine, Mount Sinai Hospital, New York, NY. April 25, 2018.
- 15. "Controversy Rounds: Steroids for Pneumonia & Outpatient Management of Pulmonary Embolism." Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. June 27, 2018.
- 16. "Chest Pain Risk Stratification, Diagnostic Testing, and Disposition." Journal Club. Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY, December 12, 2018.
- 17. "Telehealth: Current Trends and Future Directions." Department of Emergency Medicine, Mount Sinai Hospital, New York, NY. January 16, 2019.
- 18. "Suicide Risk Assessment and Initiating Anticoagulation Therapy for Atrial Fibrillation." Journal Club. Department of Emergency Medicine, Mount Sinai Beth Israel, New York, NY. May 1, 2019.

Media Resource Educational Materials

- 1. "House Staff Patient Safety Council: Badge Buddies for Adverse Event Reporting." MedEdPORTAL 2013. Available at: https://www.mededportal.org/icollaborative/resource/791
- 2. AWAEM Anniversary Interviews: 10 Years of Progress Kathy Clem, MD. March 26, 2019. Podcast available at: https://feminem.org/podcast/awaem-anniversary-interviews-10-years-of-progress-kathy-clem-md/ and https://saem.org/awaem/education/awaem-anniversary-interviews---10-years-of-progress
- 3. AWAEM Anniversary Interviews: 10 Years of Progress Sheryl Heron, MD. April 2, 2019. Podcast available at: https://feminem.org/podcast/awaem-anniversary-interviews-10-years-of-progress-

- sheryl-heron-md/ and http://saem.org/awaem/education/awaem-anniversary-interviews---10-years-of-progress
- 4. AWAEM Anniversary Interviews: 10 Years of Progress Michelle Lall, MD, MHS. April 9, 2019. Podcast available at: https://feminem.org/podcast/awaem-anniversary-interviews-10-years-of-progress and https://saem.org/awaem/education/awaem-anniversary-interviews---10-years-of-progress
- 5. AWAEM Anniversary Interviews: 10 Years of Progress Tracy Sanson, MD, FACEP. April 18, 2019. Podcast available at: https://feminem.org/podcast/awaem-anniversary-interviews-10-years-of-progress and https://saem.org/awaem/education/awaem-anniversary-interviews---10-years-of-progress
- 6. AWAEM Anniversary Interviews: 10 Years of Progress Elizabeth Goldberg, MD, ScM, FACEP. April 23, 2019. Podcast available at: https://feminem.org/podcast/awaem-anniversary-interviews--10-years-of-progress-elizabeth-goldberg-md-scm-facep/ and https://saem.org/awaem/education/awaem-anniversary-interviews---10-years-of-progress
- 7. AWAEM Anniversary Interviews: 10 Years of Progress Stephanie Abbuhl, MD, FACEP. April 30, 2019. Podcast available at: https://feminem.org/2019/04/30/awaem-anniversary-interviews-10-years-of-progress and https://saem.org/awaem/education/awaem-anniversary-interviews---10-years-of-progress
- 8. AWAEM Anniversary Interviews: 10 Years of Progress Esther Choo, MD, MPH. May 7, 2019. Podcast available at: https://feminem.org/podcast/awaem-anniversary-interviews-10-years-of-progress

<u>Invited Media Appearances</u>

- 1. Invited speaker at press conference regarding impact of proposed Medicaid cuts on NYC HHC hospitals. October 29, 2011. Archived at: http://www.cirseiu.org/2011/10/29/cir-doctors-speak-out-at-htc-press-conference-against-medicaid-cuts/
- 2. Invited speaker at joint press conference of NYC Paid Sick Days coalition and NY City Councilmembers Gale Brewer and Rosie Mendez. Archived at: http://cir.seiu.org/page/s/psd
- 3. Featured testimony: Dr. Michelle Lin. NYC Paid Sick Days coalition. Archived at: http://nycforpaidsickdays.org/people/testifiers/dr-michelle-lin/
- 4. Keeping it in the Community: Review of Lin, MP et al. AJMC 2018. Policy Prescriptions® and the Emergency Medicine Residents' Association Health Policy Journal Club. June 2018. Available at: http://www.policyprescriptions.org/
- 5. "Lin Session: Choosing Wisely." EM:RAP June 2018: Section 9. Available at: https://www.emrap.org/episode/emrap2018june/linsession
- 6. Urgent Matters Podcast. June 2018. Available at: https://smhs.gwu.edu/urgentmatters/tools-and-education/podcasts
- 7. "Trends in Emergency Department Visits and Admission Rates." Live Interview with Mount Sinai Health System Media. October, 2018. Available at: https://www.youtube.com/watch?v=U3fyscdXL6k&feature=youtu.be
- 8. "Should you get the flu shot? What to know about the 2018-19 flu season." Quoted by Madeline Farber, Fox News Digital. October 18, 2018. Available at: https://www.foxnews.com/health/should-i-get-the-flu-shot-what-to-know-about-the-2018-19-flu-season
- 9. "How to avoid getting burned at the emergency room this Thanksgiving." Interview by Nicole Lyn Pesce. MarketWatch.com. November 16, 2018. Available at: https://www.marketwatch.com/story/how-to-avoid-getting-burned-at-the-emergency-room-this-thanksgiving-2018-11-16
- 10. "Shingles: What It Is, Who Should Get Vaccinated, and Why the Shortage Matters." CBS-NY Live Television Interview by Valerie Castro. January 7, 2019. Available at: https://newyork.cbslocal.com/video/4005546-doctor-discusses-shortage-of-shingles-vaccine/ and https://www.youtube.com/watch?v=QuXQ1cy9 pU

11. "Shingles vaccine shortage a concern in midst of government shutdown." Text quotes from audio interview by Kristin Toussaint. Metro New York. January 8, 2019. Available at: https://www.metro.us/news/local-news/new-york/shingles-vaccine-shortage-government-shutdown-schumer