

Health Information Technology in Geriatrics

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April 21th, Montréal, Canada

Faculty / Presenter Disclosure

- **Faculty:** Benoit Cossette
- **Relationships with financial sponsors:** none

Presentation Plan

- Appropriate use of antipsychotics in long-term care homes
 - Québec OPUS-AP program
 - Canadian Foundation for Healthcare Improvement
AUA Pan Canadian project
- Integrated knowledge translation (KT) strategy to reduce the use of potentially inappropriate medications



Appropriate use of antipsychotics in long-term care



Background

- Up to 80% of long-term care residents have a diagnosis of major neurocognitive disorder.
- The vast majority of them have behavioral and psychological symptoms of dementia (BPSD).
- Non-pharmacological approaches should generally be used as first-line treatment for cases of BPSD.



Background

- The efficacy of antipsychotics for the management of behavioral and psychological symptoms of dementia (BPSD) is at best modest.
- The use of antipsychotics has been associated with an increased risk of mortality and stroke in older long-term care residents.

A persisting situation

Omnibus Budget Reconciliation Act (OBRA) –
Nursing Home Reform (1987): “Directed at
protecting residents of long-term care facilities from
medically unnecessary physical or chemical restraints
imposed for purposes of discipline or convenience”

168

THE NEW ENGLAND JOURNAL OF MEDICINE

July 16, 1992

SPECIAL ARTICLE

A RANDOMIZED TRIAL OF A PROGRAM TO REDUCE THE USE OF PSYCHOACTIVE DRUGS IN NURSING HOMES

JERRY AVORN, M.D., STEPHEN B. SOUMERAI, Sc.D., DANIEL E. EVERITT, M.D., DENNIS ROSS-DEGNAN, Sc.D.,
MARK H. BEERS, M.D., DAVID SHERMAN, R.Ph., SUSANNE R. SALEM-SCHATZ, Sc.D., AND DAVID FIELDS, M.D.



Current situation in Québec

In phase 1 of the OPUS-AP program conducted in 24 long term care facilities (CHSLD) in Québec, among 1054 residents :

51.7%

had ≥ 1 antipsychotic prescription

Among 464 residents with neurocognitive disorder and ≥ 1 antipsychotic prescription

67.2%

were judged eligible for deprescribing



Achieving and sustaining a reduced use of antipsychotic in long term care

Health Information Technology to support a sustained reduction in antipsychotic use in long-term care

- Optimizing Practices, Use, Care and Services – Antipsychotics (OPUS-AP) – Québec
- Canadian Foundation for Healthcare Improvement (CFHI) – Appropriate Use of Antipsychotics (AUA) – Pan Canadian initiative



OPTIMISER LES PRATIQUES, LES USAGES,
LES SOINS ET LES SERVICES - ANTIPSYCHOTIQUES

Optimizing Practices, Use, Care and Services – Antipsychotics (OPUS-AP)

Funding:

Ministère de la santé et
des services sociaux (Qc)

Canadian Foundation for
Healthcare Improvement

OPUS-AP

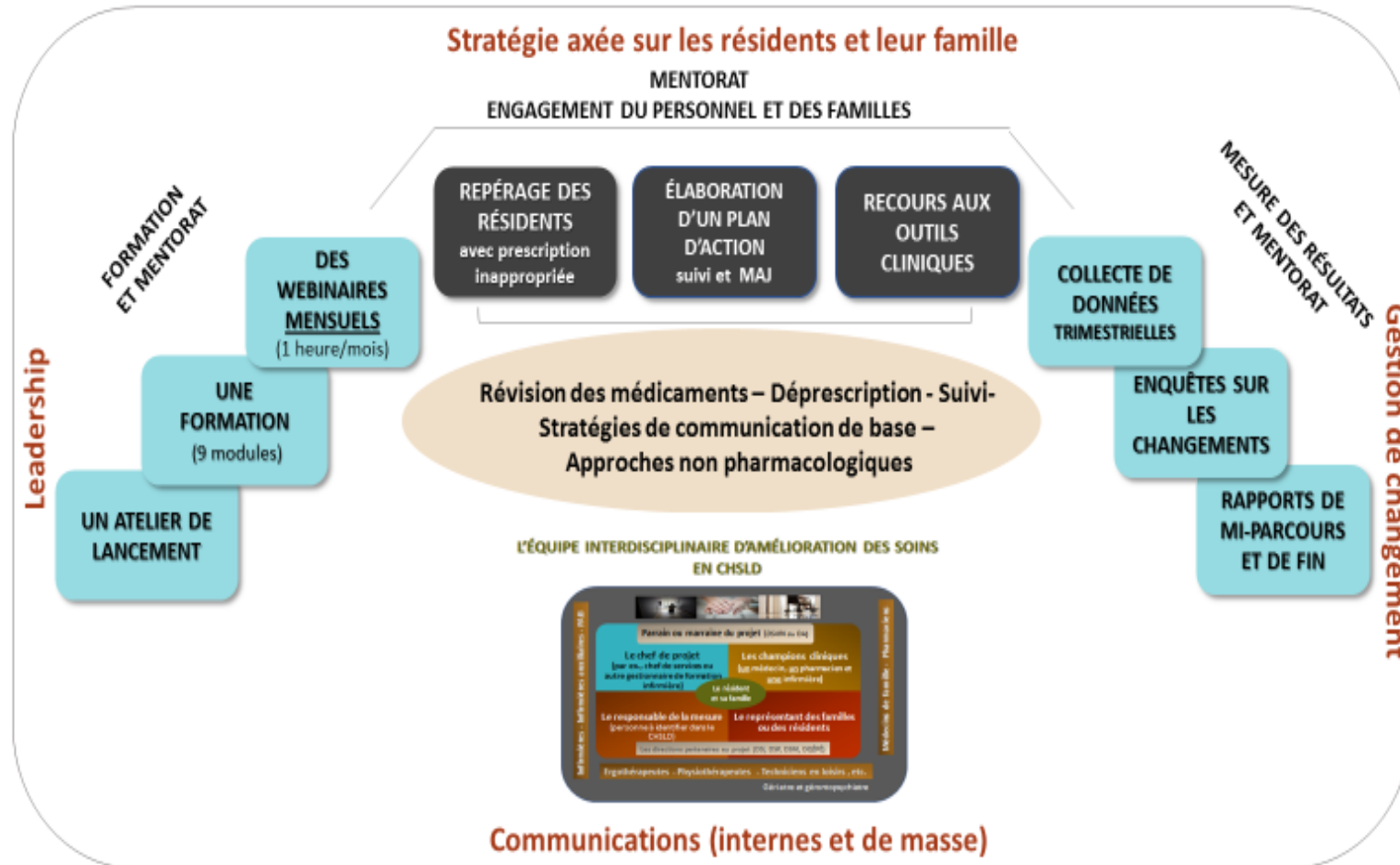
Objectives

- Ensure the appropriate use of antipsychotics in long-term care (CHSLD).
- Reinforce the use of patient centered care strategies.
- Increase the use of non-pharmacological interventions when managing behavioral and psychological symptoms of dementia (BPSD).

Phases

Phase 1: 2018	24 CHSLD
Phase 2: 2019-20	136 CHSLD
Phase 3: 2021	317 CHSLD

LE DISPOSITIF DE RENFORCEMENT DE L'AMÉLIORATION DE LA QUALITÉ





Data collection – OPUS-AP, phase 1


REDCap™

- Secure web application
- Compliant: 21 CFR Part 11, FISMA, HIPAA
- Data storage / access by long term care facilities
- Reports generated: 1) for all CHSLD; 2) by CHSLD
- Data entry: diagnoses, Cohen-Mansfield questionnaire, neuropsychiatric inventory, falls, restraints
- Data import: medications

REDCap™ – baseline questionnaire

📄 Résident

Groupe d'accès aux données: **Région 06-CHSLD Paul Guoin** [?](#)

 La modification de Record ID **603** (1-Numéro de dossier **309-34782**)

Nom d'événement: **To-Entrée dans l'étude**

Record ID 603
To rename the record, see the record action drop-down at top of the [Record Home Page](#).

1-Numéro de dossier
* doit fournir une valeur

2-Quelle est la date à laquelle l'extraction des données médicamenteuses du logiciel pharmacie à eu lieu? Y-M-D
* doit fournir une valeur

3-Quel est le sexe du résident? Homme Femme [réinitialiser la valeur](#)
* doit fournir une valeur

4-Date de naissance Y-M-D
* doit fournir une valeur

5-Quel est l'âge du résident? [Afficher l'équation](#)
* doit fournir une valeur

6-Indiquez si "Oui" ou "Non", les situations suivantes s'appliquent à ce résident:

	Oui	Non
Résident avec schizophrénie ou troubles psychotiques apparentés <input type="text" value=""/> <small>* doit fournir une valeur</small>	<input checked="" type="radio"/>	<input type="radio"/>
		réinitialiser la valeur
Résident avec Trouble dépressif majeur <input type="text" value=""/> <small>* doit fournir une valeur</small>	<input type="radio"/>	<input checked="" type="radio"/>
		réinitialiser la valeur
Résident avec Parkinson <input type="text" value=""/> <small>* doit fournir une valeur</small>	<input type="radio"/>	<input checked="" type="radio"/>
		réinitialiser la valeur
Résident avec prescription d'antipsychotiques dans un contexte de soins de fin de vie <input type="text" value=""/> <small>* doit fournir une valeur</small>	<input type="radio"/>	<input checked="" type="radio"/>
		réinitialiser la valeur



Data collection – OPUS-AP, phase 1

Medication data:

- Extracted with standard software function in an Excel™ format
- Imported into REDCap™

Medication softwares:

- SyPhaC™
- GESPHARx8™
- StatRx™



Data collection – OPUS-AP, by phase

Phase 1 – 2018

- REDCap™
- Medication software

Phase 2 – 2019-20

- Outils d'Évaluation Multi Clientèle (OEMC)
- Medication software
- REDCap™

Phase 3 – 2021: interoperability in a central Electronic Medical Record of the electronic clinical tools:

- Outils d'Évaluation Multi Clientèle (OEMC): demographic information, diagnoses, falls, restraints...
- Medication software

OPUS-AP – baseline results – January 2018

1054 residents admitted on participating wards

- Mean age : 82.9 years
- Women : 63.4%
- Residents with neurocognitive disorder: 78.3%
- Residents prescribed:
 - ≥ 1 antipsychotic: 51.7%
 - ≥ 1 benzodiazepine: 37.4%
 - ≥ 1 antidepressant: 56.4%

464 residents in the follow-up cohort (major neurocognitive disorder & antipsychotic)

Creating collaboratives to spread evidence-informed improvement

Appropriate Use of Antipsychotics



56 LTC facilities

7034 residents

Reduced falls & aggressive behaviours

36%

Percent of target residents with discontinued antipsychotic medication by Q3

18%

Percent of target residents who had the dose of antipsychotic medication reduced by Q3



Canadian Foundation for Healthcare Improvement - Pan Canadian initiative

Residents assessment instrument (RAI) MDS 2.0

- Diagnosis of: schizophrenia, Huntington's chorea, hallucinations, or delusions, and are not in hospice care or end-of-life residents.
- Restraints
- Behaviours: physical abuse, socially inappropriate or disruptive behaviour, resistance to care, verbal abuse, wandering.
- Falls
- RAI Outcome scales: CPS, DRS, Pain, ISE, ABS, ADL

Canadian Institute for Health Information (CIHI)

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Potentially Inappropriate Use of Antipsychotics in Long-Term Care

This indicator looks at how many long-term care residents are taking antipsychotic drugs without a diagnosis of psychosis. These drugs are sometimes used to manage behaviours in residents who have dementia. Careful monitoring is required, as such use raises concerns about safety and quality of care.

[More](#)

In Canadian long-term care homes,



residents is taking antipsychotic drugs without a diagnosis of psychosis

(Source: CIHI, 2016)



of seniors in Canadian long-term care have been diagnosed with dementia

(Source: CIHI, 2016)

Regional variation between long-term care homes in use of antipsychotic drugs



(Source: CIHI, 2016)

Integrated knowledge translation strategy to reduce the use of potentially inappropriate medications

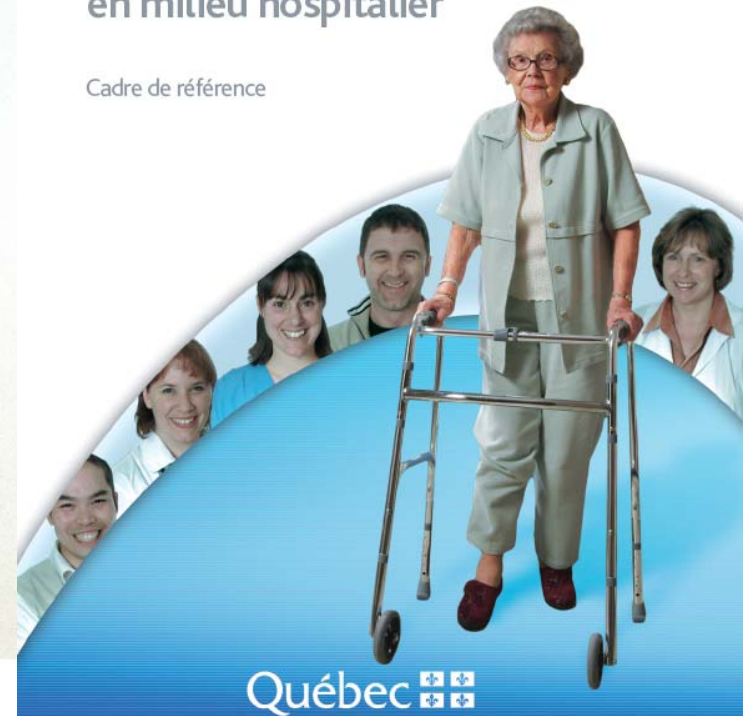
Elder-friendly approach

Approche adaptée à la personne âgée (AAPA) en milieu hospitalier (MSSS)

- Emphasis on the prevention:
 - Delirium
 - Functional decline
- Priority to patients 75 years and older

Approche adaptée
à la personne âgée
en milieu hospitalier

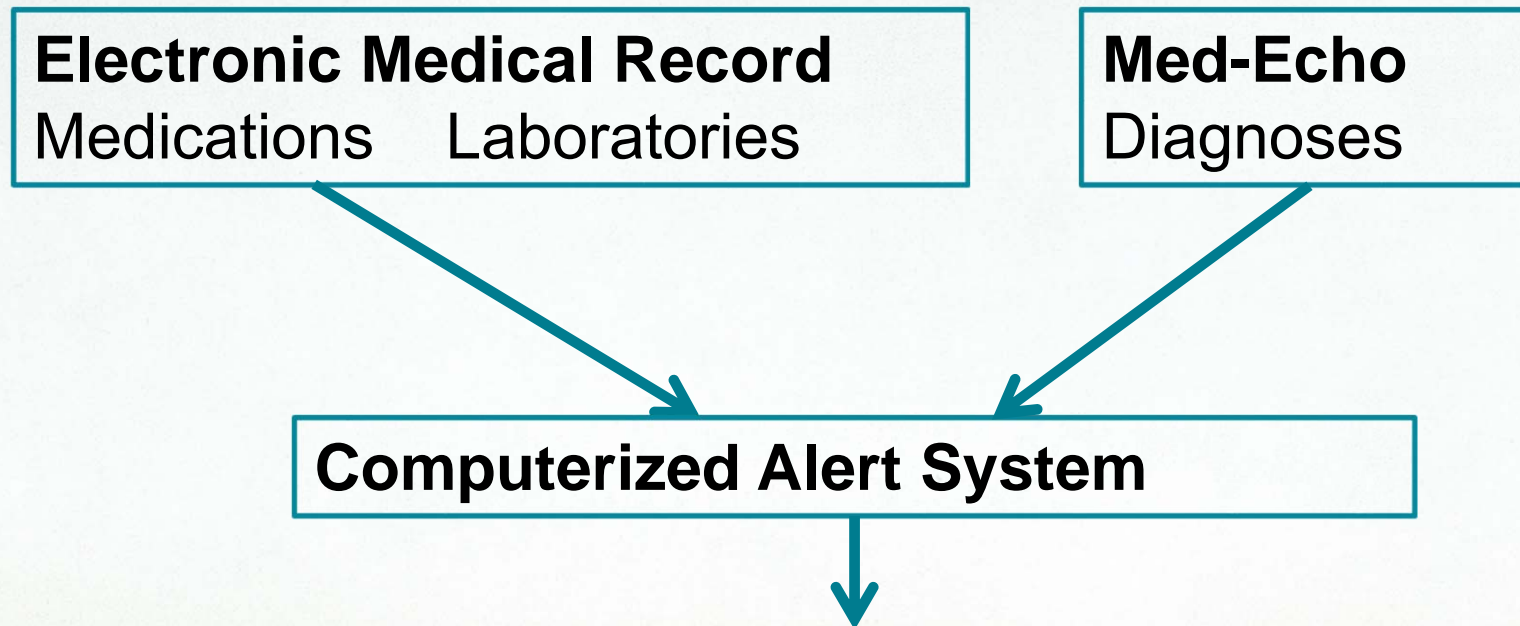
Cadre de référence



Integrated knowledge translation strategy

- Printed educational materials
- Local opinion leaders
- Pharmacist – physician interventions based on the alerts of a computerized system

Computerized Alert System(CAS)



Patients	Alerts	Medications
1	CNS4	quetiapine, lorazepam...
2	Dem + Rx-Ach	amitriptyline
3	Duplicate benzo	lorazepam, oxazepam
4

Knowledge Translation Strategy to Reduce the Use of Potentially Inappropriate Medications in Hospitalized Elderly Adults

Benoit Cossette, BPharm, PhD,^{†‡} Josée Bergeron, BPharm, MSc,[‡] Geneviève Ricard, MD,^{*§} Jean-François Éthier, MD,^{*§¶} Thomas Joly-Mischlich, BPharm, MSc,^{*‡} Mitchell Levine, MD, MSc,^{††‡‡} Modou Sene, MSc,[†] Louise Mallet, BScPharm, PharmD,^{§§¶¶} Luc Lanthier, MD, MSc,^{*§} Hélène Payette, PhD,[†] Marie-Claude Rodrigue, MSc,^{**} and Serge Brazeau, MD[§]*

Journal of the American Geriatrics Society, 64:2487–2494, 2016

Cohort

8622 patients; 14 071 admissions; 145 061 patient-days

Table 1. Participant Characteristics (14,071 Admissions)

Characteristics	Value
Demographic	
Female, n (%)	7,668 (54.5)
Age, mean \pm SD	83.3 \pm 5.9
Age, n (%)	
75–84	8,842 (60.6)
\geq 85	5,639 (39.4)
Morbidities^a	
Charlson Comorbidity Index, mean \pm SD ^b	1.87 \pm 2.19
Dementia, n (%)	2,293 (16.3)
Functional decline, n (%)	1,363 (9.7)
Delirium, n (%)	1,198 (8.5)
Falls, n (%)	1,011 (7.2)
Orthostatic hypotension, n (%)	847 (6.0)
Parkinson's disease and parkinsonism, n (%)	319 (2.3)
Hospitalizations, n (%)	
\geq 1 in previous year	6,131 (43.6)
\geq 1 in previous month	1,911 (13.6)

Interrupted Time Series (ITS) analysis

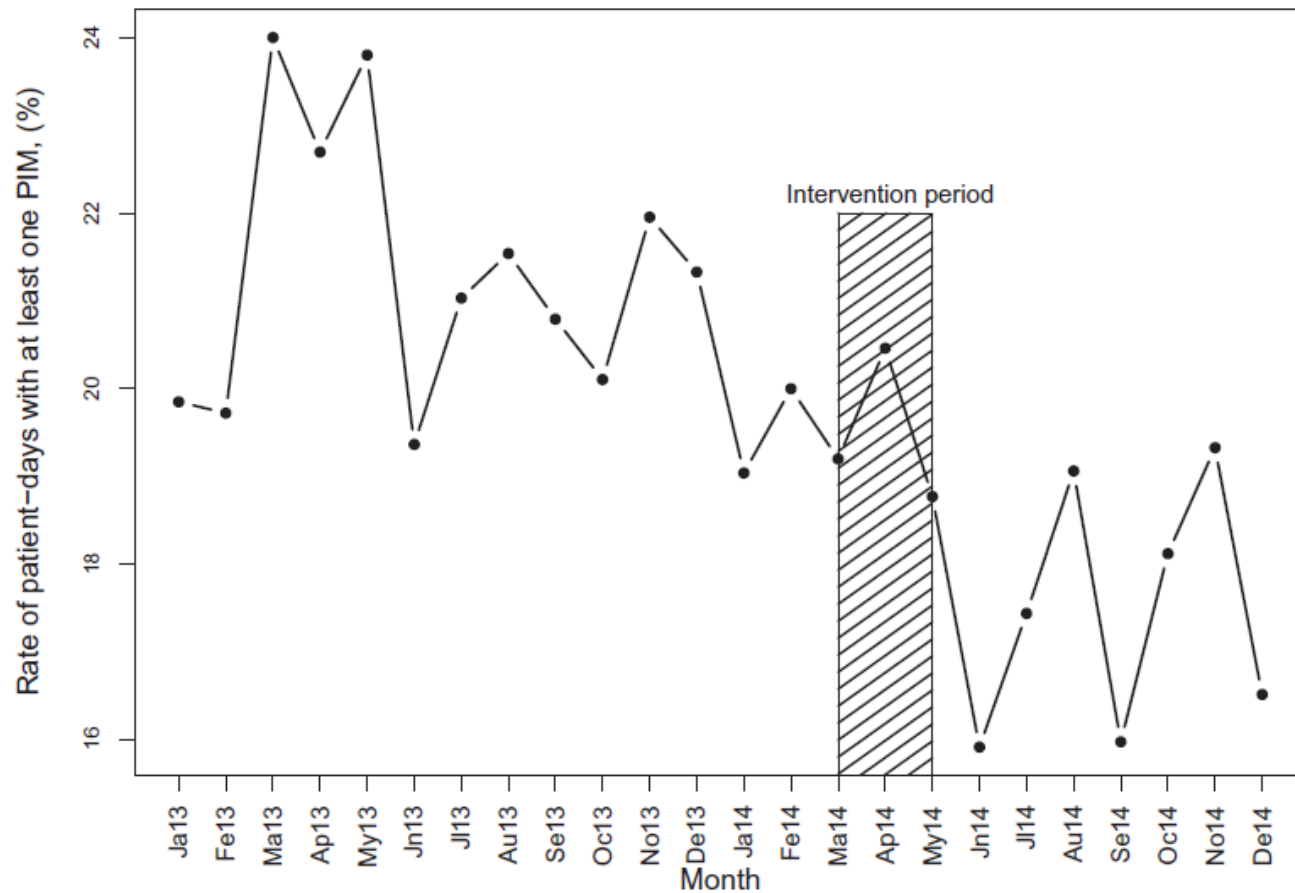


Figure 1. Rate of patient-days with at least one potentially inappropriate medication (PIM) according to month.

Segmented Regression Analysis

Table 2. Estimated Use of Potentially Inappropriate Medication (PIM) According to Segmented Regression Analysis

Independent Variable	Patient-Days with ≥ 1 PIMs, % (95% Confidence Interval) <i>P</i> -Value	
	Full Model	Most Parsimonious Model
All PIMs		
PIM use at start of observation	21.89 (20.17–23.60) <.001	21.09 (20.3–21.88) <.001
Preintervention trend, per month	–0.11 (–0.31–0.09) .31	Not retained
Change in rate immediately after intervention	–2.55 (–5.58–0.47) .12	–3.45 (–4.76 to –2.14) <.001
Change in trend after intervention, per month	0.11 (–0.40–0.62) .68	Not retained

Reduction in targeted potentially inappropriate medication use in elderly inpatients: a pragmatic randomized controlled trial

**Benoit Cossette^{1,2,3,4} • Jean-François Éthier^{1,5,6} • Thomas Joly-Mischlich^{1,3} •
Josée Bergeron³ • Geneviève Ricard^{1,5} • Serge Brazeau⁵ • Mathieu Caron⁷ •
Olivier Germain⁸ • Hélène Payette^{1,2} • Janusz Kaczorowski^{9,10} • Mitchell Levine^{4,11}**

Eur J Clin Pharmacol. 2017 Oct;73(10):1237-1245

Medication change

	Control % (modified drugs/drugs with intervention) ^a	Intervention	Absolute difference % (95%CI)
Drug cessation or dosage decrease			
Number of interventions ^b	99	52	
Medication change at 48 h	15.9 (13/82)	45.8 (22/48)	30.0 (13.8 to 46.1)
Medication change at discharge	27.3 (27/99)	48.1 (25/52)	20.8 (4.6 to 37.0)

Table 4 Medication changes for drugs for which a pharmacist intervened

Current project

Implementation of the Integrated Knowledge Translation Strategy in primary care

- Family Health Team practice, (Estrie region of Qc)
- 65 (18%) of 369 screened patients 65 and older with an alert
- Mean age: 77 years old; women: 71%
- Clinically relevant alert for 27 (42%) of 65 patients
- Change in medication in 17 (63%) of the 27 patients with a relevant alert

Our next project (Sept. 2018)

Transitional Care Services

Reductions in Medication-Related Hospitalizations in Older Adults with Medication Management by Hospital and Community Pharmacists: A Quasi-Experimental Study

Karen L. Pellegrin, PhD, MBA,^a Les Krenk, RPh,^b Sheena Jolson Oakes, PharmD, RPh,^c

JAGS 65:212–219, 2017

Discussion

Using the existing electronic tools (medication software, electronic medical record, discharge summaries...) has multiple advantages:

- Avoids double data entry
- Data validated by the clinical processes
- Providing feedback to the clinicians on their practices, based on the data that they enter
- Possibility to add data to the clinical tools based on the clinicians' needs
- Longitudinal assessment of the clinical practices

Discussion

Using the existing electronic tools also has disadvantages:

- Clinical needs can differ from evaluation needs
- Clinical data structured as aggregated / free text data

Using the existing electronic tools has more advantages than disadvantages

What is the Canadian Longitudinal Study on Aging (CLSA)?

“The Canadian Longitudinal Study on Aging is the largest most comprehensive research platform and infrastructure available for aging research with longitudinal data that will span 20 years from over 50,000 Canadians over the age of 45”

A research platform – infrastructure to enable state-of-the-art, interdisciplinary population-based *research* and *evidenced-based* decision-making that will lead to better health and quality of life for Canadians



The CLSA platform collects data and biospecimens from:

51,338 Canadian women and men aged 45 - 85 at baseline

Questionnaires by telephone interview (~150 min) on 21,241 participants

**Randomly selected
10 provinces**

Questionnaires by in-person interviews (~60 min) and physical assessments (~180 min) on 30,097 participants

**Randomly selected
25-50 km of 11 sites in 7 provinces**

20 year study: Follow up every 3 years, maintaining contact in between

Data Linkage with health care, mortality and disease registries

- The CLSA is currently in Follow-up 2 of data and biospecimen collection
- Data from the Baseline are available and already used by the research community and governments. Data from Follow Up 1 will be available in 2019.

Steps in Data Access Process

1. Data Preview Portal: User reviews data available

The screenshot shows the 'DataPreview Portal' interface. It includes a search bar with a dropdown menu for 'Variable' and 'Dataset'. Below the search bar, there are sections for 'Variable properties' (Name, Label) and 'Additional information' (Areas of information, Contributions for cognitive functioning and mental health, Contributions for general health). A table displays the search results with columns for Name, Label, and Dataset.

Name	Label	Dataset
NUT_CALC_MF_DOM	Consumption of Calcium-fortified juices - For Month	Q08F
NUT_CALC_WB_DOM	Consumption (times per week) of Calcium-fortified juices	Q08F
NUT_CALC_WK_DOM	Consumption of Calcium-fortified juices - For Week	Q08F
NUT_CALC_YR_DOM	Consumption of Calcium-fortified juices - For Year	Q08F
NUT_CALC_FD_DOM	Consumption of calcium-fortified foods	Q08F
NUT_CALC_DW_DOM	Consumption of calcium-fortified foods - For Day	Q08F
NUT_CALC_MO_DOM	Consumption of calcium-fortified foods - For Month	Q08F

2. User applies for data

The screenshot shows the 'CLSA Data and Biospecimen Request Application' form. It includes the CLSA logo and the text 'Application ID / N° de la demande (office use only / usage interne seulement)'. Below the form title, there are instructions for completing the application in both English and French.

CLSA Data and Biospecimen Request Application
Demande d'accès aux données et aux échantillons de l'ÉLCV

Instructions for completing an application /
Consignes pour remplir une demande

- Please consult the CLSA website for instructions, and policies and procedures for CLSA data and biospecimen access: www.clsa-élcvc.ca (Data Access). Applicants are also encouraged to review the pertinent sections of the relevant CLSA protocol(s), Data Collection Tools and Physical Assessments in advance of completing the application. Additional information on the variables in the CLSA dataset is on the **CLSA Data Preview Portal**.

Veuillez consulter les consignes, les politiques et la procédure de demande d'accès aux données et

3. CLSA performs administrative & statistical review
4. CLSA Data and Sample Access Committee Review & approvals
5. User signs Data & Sample Access Agreement & provides proof of ethics approval
6. CLSA prepares and delivers dataset

Questions ?

benoit.cossette@usherbrooke.ca

SCHÉMA

Tous les résidents des unités participant à OPUS-AP
(n=1054, 100%)

Résidents sans prescription d'antipsychotiques
(n=509, 48%)

Résidents sans diagnostic de trouble
neurocognitif majeur (n=228, 22%)

Cohorte de suivi (TNCM+ antipsychotique)
(n=464, 44%)

Prescription d'antipsychotique au dossier pour un résident avec:

- Résident avec symptômes psychotiques ou des symptômes d'agressivité en présence d'un danger pour le résident ou pour autrui (n=88, 19%)
- Schizophrénie ou troubles psychotiques apparentés (n=26, 6%)
- Trouble dépressif majeur (n=19, 4%)
- Troubles bipolaires ou apparentés (n=14, 3%)
- Déficience intellectuelle (n=1, 0,2%)
- En contexte de fin de vie (n=2, 0,4%)
- Famille désire poursuivre l'antipsychotique (n=26, 6%)
- Non-admis à l'unité lors de la saisie (n=1, 0,2%)
- Autre (n=17, 4%)

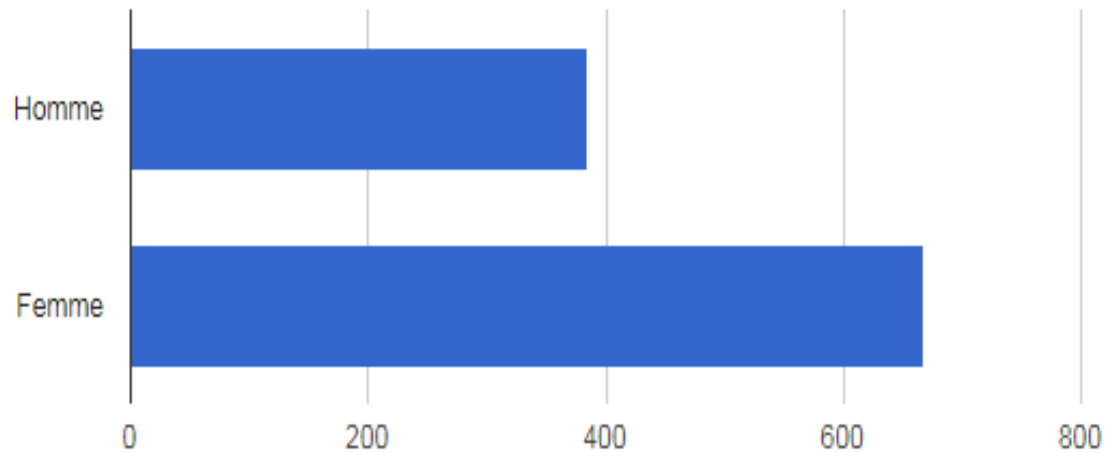
Résidents éligibles à la déprescription
(n=312, 67%)

REDCap™ – Reports

5-Sexe [Actualiser](#) |

Total (N)	Manquant	Unique
1052	2 (0,2%)	2

Comptages/fréquence: Homme (385, 36,6%), Femme (667, 63,4%)



A fluctuating situation

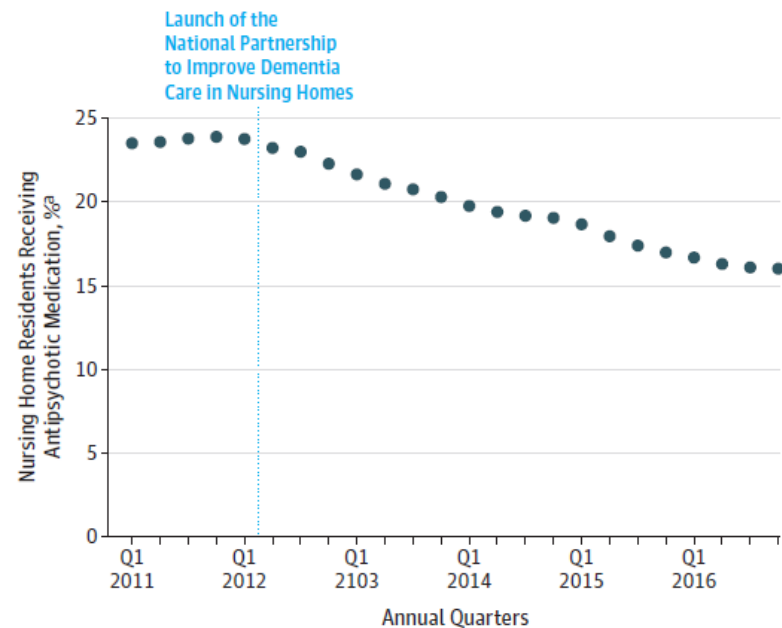
VIEWPOINT

Reducing Excessive Use of Antipsychotic Agents in Nursing Homes

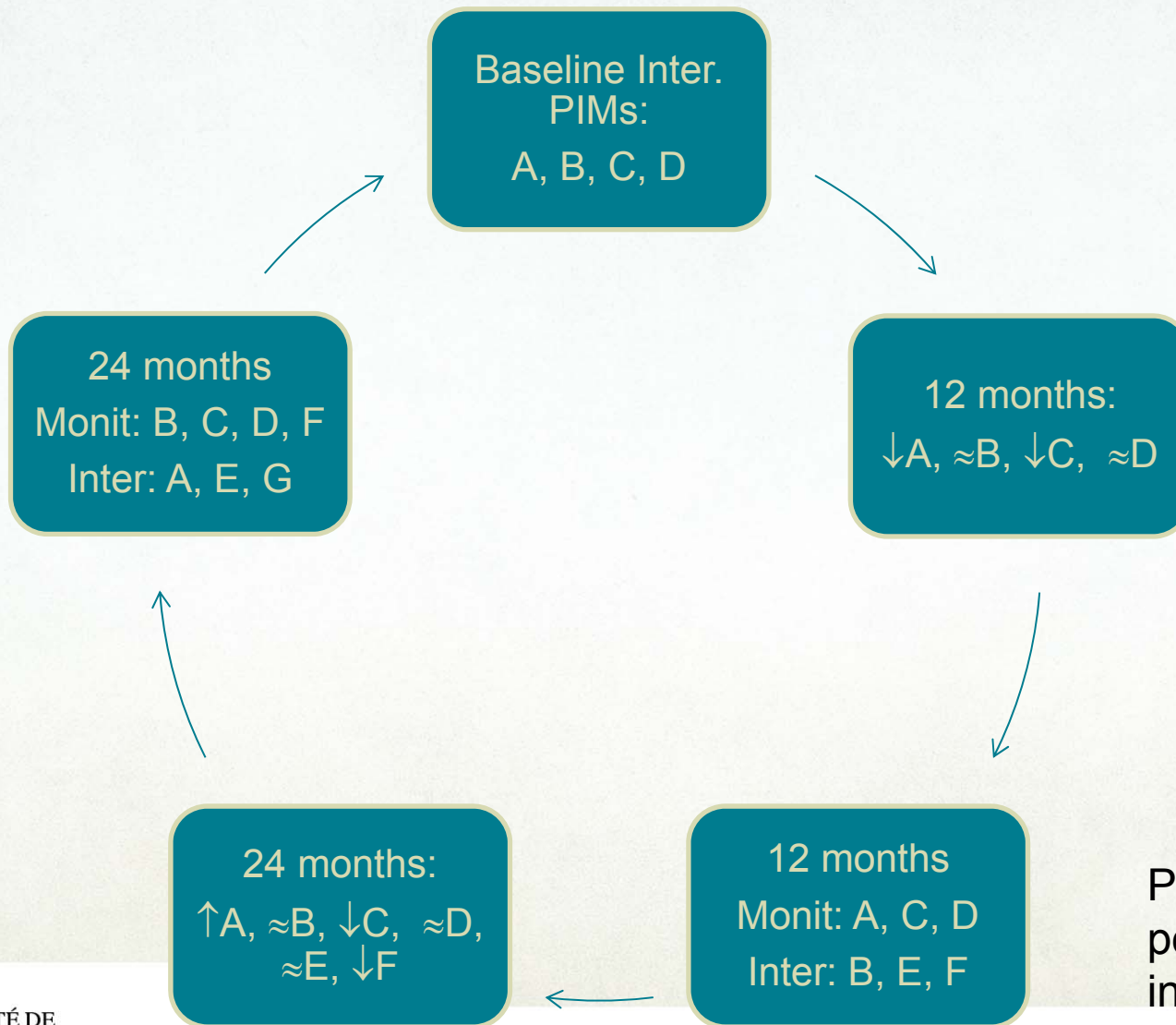
Jerry H. Gurwitz, MD JAMA July 11, 2017 Volume 318, Number 2

- 1996: antipsychotic use (US): 16%
- The introduction of atypical antipsychotics changed prescribing patterns
- Impact of the initiative led by the Centers for Medicare & Medicaid Services (CMS)

Figure. Percentage of Long-Term Nursing Home Residents Receiving Antipsychotic Medication, 2011-2016



Monitoring & intervention cycle



PIMs:
potentially
inappropriate
medication