



HSPR  
TALKS

June 28, 2022  
1:00pm-2:00pm EDT

# WEBINAR

## ARTICLES OF THE YEAR (2021 & 2022)



### DR. RACHEL D. SAVAGE

#### 2021 ARTICLE OF THE YEAR

*"Evaluation of a Common Prescribing Cascade of Calcium Channel Blockers and Diuretics in Older Adults with Hypertension"*



### DR. FENG XIE

#### 2022 ARTICLE OF THE YEAR

*"Economic Analysis of Mobile Integrated Health Care Delivered by Emergency Medical Services Paramedic Teams"*

**Moderated by Rick Glazier, CIHR-IHSPR & Maggie Keresteci, CAHSPR**



# HSPR TALKS

## AGENDA

**13:00-13:15**

**Opening remarks and Introductions**

*Dr. Rick Glazier and Ms. Maggie Keresteci*

**13:15-13:35**

**AOTY 2021: “Evaluation of a common prescribing cascade of calcium channel blockers and diuretics in older adults with hypertension”**

*Presented by Dr. Rachel Savage*

**Audience Q&A**

*Moderated by Dr. Rick Glazier*

**13:35-13:55**

**AOTY 2022: “Economic analysis of mobile integrated health care delivered by emergency medical services paramedic teams”**

*Presented by Dr. Feng Xie*

**Audience Q&A**

*Moderated by Ms. Maggie Keresteci*

**13:55-14:00**

**Closing Remarks**

*Dr. Rick Glazier*



# HSPR TALKS

## ABOUT THE SPEAKERS



**DR. RACHEL D. SAVAGE**  
**2021 ARTICLE OF THE YEAR**

Rachel Savage, PhD is a Scientist at Women's Age Lab and Women's College Research Institute, Women's College Hospital, an Adjunct Scientist at ICES, and an Assistant Professor at the Institute of Health Policy, Management and Evaluation, University of Toronto. At Women's Age Lab, Dr. Savage leads research focused on promoting social connectedness in older adults and supporting aging in place. She is the principal investigator of a national study, funded by the Canadian Institutes of Health Research, that evaluates how loneliness in older adults impacts the health system. She also collaborates on research that aims to optimize drug treatments in older adults.



**DR. FENG XIE**  
**2022 ARTICLE OF THE YEAR**

Dr. Feng Xie is Professor in the Department of Health Research Methods, Evidence, and Impact (formerly Clinical Epidemiology and Biostatistics) and Centre for Health Economics and Policy Analysis (CHEPA) at McMaster University. His research interests include health technology assessment (HTA), economic evaluations, patient-reported outcome measures, and health utility measures. Dr. Xie has been leading numerous HTAs and economic evaluations to support Canadian federal and provincial reimbursement decision making. Dr. Xie is currently an associate editor of Medical Decision Making. Dr. Xie was a recipient of CIHR New Investigator Award and the Career Scientist Award from Ontario Ministry of Health and Long-Term Care.





# HSPR TALKS

## ABOUT THE MODERATORS



**RICK GLAZIER**

**SCIENTIFIC DIRECTOR, CIHR-IHSPR**

Dr. Rick Glazier is Scientific Director of the Institute of Health Services and Policy Research at the Canadian Institutes of Health Research (CIHR) and a Senior Core Scientist at ICES. He is also a staff family physician at St. Michael's Hospital in Toronto and a Scientist in its Centre for Urban Health Solutions, a Professor at the University of Toronto in the Department of Family and Community Medicine, Faculty of Medicine, and Dalla Lana School of Public Health. His research interests include evaluating health system transformation, primary care health services delivery models, health of disadvantaged populations, management of chronic conditions, and population-based and geographic methods for improving equity in health.



**MAGGIE KERESTECI**

**EXECUTIVE DIRECTOR, CAHSPR**

Maggie Keresteci is the Executive Director at CAHSPR. After leadership roles at the Canadian Institute for Health Information and the Canadian Partnership Against Cancer Maggie went on to provide senior leadership for health system programs and knowledge translation at the Ontario Medical Association, where she was also responsible for engagement of a diverse membership of 30,000 physicians. She is an active participant in many provincial and pan-Canadian advisory panels, providing strategic advice on achieving integration in the health system, including insights about the importance of patient, caregiver and family partnership in research, co-design of care and clinical interactions. She is the essential caregiver to two family members and is also a Board director with Emily's House, Toronto's only paediatric hospice.



# ABSTRACT: 2021 ARTICLE OF THE YEAR

## EVALUATION OF A COMMON PRESCRIBING CASCADE OF CALCIUM CHANNEL BLOCKERS AND DIURETICS IN OLDER ADULTS WITH HYPERTENSION

Rachel D. Savage RD, Jessica D. Visentin, Susan E. Bronskill, Xuesong Wang, Andrea Gruneir, Vasily Giannakeas, Jun Guan, Kenneth Lam, Miles J. Luke, Stephanie H. Read, Nathan M. Stall, Wei Wu, Lynn Zhu, Paula A. Rochon, Lisa M. McCarthy.

**Importance:** Calcium channel blockers (CCBs) are commonly prescribed agents for hypertension that can cause peripheral edema. A prescribing cascade occurs when the edema is misinterpreted as a new medical condition and a diuretic is subsequently prescribed to treat the edema. The extent to which this prescribing cascade occurs at a population level is not well understood.

**Objective:** To measure the association between being newly dispensed a CCB and subsequent dispensing of a loop diuretic in older adults with hypertension.

**Design, Setting, and Participants:** A population-based cohort study was performed using linked health administrative databases of community-dwelling adults 66 years or older with hypertension and new prescription drug claims from September 30, 2011, to September 30, 2016, in Ontario, Canada. The dates of analysis were September 1, 2018, to May 30, 2019.

**Exposures:** Individuals who were newly dispensed a CCB were compared with the following 2 groups: (1) individuals who were newly dispensed an angiotensin-converting enzyme inhibitor or angiotensin II receptor blocker and (2) individuals who were newly dispensed an unrelated medication.

**Main Outcomes and Measures:** Hazard ratios (HRs) with 95% CIs were estimated for individuals who were dispensed a loop diuretic within 90 days of follow-up using Cox proportional hazards regression models.

**Results:** The cohort included 41 086 older adults ( $\geq 66$  years) with hypertension who were newly dispensed a CCB, 66 494 individuals who were newly dispensed another antihypertensive medication, and 231 439 individuals who were newly dispensed an unrelated medication. At index (ie, the dispensing date), the mean (SD) age was 74.5 (6.9) years, and 191 685 (56.5%) were women. Individuals who were newly dispensed a CCB had a higher cumulative incidence at 90 days of being dispensed a loop diuretic than individuals in both control groups (1.4% vs 0.7% and 0.5%,  $P < .001$ ). After adjustment, individuals who were newly dispensed a CCB had increased relative rates of being dispensed a loop diuretic compared with individuals who were newly dispensed an angiotensin-converting enzyme inhibitor or angiotensin II receptor blocker (HR, 1.68; 95% CI, 1.38-2.05 in the first 30 days after index [days 1-30]; 2.26; 95% CI, 1.76-2.92 in the subsequent 30 days [days 31-60]; and 2.40; 95% CI, 1.84-3.13 in the third month of follow-up [days 61-90]) and individuals who were newly dispensed unrelated medications (HR, 2.51; 95% CI, 2.13-2.96 for 1-30 days after index; 2.99; 95% CI, 2.43-3.69 for 31-60 days after index; and 3.89; 95% CI, 3.11-4.87 for 61-90 days after index). This association persisted, although slightly attenuated, from 90 days to up to 1 year of follow-up and when restricted to a subgroup of individuals who were newly dispensed amlodipine.

**Conclusions and Relevance:** Many older adults with hypertension who are newly dispensed a CCB subsequently receive a loop diuretic. Given how widely CCBs are prescribed, interventions are needed to raise clinicians' awareness of this common prescribing cascade to reduce the prescribing of potentially unnecessary medications that may cause harm.

**Citation:** Savage RD, Visentin JD, Bronskill SE, et al. Evaluation of a Common Prescribing Cascade of Calcium Channel Blockers and Diuretics in Older Adults With Hypertension. *JAMA Intern Med.* 2020;180(5):643-651. doi:10.1001/jamainternmed.2019.7087



# ABSTRACT: 2022 ARTICLE OF THE YEAR

## ECONOMIC ANALYSIS OF MOBILE INTEGRATED HEALTH CARE DELIVERED BY EMERGENCY MEDICAL SERVICES PARAMEDIC TEAMS

Feng Xie, Jiajun Yan, Gina Agarwal, Richard Ferron

**Importance:** Mobile integrated health care (MIH) is a new model of community-based health care to provide on-site urgent or nonurgent care. Niagara emergency medical services (NEMS) started MIH in 2018 to serve the Niagara region of Ontario, Canada. However, its economic impact is unknown.

**Objective:** To compare time on task and cost between MIH and ambulance delivered by NEMS from a public payer's perspective.

**Design, Setting, and Participants:** This economic evaluation was an analysis of the NEMS databases regarding responses to emergency calls by the NEMS from 2016 to 2019. Emergency calls serviced by MIH in 2018 to 2019 were used as an intervention cohort. Propensity score matching was used to identify a 1:1 matched cohort of calls serviced by regular ambulance response for the same period and 2 years prior. Statistical analyses were performed from January to April 2020.

**Exposures:** MIH compared with matched ambulance services.

**Main Outcomes and Measures:** The main outcomes were the time on task (including time on scene and time at hospital) and costs. Costs were calculated in 2019 Canadian dollars using cost per minute and compared with the 3 ambulance cohorts.

**Results:** In 2018 to 2019, there were 1740 calls serviced by MIH for which a matched ambulance cohort was identified for the same period and 2 years prior. The mean (SD) time on task was 72.7 (51.0) minutes for MIH, compared with 84.1 (52.0) minutes, 84.3 (54.1) minutes, and 79.4 (42.0) minutes for matched ambulance in 2018 to 2019, 2017 to 2018, and 2016 to 2017, respectively. Of calls serviced by MIH, 498 (28.6%) required ED transport (ie, after MIH team assessment, transport to ED was deemed to be necessary or demanded by the patient), compared with 1300 (74.7%) calls serviced by ambulance in 2018 to 2019, 1294 (74.4%) in 2017 to 2018, and 1359 (78.1%) in 2016 to 2017. The mean (SD) total cost per 1000 calls was \$122 760 (\$78 635) for MIH compared with \$294 336 (\$97 245), \$299 797 (\$104 456), and \$297 269 (\$81 144) for regular ambulance responses in the 3 matched cohorts, respectively.

**Conclusions and Relevance:** Compared with regular ambulance response, MIH was associated with a substantial reduction in the proportion of patients transported to the ED, leading to a substantial saving in total costs. This finding suggests that the MIH model is a promising and viable solution to meeting urgent health care needs in the community, while substantially improving the use of scarce health care resources.

**Citation:** Xie F, Yan J, Agarwal G, Ferron R. Economic Analysis of Mobile Integrated Health Care Delivered by Emergency Medical Services Paramedic Teams. *JAMA Netw Open*. 2021;4(2):e210055. doi:10.1001/jamanetworkopen.2021.0055