


Webinar Series  
November 7,  
2018



**FRAMING-LTC: Frailty and Recognizing  
Appropriate Medications IN Geriatrics and  
Long-Term Care**

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**Canadian  
Frailty  
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**Réseau canadien  
des soins aux  
personnes fragilisées**

# Welcome



- **Today's webinar will be hosted by CFN's Executive Director: Carol Barrie**
- **Amanda Lorbergs, Manager of Research & KT, will facilitate Q&A session: Please submit your Qs online during presentation**
- **We will answer as many Qs as time permits**



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- **Wednesday, November 21, 2018 at 12 noon ET**

A National Comparison of Intensity of End-of-Life Care in Canada: Defining Changing Patterns, Risk Factors and Targets for Intervention – CFN-funded Core Research Grant Program – Robert Fowler and Andrea Hill, Sunnybrook Research Institute

- **Wednesday, December 5, 2018 at 12 noon ET**

Care of acutely ill older persons living with frailty: Making health care work like a system – CFN-funded Fall Strategic Impact Grant Program – John Hirdes and George Heckman, University of Waterloo



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- **2019 Summer Student Awards and Interdisciplinary Fellowship Program competitions are open**
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# Presenters

## FRAMING-LTC: Frailty and Recognizing Appropriate Medications IN Geriatrics and Long-Term Care



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# FRAMING-LTC: Frailty and Recognizing Appropriate Medications IN Geriatrics and Long-Term Care

Chaim M. Bell, MD, PhD, FRCP(C)

Susan E. Bronskill, PhD

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Canadian Frailty Network Research Webinar  
November 7, 2018



St. Michael's  
Inspired Care.  
Inspiring Science.

# FRAMING-LTC Team

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## PRINCIPAL INVESTIGATORS

**Chaim M. Bell**  
**Susan E. Bronskill**  
**Lianne Jeffs**  
**Colleen J. Maxwell**  
**Andrew M. Morris**

## RESEARCH STAFF

Michael A. Campitelli  
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Andrea Gruneir  
David B. Hogan  
Kate Lapane  
Dallas Seitz  
Gary Teare  
Kednapa Thavorn  
Walter P. Wodchis



# Overview of FRAMING-LTC

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Brought together a diverse group of investigators to explore the relationship between frailty and medication appropriateness in long-term care (LTC) and assisted living.

- Multiple methods
- 4 “highly qualified personnel” (trainees)
  - University of Waterloo: Kathryn Stock
  - University of Toronto: Shaul Kruger, Kieran Quinn, Marie-Claude Mainville
- Included upwards of 50 investigators, collaborators and knowledge users in carrying out key study deliverables

# Scope of FRAMING-LTC

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## QUANTITATIVE

Potentially inappropriate medications (PIMs) of relevance to frail older adults

- Antipsychotics, benzodiazepines, antimicrobials, statins & cholinesterase inhibitors
- Population-based administrative data were linked and analyzed at ICES

## QUALITATIVE

On-site chart audits directed by the administrative data

- Interviews, observations, and documents at eight LTC facilities with a focus on antipsychotics and antimicrobials
- Iterative, direct content analysis

Development of a consensus panel using modified Delphi methodology

- To identify feasible antimicrobial stewardship interventions for LTC

1) The variation of statin use among nursing home residents and physicians: A cross-sectional analysis.	Journal of the American Geriatrics Society (JAGS)	Campitelli MA, Maxwell CJ, Giannakeas V, Bell CM, Daneman N, Jeffs L, Morris AM, Austin PC, Hogan DB, Ko DT, Lapane KL, Maclagan LC, Seitz DP, Bronskill SE.	2017 Sep;65(9):2044-2051
2) Frailty and potentially inappropriate medication use at nursing home transition.	Journal of the American Geriatrics Society (JAGS)	Maclagan LC, Maxwell CJ, Gandhi S, Guan J, Bell CM, Hogan DB, Daneman N, Gill SS, Morris AM, Jeffs L, Campitelli MA, Seitz DP, Bronskill SE.	2017 Oct;65(10):2205-2212
3) Antipsychotic use and hospitalization among older assisted living residents: Does risk vary by frailty status?	American Journal of Geriatric Psychiatry	Stock KJ, Hogan DB, Lapane K, Amuah JE, Tyas SL, Bronskill SE, Morris AM, Bell CM, Jeffs L, Maxwell CJ.	2017 Jul;25(7):779-790
4) Influences on the start, selection and duration of treatment with antibiotics in long-term care facilities.	Canadian Medical Association Journal	Daneman N, Campitelli MA, Giannakeas V, Morris AM, Bell CM, Maxwell CJ, Jeffs L, Austin PC, Bronskill SE.	2017 Jun 26;189(25):E851-860
5) Prevalence of, and resident and facility characteristics associated with antipsychotic use in assisted living vs. long-term care facilities: a cross-sectional analysis from Alberta, Canada.	Drugs and Aging	Stock KJ, Amuah JE, Lapane KL, Hogan DB, Maxwell CJ.	2017 Jan;34(1):39-53
6) Low-dose trazodone, benzodiazepines, and fall related injuries in nursing homes: a matched-cohort study.	Journal of the American Geriatrics Society (JAGS)	Bronskill SE, Campitelli MA, Iaboni A, Herrmann N, Guan J, Maclagan LC, Watt J, Rochon PA, Morris AM, Jeffs L, Bell CM, Maxwell CJ.	2018 Oct;66(10):1963-1971
7) Predictors of cholinesterase inhibitor discontinuation during the first year after nursing home admission.	JAMDA	Maclagan LC, Bronskill SE, Guan J, Campitelli MA, Herrmann N, Lapane KL, Hogan DB, Amuah JE, Seitz DP, Gill SS, Maxwell CJ.	2018 Sep 24; doi: 10.1016/j.jamda.2018.07.020. [Epub ahead of print]
8) Survival among older residents of nursing homes prescribed intensive-dose and moderate-dose statins: a propensity-score matched cohort study	Under review	Campitelli MA, Maxwell CJ, Maclagan LC, Ko DT, Bell CM, Jeffs L, Morris AM, Lapane KL, Daneman N, Bronskill SE.	Response to reviewers submitted
9) Association between physician intensity of antibiotic prescribing and the prescription of benzodiazepines, opioids and proton-pump inhibitors	Under review	Quinn KL, Campitelli MA, Diong C, Daneman N, Stall NM, Morris AM, Detsky AS, Jeffs L, Maxwell CJ, Bell CM, Bronskill SE.	Submitted
10) Development of a frailty index for long-term care and home care populations using Resident Assessment Instrument (RAI) data	<u>Prepared For:</u> Joseph E. Amuah, PhD, Senior Researcher, Health System Performance Branch, Canadian Institute for Health Information		

# Key findings from FRAMING-LTC: Quantitative

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Our quantitative findings showed:

- Frailty exists as a spectrum in older adults, and can be assessed using clinical items readily available in population-based data
- Frailty was associated with PIM use and modified drug-related outcomes
  - Prescriber, resident, facility, and system level factors over and above frailty
  - Direction and magnitude of these associations sometimes contradict clinical expectations (i.e. frail individuals often receive more, rather than fewer PIMs)

# Antipsychotic use and hospitalization among older assisted living residents: does risk vary by frailty status?

*Kathryn J. Stock MSc, David B. Hogan MD, Kate Lapane PhD, Joseph E. Amuah PhD, Suzanne L. Tyas PhD, Susan E. Bronskill PhD, Andrew M. Morris MD, SM, Chaim M. Bell MD, PhD, Lianne Jeffs RN, PhD, Colleen J. Maxwell PhD*

**Am J Geriatr Psychiatry** 2017;25(7):779-790.

Baseline frailty status, but not antipsychotic use, was significantly associated with hospitalization over one year. When stratified by frailty status, frail residents using antipsychotics showed a significantly increased risk for hospitalization compared with frail non-users. Non-frail residents using antipsychotics were significantly less likely to be hospitalized compared with non-frail non-users.

Frailty measures may be helpful in identifying those who are particularly vulnerable to adverse effects and those who may experience benefit with treatment.

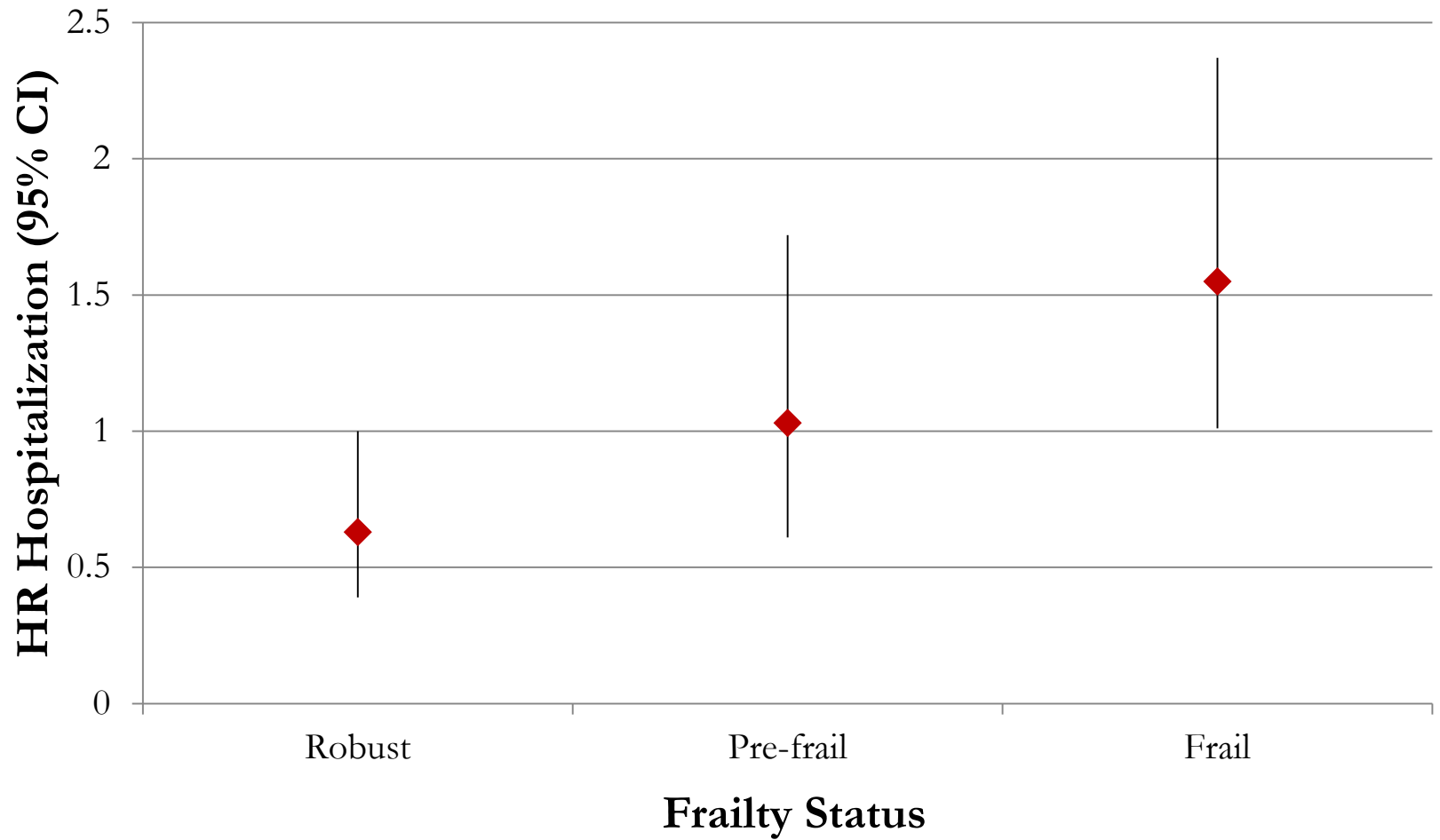
Table 4. Hospitalization Risk Associated with Antipsychotic Use by FI Frailty

Antipsychotic Drug Use	Robust (FI<0.2)	Pre-frail (0.2≤FI≤0.3)	Frail (FI>0.3)
Reference: no antipsychotic use	n=365	n=412	n=289
Adjusted HR (95% CI)	<b>0.63</b> <b>(0.39-1.00)</b>	1.03 (0.61-1.72)	<b>1.55</b> <b>(1.01-2.37)</b>
Adjusted for age, sex, aggressive behaviour, presence of delusions and/or hallucinations, diagnoses of schizophrenia, # hospitalizations/past year, # drugs (excluding antipsychotics)			

Table 5. Hospitalization Risk Associated with Antipsychotic Use by CHS Frailty

Antipsychotic Drug Use	Robust	Pre-frail	Frail
Reference: no antipsychotic use	n=240	n=511	n=179
Adjusted HR (95% CI)	<b>0.63</b> <b>(0.41-0.96)</b>	1.03 (0.71-1.52)	1.61 (0.95-2.72)
Adjusted for age, sex, aggressive behaviour, presence of delusions and/or hallucinations, diagnoses of schizophrenia, # hospitalizations/past year, # drugs (excluding antipsychotics)			

Figure 2. Hospitalization Risk Associated with Antipsychotic Use by Frailty Strata



# Low-dose trazodone, benzodiazepines & fall-related injuries in nursing homes: a matched cohort study

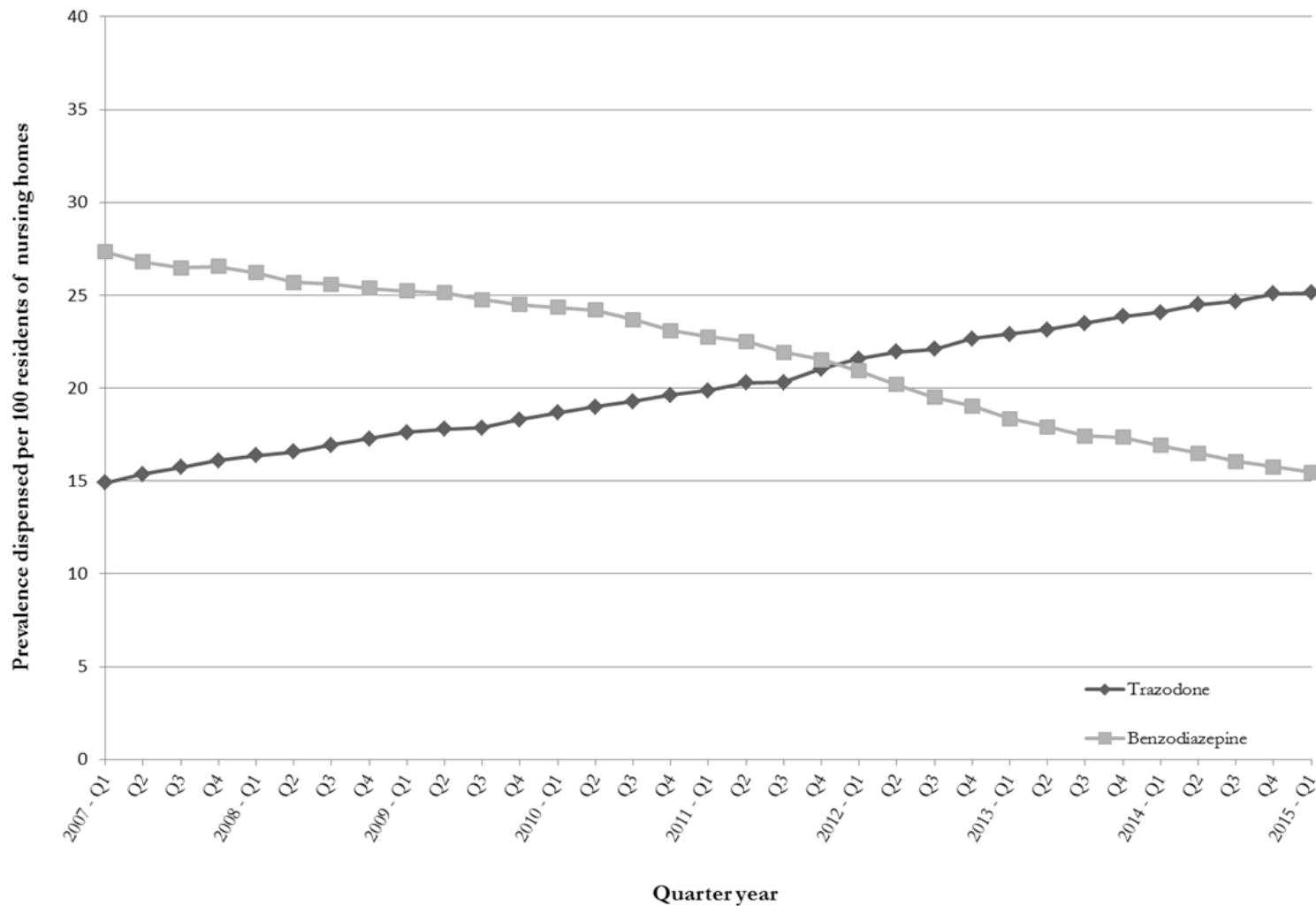
*Susan E Bronskill PhD, Michael A Campitelli MPH, Andrea Iaboni MD, Nathan Herrmann MD, Jun Guan MSc, Laura C Maclagan MSc, Jennifer Watt MD, Paula A Rochon MD, MPH, Andrew M Morris MD, SM, Lianne Jeffs RN, PhD, Chaim M Bell MD, PhD, Colleen J Maxwell PhD*

**J Am Geriatr Soc** 2018;66(10):1963-1971.

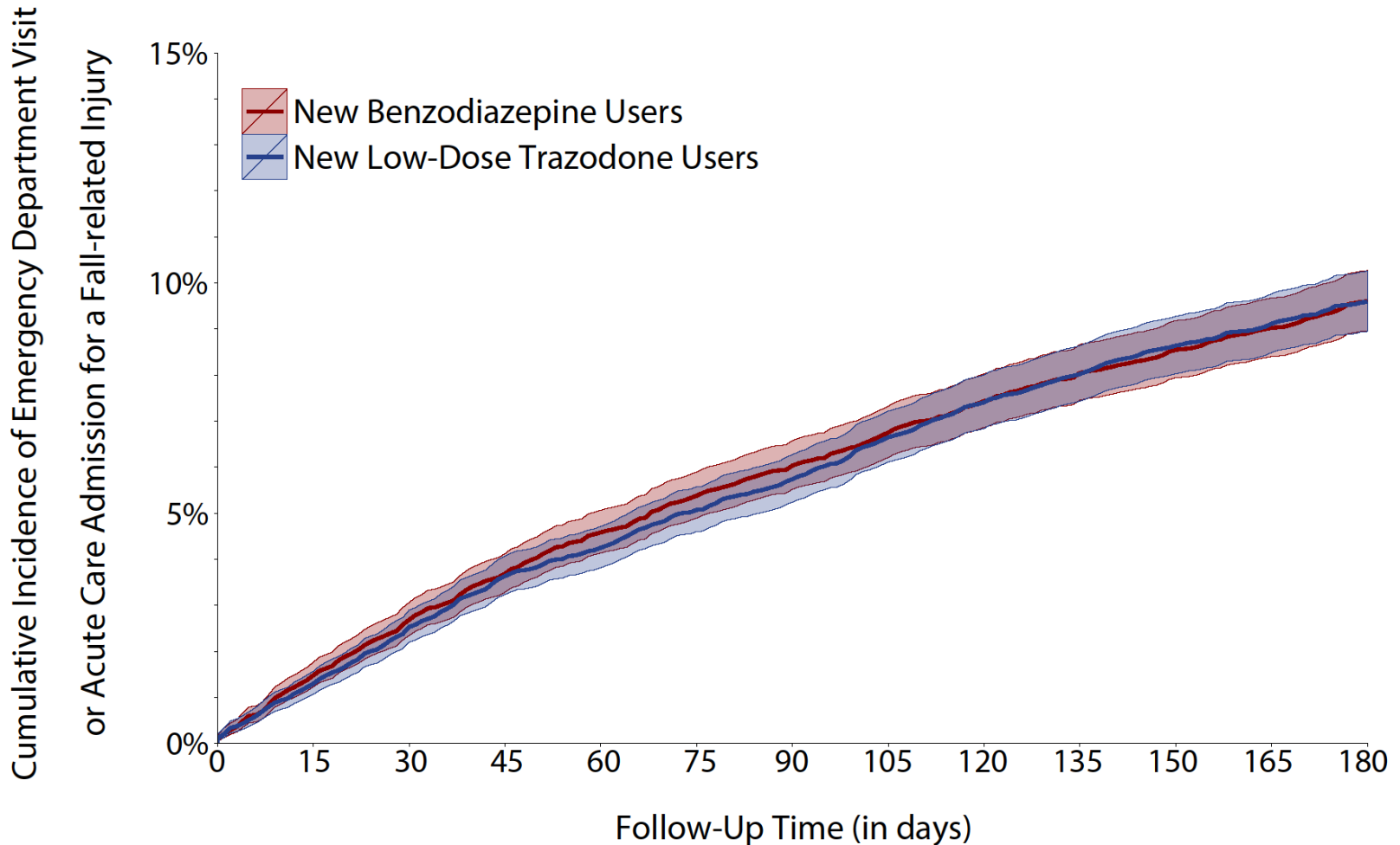
New use of low-dose trazodone was no safer against a risk of a fall-related injury than new use of benzodiazepines. Additional studies to assess the comparative effectiveness and risks of low-dose trazodone compared to a variety of psychotropic drug therapies are required, in light of increasing trends in the use of this drug in the nursing home environment.



# Trends in the prevalence of trazodone and benzodiazepines dispensed to residents of nursing homes in Ontario from January 1, 2007 to March 31, 2015, by quarter year



# Cumulative incidence functions for fall-related injuries in Ontario residents of nursing homes dispensed low-dose trazodone compared to a benzodiazepine between April 1, 2010 and March 31, 2015



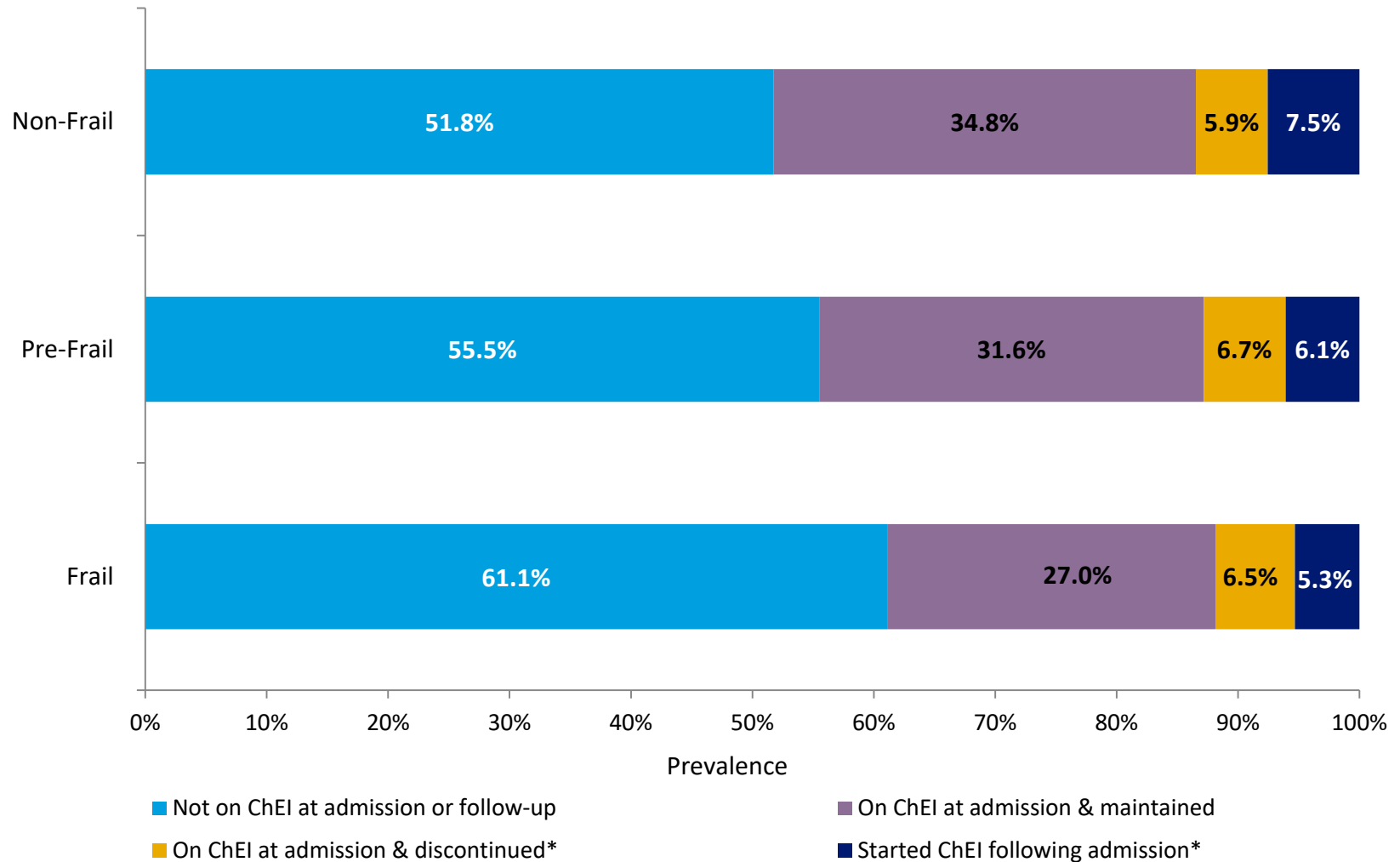
# Predictors of cholinesterase discontinuation during the first year after nursing home admission

*Laura C. Maclagan, MSc, Susan E. Bronskill, PhD, Jun Guan, MSc, Michael A. Campitelli, MPH, Nathan Herrmann, MD, Kate L. Lapane, PhD, David B. Hogan, MD, Joseph E. Amuah, PhD, Dallas P. Seitz, MD, PhD, Sudeep S. Gill, MD, MSc, Colleen J. Maxwell, PhD*

**JAMDA** 2018; doi: 10.1016/j.jamda.2018.07.020 [Epub ahead of print].

Less than one-fifth of residents on a ChEI at admission discontinued use during the following year. While some of the predictors of discontinuation align with past research and current clinical recommendations, others were unexpected and point to novel drivers of ChEI use. Future investigations should explore the varied reasons underlying these associations and resident outcomes associated with ChEI discontinuation.

# Pattern of ChEI use at admission and during 1-year follow-up among older adults with dementia newly admitted to a nursing home in Ontario, Canada, by frailty status



# Thoughts for discussion: FRAMING-LTC Quantitative

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Over and above frailty, there are other important resident-level factors (including select sociodemographic characteristics, severity of cognitive status and behaviours) that drive rates of PIM use.

Over and above frailty, there are important prescribing physician-level factors (including historical prescribing tendencies and sex) that drive rates of PIM use.

- The direction, and magnitude of the impact of these drivers on PIM is sometimes consistent with expectations regarding frailty and sometimes not, and depends on drug class.

# ACKNOWLEDGEMENTS

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This study was supported by the Institute for Clinical Evaluative Sciences (ICES) which is funded by the Ontario Ministry of Health and Long-Term Care (MOHLTC). The opinions, results and conclusions are those of the authors and are independent from the funding source. No endorsement by ICES or the Ontario MOHLTC is intended or should be inferred. Parts of this material are based on data and information compiled and provided by CIHI. However, the analyses, conclusions, opinions and statements expressed herein are those of the author, and not necessarily those of CIHI.

**Antipsychotic Use in Long-Term Care  
Homes - A Paradoxical Tension:  
Insights from a Qualitative Study**

# STUDY DESIGN & METHODS

- A qualitative design with direct content analyses was employed for this study.
- Sampling frame was determined through an initial stratification of all nursing homes in Ontario according to bed size, frailty status, and facility polypharmacy.
- Research staff conducted and recorded all the interviews using semi-structured interview guides with the interviews transcribed verbatim.



# SAMPLE CHAACTERISTICS

- 88 healthcare providers [predominately RNs or RPNs and included pharmacists, social workers, personal support workers and medical doctors] and 39 residents and caregivers [56% were females and 44% males & average age range for the residents was from 81 to 83 and for the caregivers the average age was 40 to 88 years of age] from 8 LTCs.
- Average time of the healthcare provider and administrator interviews were 22:35 minutes with a range of 4:56 to 40:14 minutes.
- Average time of the resident or caregiver interviews were 23:56 minutes with a range of 4:04 to 43:49 minutes.

# Paradoxical Tension



# Using Antipsychotics as a Last Resort

Having additional education and training in managing behaviors

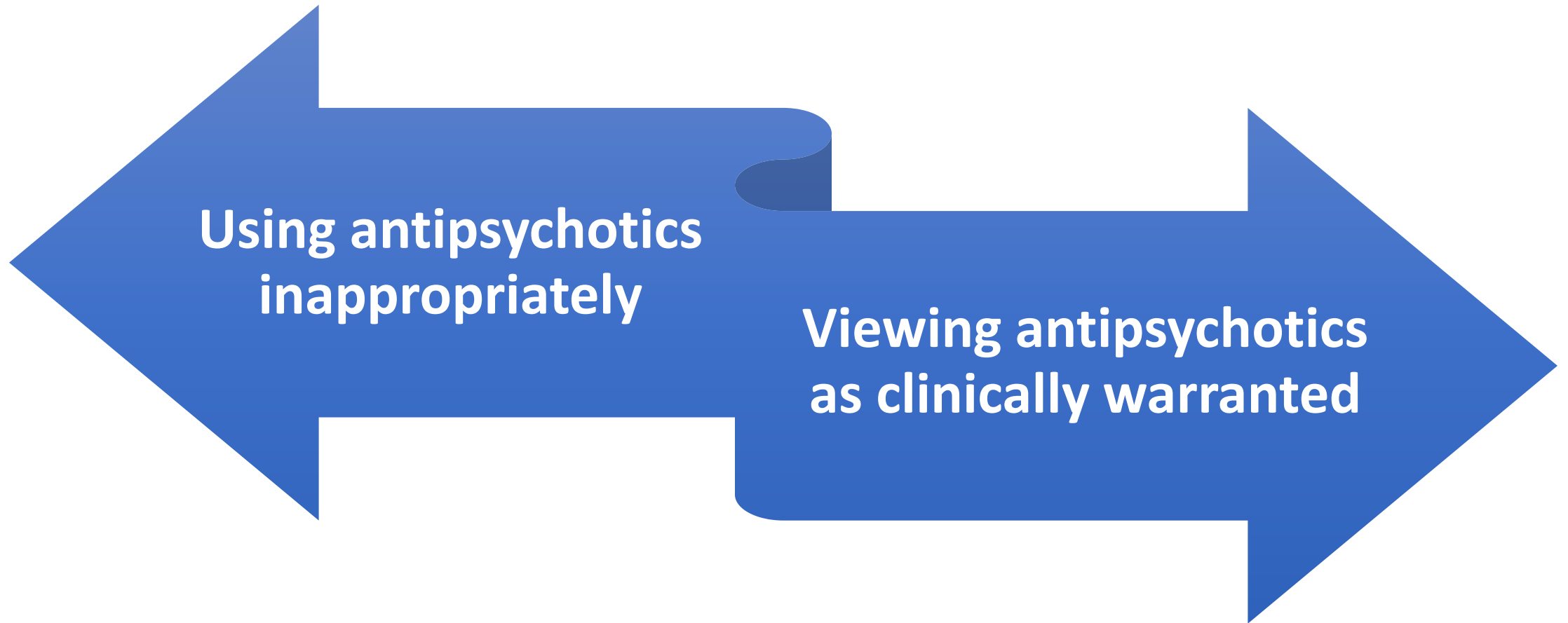
Managing behaviors through GPA and Montessori approaches

**Last Resort**

Conducting a comprehensive assessment and behavior mapping

Accessing internal and external resources

# Reconciling Prescribing Inappropriately and When Necessary



# IMPLICATIONS

- Importance of continuing education for regulated and unregulated staff around antipsychotics; resident conditions; and behavior management approaches.
- Essential to have initial on admission and ongoing education and engagement of residents (where possible) and family members around their care plan including medication plan of care.

# Evaluating and Prioritizing Antimicrobial Stewardship Programs for Nursing Homes: A Modified Delphi Panel

**Andrew M. Morris**

*Director, Antimicrobial Stewardship Program*

Sinai Health System and University Health Network

*Professor, Department of Medicine*

University of Toronto

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@ASPphysician 

# Background

## Residents of nursing homes

- a growing population<sup>1</sup>

## High susceptibility to infection (3-15%)<sup>2</sup>

## High use of antibiotics

- many may be inappropriate (50-75%)<sup>3</sup>

<sup>1</sup> Statistics Canada. 2015.

<sup>2</sup> Long-Term Care Utilization Report. 2017.

<sup>3</sup> Nicolle, 2000. *Clin Infect Dis*.

# Background

## Consequences of inappropriate antibiotic use

- adverse drug events
- antibiotic resistance
- *Clostridium difficile* infection



# Background

## Antimicrobial stewardship programs (ASPs)

- institutional initiatives and interventions to optimize the use of antibiotics and improve patient outcomes, whilst reducing inappropriate antibiotics, adverse events, and overall cost of therapy

ASPs are uncommon in LTC

# Purpose & Objectives

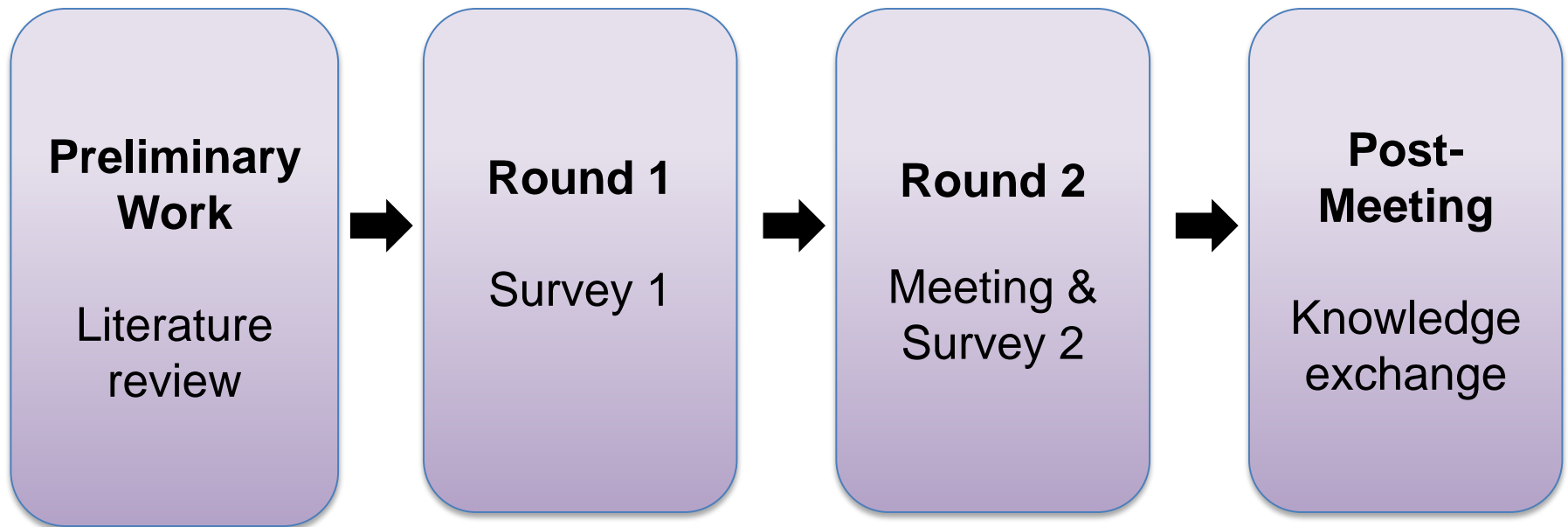
## Purpose

- to utilize the Modified Delphi Method to evaluate interventions for implementing ASPs in nursing homes

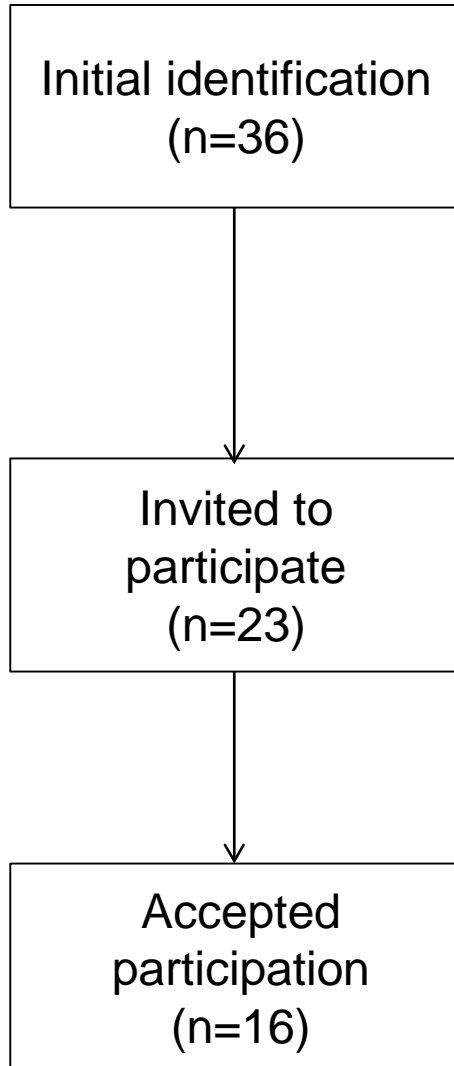
## Objectives

- to provide nursing homes with two tools:
  1. prioritized list of appropriate and necessary interventions for nursing homes
  2. resources required for intervention implementation

# Theoretical Framework of the Modified Delphi Method



# Modified Delphi Panel Recruitment Process



# Panel Composition

Diverse professional representation:

- infectious disease
- infection control
- nursing home physicians
- hospitalists (MD)
- ASP experts
- residents / advocates / councils
- nursing
- pharmacy
- administration
- policy / stakeholder

# Methods

## Identification of ASP interventions

### Criteria for evaluating interventions:

1. Scientific merit
2. Impact
3. Feasibility
4. Accountability
5. Importance

# Survey Results – Survey 1

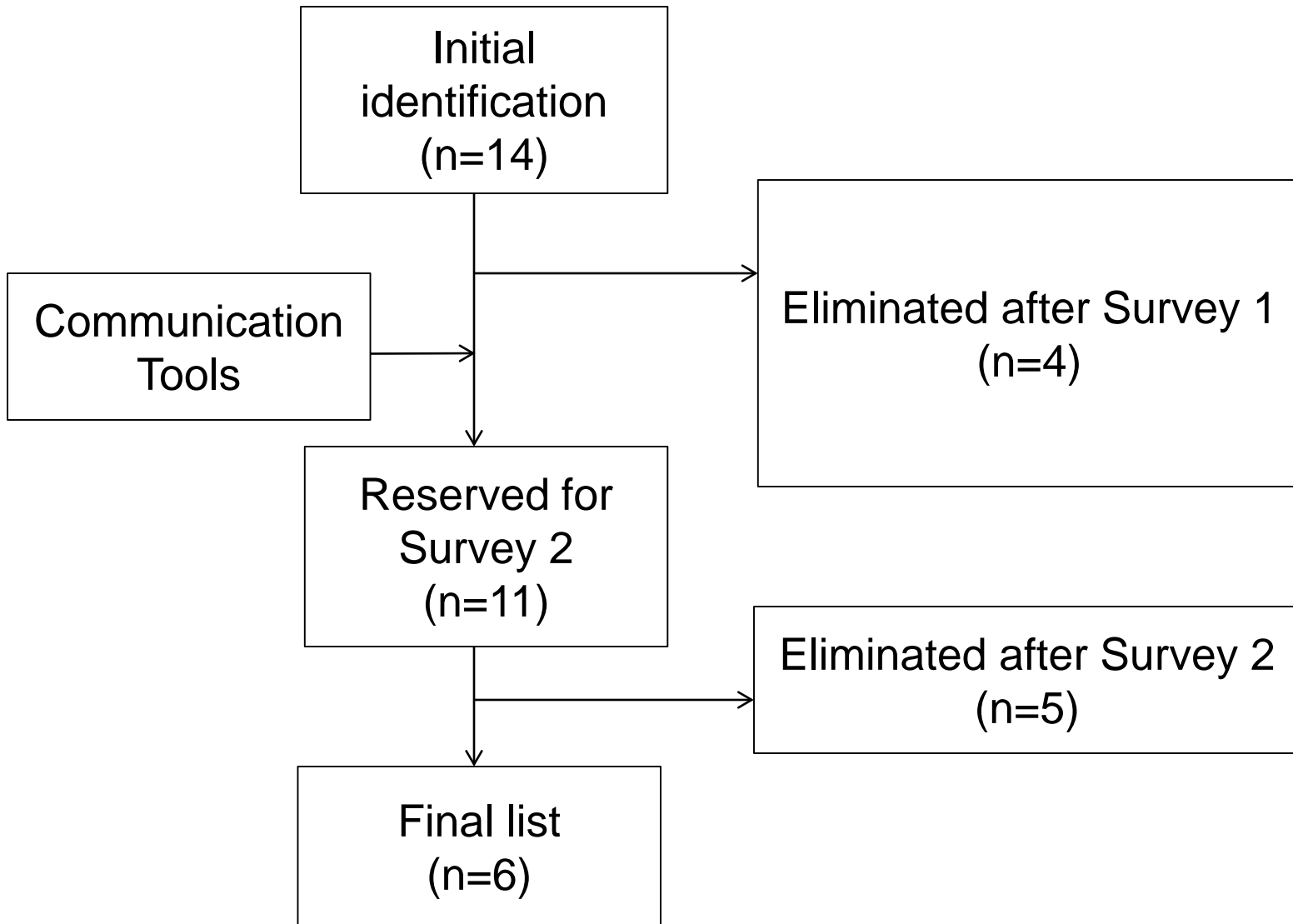
- no consensus for inclusion across all criteria for any intervention
- several interventions received consensus for rejection across all criteria:
  - antibiotic cycling
  - formulary automatic substitution
  - formulary review
  - IV to oral transition

# Survey Results – Survey 2

- one intervention received consensus for inclusion across all criteria: guidelines for empiric prescribing
- several interventions received consensus for rejection across all criteria:
  - antibiograms
  - formulary automatic substitution
  - formulary restriction
  - targeting CDI (*clostridium difficile* infection)



# Summary of Intervention Evaluation



# Prioritization of ASP Interventions for Nursing Homes

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Interventions	Mean
<i>Guidelines for Empiric Prescribing</i>	<b>1.3</b>
<i>Audit and Feedback</i>	<b>3.4</b>
<i>Communication Tools</i>	<b>3.4</b>
<i>Short Course Antibiotic Therapy</i>	<b>3.9</b>
<i>Scheduled Antibiotic Reassessment (formerly De-escalation)</i>	<b>4.4</b>
<i>Clinical Decision Support Systems</i>	<b>4.6</b>

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<sup>a</sup> Panelists instructed to rank interventions from 1-6

# Strengths and Limitations

## Strengths

- strengths of Modified Delphi Method
- interdisciplinary representation of panel

## Limitations

- biases (panelist intimidation, influence from moderator)
- reliability and validity of Modified Delphi Method
- representativeness of panel

# Future Directions

Feasibility

Improved evidence base

Policy implications

Novel interventions

# Conclusions

## Summary of findings

- prioritized list of ASPs for nursing homes
  1. guidelines for empiric prescribing
  2. audit and feedback, and communication tools
  3. short course antibiotic therapy
  4. scheduled antibiotic reassessment
  5. clinical decision support systems
- resources suggested for implementation
  - electronic medical record
  - staffing
  - funding

# Acknowledgments

Funding: 2014 CFN Strategic Impact Grant



HQP: Saul Kruger, MSc

Panelists

Research Team, incl. PIs: Chaim Bell, Susan Bronskill, Lianne Jeffs, Colleen Maxwell



# Delphi Panel Participants

Carla Beaton	- LTC Administration
Anne Bialachowski	- Infection Control/Nursing
Sharron Cooke	- Resident
Nick Daneman	- ASP Expert/Hospitalist (MD)
Kamyab Ghatan	- Infection Control
Devora Greenspon	- Resident
Lynn Johnston	- Infectious Disease (ID)/Hospitalist (MD)/Policy
Louis Kennedy	- LTC Physician
Maloree Kubica	- Nursing
Jonathan Lam	- Policy/Stakeholder
Bradley Langford	- Pharmacy/ASP Expert
Dee Lender	- Family Council
Justin Lin	- Pharmacy
Mark Loeb	- ID/ASP Expert
Lindsay Nicolle	- ID/ASP Expert
Lisa Sever	- Pharmacy

# Evaluating and Prioritizing Antimicrobial Stewardship Programs for Nursing Homes: A Modified Delphi Panel

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**Colleen Maxwell:** [Colleen.maxwell@uwaterloo.ca](mailto:Colleen.maxwell@uwaterloo.ca)

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