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Taking action to improve health for all

Cost-Savings of Primary Healthcare Nurse Practitioners' Planned Interventions for Reducing Transfers of Patients from Home Care to Emergency Departments in Québec, Canada

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Background & Research Problem

The role of PHCNPs

Primary healthcare nurse practitioners (PHCNPs) increase access to services in home care settings.

PHCNP's planned interventions are **regular follow up** of patients in home care

PHCNP's unplanned interventions include home visits to **patients experiencing unexpected events (i.e falls) or a deterioration** in their health

Background & Research Problem

Current Evidence

Systematic reviews show that regular follow up by PHCNPs improve health outcomes and:

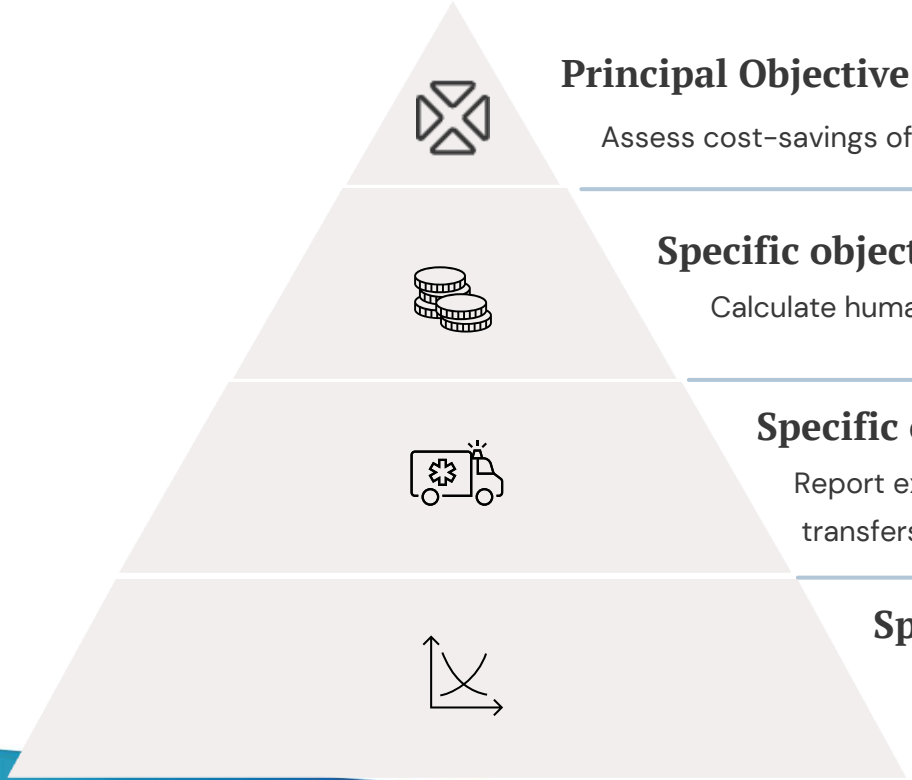
- reduce transfers to the Emergency Department (ED)
- reduce hospital stays
- reduce complications

Knowledge Gap

The economic benefits of PHCNP's planned interventions and reduced transfer costs remain underexplored

Cost-effectiveness analyses are needed to guide policy decisions.

Study Objectives



Principal Objective

Assess cost-savings of PHCNPs' planned interventions

Specific objective 1: Estimate Intervention Costs

Calculate human resource costs of planned and unplanned interventions (care)

Specific objective 2: Determine Transfer Costs

Report expenses from the literature for emergency department transfers from home care

Specific objective 3: Calculate Cost-Savings

Quantify economic benefits of reduction in transfers due to PHCNPs' planned versus unplanned interventions

Methodology

Phase 1: Time-Motion Study

PHCNPs were observed by research staff during their work in home care settings.
Activities were captured using a validated tool to **capture time spent** on clinical and non-clinical dimensions of interventions.

Phase 2: Rapid Literature Review

CINAHL and Medline databases were queried
Costs of PHCNP related patient transfers from home care to ED were summarized

Phase 3: Retrospective Chart Review - Cost-Effectiveness Analysis

Calculated **net cost-savings** from data spanning 2019-2020, using a **societal perspective,** 1,000 simulations with **discount rates. of 3%, 5%, and 8%,** and costs were reported in 2022 CAD

Findings

Phase 1: Time-Motion Study

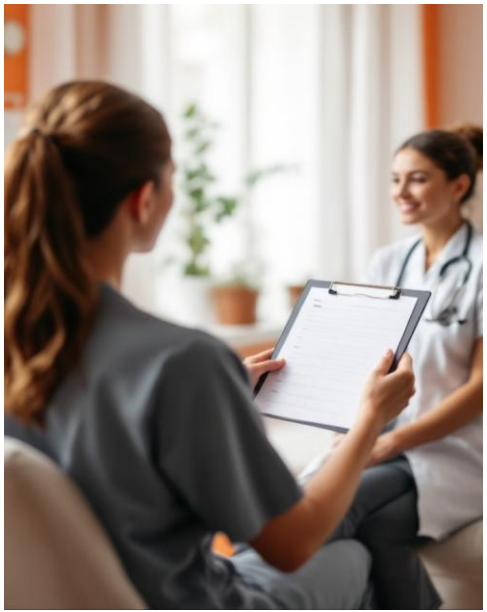
Nurses

6 PHCNPs were followed between November 2021 and May 2022

Total time recorded per PHCNP: 113 hrs and 58 min

Patients visited on average per day: 9.2

Mean observation time per day : 8hrs 06 minutes



Interventions

Total N= 1091

Planned n=790 (72%)

Unplanned n=301 (28%)

Clinical n=854 (78%)

Non-clinical n=237 (22%)

Phase 1: Time spent by dimension during home visits

Dimensions/Activities	Number	% of total	Time spent hours:minutes	% of time spent
Direct Care	632	**57.9**	61:01	53.5
Indirect Care	222	20.3	21:14	18.6
Education	30	2.7	7:31	6.6
Administration	164	15.0	11:46	10.3
Research	18	1.6	3:57	3.5
Other	1	0.1	0:22	0.3
Personal time	24	2.2	8:07	7.1
Total	**1,091**	100.0	113:58	100.0

Phase 1: Cost Analysis of Interventions

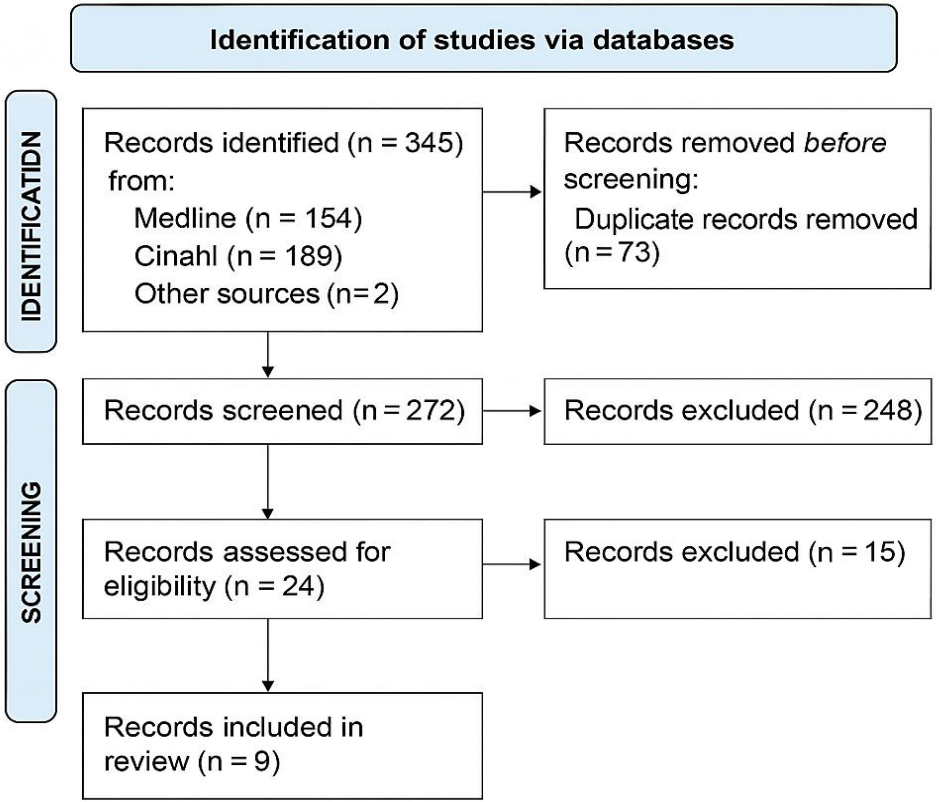
Intervention Type	Median Annual Cost (CAD 2022)	Range (Min; Max)
All Interventions N=1091	790.00	392.70; 3,997.10
Unplanned n=790	772.10	403.50; 2,942.20
Planned n=301	792.30	392.70; 3,997.10
Adjusted Cost difference Planned vs. Unplanned	**49.50**	**-71.00; 166.30**

Time-Driven Activity-Based Costing showed planned interventions cost slightly more than unplanned ones, but non-significant (p>0.05)

Phase 2: Literature Review

To identify the costs linked to patient transfers from home care to emergency departments we undertook a rapid literature review.

Time frame: 2015-2025



Phase 2: Costs of transfer (standardized to 2022 CAD)

Median Transfer Cost

$1,266 (986 ; 1,557)

5% (3%, 8%) discount

Median transfer cost **with hospitalization**

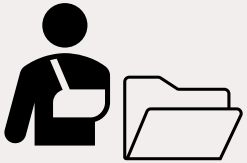
$15,303 (12,867 ; 20,583)

5% (3%, 8%) discount

Phase 3: Chart review to assess Impact of Planned interventions

Chart data were extracted from 4 sites where PHCNP from phase 1 worked in home care teams

- Two rural and two urban establishments in Quebec were chosen



Data were extracted for 343 patients who received care between 2019 and 2020

Phase 3: Patient Characteristics

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Demographics n=343

Average age: 80.2 years

77.6% > 65 years old

Female 71.2%

Male : 28.8%

Health Factors

83.1% required complex care (e.g., multi-morbidity)

Intervention Context

53.1% involved multiple informants (e.g., family)

27.9% were for follow-up/chronic illness management

Communication Methods

27.3% face-to-face

14.8 % were telephone or web based

Phase 3: Chart review to Assess Impact of Planned Interventions

	Interventions		
Number of transfers	Unplanned	Planned	Total
0	984	2 058	3 042
1 - 6	107	25	132
Total	**1 091**	**2 083**	**3 174**

Transfer Frequency

81.9% of patients had zero transfers. **18.1%** experienced 1–6 transfers

Phase 3: Chart review to Assess Impact of Planned Interventions

Transfer reduction %

19.8% (3.1% - 33.6%)

Decrease when planned interventions increase by 1%

For each **1%** increase in planned interventions, transfers decreased by **19.8%**

Transfer reduction

26.14 (4.09 – 44.35)

Average number of transfers prevented

This resulted in **26.14 (4.09–44.35) avoided transfers annually**.

Cost-Savings Results

Net Cost-Savings (2022 CAD)

38,857 (30,968; 57,036) median 5% (3%, 8%) discount for **transfer reduction alone**

879,718* (700,516 ; 2,147,421) median **with hospitalization** 5% (3%, 8%) discount

Benefit-Cost Ratio

800:1 (603:1 ; 1,164:1) median 5% (3%, 8%) discount

17,530:1 (13,031:1; 46,563:1)** median with hospitalization 5% (3%, 8%) discount

***Planned interventions provide net gains of $879,718 per year**

**** Every 1 dollar invested in planned interventions provides $17,530 in savings**

Conclusions and Implications

The economic evidence s**upports investment in PHCNP roles for home care.**

Interventions planned by primary care nurse practitioners generated median net cost savings of **879,718** CAD annually (2022) with the potential to reach **2,147,421** at an 8% discount rate, for reduced transfers with hospitalization.

Clinically, these finding supports **safer, more stable, and person- centred care** that keeps patients at home and out of hospital.

Policy Implications

Findings support increased integration of PHCNPs in home care services throughout Quebec's healthcare system.

Questions ?

Thank you, Merci

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Methodology

Study Design

Mixed Observational, Retrospective and comparative cost-savings study

Approach

Time-motion study, literature review, and cost-effectiveness analysis

Financial Analysis Perspective

Societal perspective to capture comprehensive economic impact

Discounting and Sensitivity Analysis

1,000 simulations with discount rates of 3%, 5%, and 8%, and costs were reported in 2022 CAD