



# SIPA

## Results of a 22 month Randomized Controlled Trial on an Integrated System of Care for Frail Older Persons

### Howard Bergman, MD

The Dr. Joseph Kaufmann Professor and Director  
Division of Geriatric Medicine, McGill University

[www.solidage.ca](http://www.solidage.ca)

Groupe de recherche  
Université de  
Montréal/McGill sur les  
services intégrés pour les  
personnes âgées

McGill/Université de  
Montréal Research Group  
on Integrated Services for  
Older Persons

Co-Director: Solidage Research Group

Director  
Quebec Research Network in Ageing  
FRSQ

Vice Chair  
Advisory Board of the Institute of Aging  
CIHR

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SIPA-Med Grand Ed



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Centre d'épidémiologie clinique et de recherche en santé  
publique, Institut Lady Davis  
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McGill

The Dr. Joseph Kaufmann Chair in Geriatric Medicine  
La Chaire D' Joseph Kaufman en gériatrie



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# The Research Team

**François Béland PhD**      **Howard Bergman MD**  
**Paule Lebel MD**

**Pierre Tousignant, Johanne Monette, Jean Louis Denis,  
André-Pierre Contandriopoulos, Francine Ducharme,  
Jean-François Boivin, Stan Shapiro**

**Kathy Lesperance, Luc Dallaire, Cristian Morales, Claude Richard,  
Denis Roberge, Nassera Touati, Ellen Leibovitch**

## International Collaboration

**A. Mark Clarfield, Jack Guralnik, Robert Kane**



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# Funding

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- ◆ Fonds de la Recherche en santé du Québec (FRSQ)
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- ◆ To support Dissemination: Novartis, GlaxoSmithKline, Aventis

# Characteristics of Older Persons with disabilities

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- ◆ Generally over 75
- ◆ Disabilities in ADL/IADL
- ◆ Acute and chronic medical problems
- ◆ Importance of social network
- ◆ Frequent transitions: community, hospital, rehab, NH
- ◆ Need for a complex combination of medical and social services

# Why Integration<sup>1</sup>

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- ◆ Increase in number of older persons
- ◆ Frail older persons need a complex combination of health and social services
- ◆ Present difficulty in management
  - Fragmentation; unmet needs; underutilization of effective geriatric and care management interventions; parallel play-medical, community services; problem in quality of care; negative incentives; inappropriate use of resources ; absence of “comprehensive” and responsibility and accountability

# Why Integration<sup>2</sup>

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- ◆ Increasing evidence of the effectiveness of treatment and care management in frail older persons
- ◆ Single entry point (coordination) represents an improvement
- ◆ Points to a need for a shift in paradigm
  - Align governance and allocation of resources with clinical goals

# Challenge

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- ◆ Present level of fragmentation
- ◆ Potential impact on health outcomes, quality of life, utilization and cost of services

How to ensure:

- ◆ Cost-effective intervention in a coherent system of care

# Integration/Coordination Demonstration projects

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## International

- ◆ Pace/On Lok (USA)
- ◆ S/HMO
- ◆ Bernabei (Italy)

## Canada

- ◆ CHOICE
- ◆ Bois-Francs-PRISMA
- ◆ SIPA

Bodenheimer, NEJM 1999;341:1324-1328  
Bernabei et al, BMJ 1998;316:1348-51  
Newcomer et al, JAGS 2000;48:829-834  
Bergman et al, CMAJ 1997;157-1116-1121

# SIPA

## The Process

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### ◆ Partnership

- Ministry and Regional Board decision-makers and administrators
- Hospital, home-care and Nursing Home managers
- Clinicians
- University-based researchers

### ◆ Advisory board

### ◆ Interdisciplinary committee on clinical practice

# Characteristics of the SIPA Integrated System of Care for the Frail Elderly<sup>1</sup>

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- ◆ Community primary care based system responsible for the full range of services
  - Health and social services, acute and long-term care: community, hospital and institutional
- ◆ Responsibility (health outcomes, utilisation) for a defined population on a defined territory
- ◆ Consolidated case management, in partnership with Family MD, with clinical responsibility and accountability, for the full range of services; integration of medical and social care based on evidence based interdisciplinary protocols

# Characteristics of the SIPA Integrated System of Care for the Frail Elderly<sup>2</sup>

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- ◆ A responsive organization able to mobilize resources flexibly and rapidly to meet needs, avoid inappropriate utilization
  - Increased intensity of community care
  - Early detection and intervention (medical, rehabilitation, social)
  - Rapid communication/response; on call; provider linkage
- ◆ Pre-payment with per capita budget with financial responsibility for the full range of services (not implemented in demonstration project)  
Universal, single payer, publicly managed

# SIPA

## Demonstration Project and Evaluation

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- ◆ Study the feasibility, effectiveness and cost-efficiency of SIPA as a system of care for the frail elderly
- ◆ Determine the modifications necessary for its generalization

# The SIPA Demonstration Project

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**A randomized controlled trial of 1230 frail elderly  
randomized to SIPA system of care or usual care on 2  
sites in Montreal, Canada**

- ◆ research, planning 1995-98
- ◆ Organization of  
demonstration project 1/6/98 – 31/5/99
- ◆ RCT 22 months - 1/6/99 – 31/3/01

# SIPA: Hypotheses<sup>1</sup>

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- ◆ The transformation (integration) of the management of frail elderly persons supported by the intensification of the community intervention will change the configuration of utilization by decreasing acute hospital (hospital days and ED use) and LTC institutional utilization
- ◆ Public per capita costs in the SIPA group, including the grant, will be equivalent or decreased compared to the control group

# SIPA: Hypotheses<sup>2</sup>

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- ◆ No change in health or functional outcomes
- ◆ Equivalent or improved quality of care
- ◆ Increased satisfaction, no increased burden or private costs in the SIPA group

# SIPA

## Lexus SUV or Honda Civic

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SIPA

Control

Costs

Costs

Use at all levels + grant

Use at all levels

Hypothesis: cost per patient in SIPA group (including grant) will be equal to the cost per patient in the control group

The higher cost of SIPA at the community service level will be “offset” by reduced hospital and LTC costs

# SIPA Intervention<sup>1</sup>

## Staff

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- ◆ 2 multidisciplinary teams per site
- ◆ 160 patients per team
  - 4 case managers (nurse or social worker)
  - 2 community nurses
  - 0.5 SW
  - 0.5 OT
  - 0.5 PT
  - 15 home makers
  - 0.5 consultant pharmacist in one site
  - Part-time staff physician

# SIPA Intervention<sup>2</sup>

## Physicians

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- ◆ Patients encouraged to continue with own community family physician (mainly office-based)
  - Usual fee-for-service plus \$400/SIPA/patient/year
- ◆ Part-time SIPA staff physician
  - Salary
  - Small SIPA primary care case load
  - Backup and resource to team and community family physician (e.g. for urgent or more intensive intervention)
  - On site geriatric consultation in one site

# SIPA Intervention<sup>3</sup>

## Assessment and management

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- ◆ Multidisciplinary team responsible for assessing needs, organizing and delivering most of health and social services in community in collaboration with primary care physician
- ◆ Comprehensive geriatric assessment on entry
- ◆ Evidence based interdisciplinary protocols development
  - Nutrition, falls, CHF, dementia, depression, medication, vaccination
- ◆ Rapid communication, mobilisation of resources
  - Intensive home care, group homes
- ◆ 24 hour nurse on call with MD backup

# SIPA Intervention<sup>4</sup>

## Case Management

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- ◆ Consolidated case management with multidisciplinary team
- ◆ Intervention with patients and caregivers
- ◆ Liaison with family MD and specialists
- ◆ Maintain clinical responsibility
- ◆ Actively followed patients throughout trajectory of care including in hospital
  - Assure continuity
  - Ease transitions

# SIPA Intervention<sup>5</sup>

## Accountability

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- ◆ 2 sites based in CLSCs but distinct budget, personnel, governance
- ◆ Clinical responsibility and accountability for utilization in community, hospital, etc.
- ◆ Monitoring of application of protocols and service utilization
- ◆ Agreements, mainly informal, with other providers
- ◆ Controlled budget allowing for intensive and flexible utilization of home services, group homes, additional services based on clinical assessment
- ◆ Per capita budget with full financial responsibility not implemented

# Control Intervention

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- ◆ Usually CLSC home care
- ◆ Multidisciplinary team evaluation based primarily on service provision
- ◆ Services: nursing, social services, support care; limited PT, OT, MD generally limited to several hours per week
- ◆ Essentially no case management
- ◆ No on call; limited weekend availability
- ◆ Little continued/flexibility over budget; no budget for group homes
- ◆ No responsibility/accountability for clinical and utilization outcomes outside of home care services.

# SIPA Demonstration Project

## Feasibility

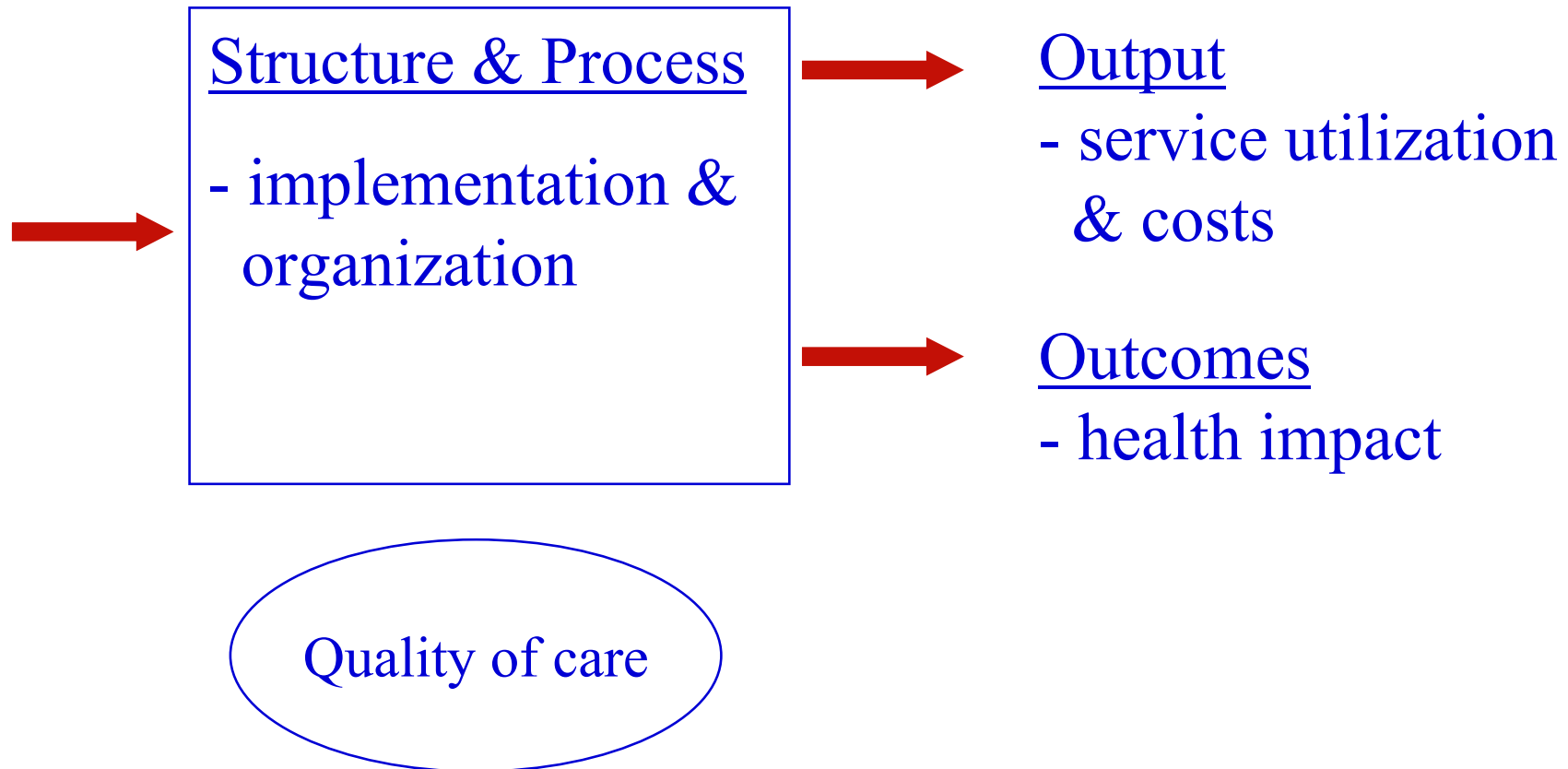
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- ◆ Clinical responsibility of SIPA, regardless of location
- ◆ Full range of services
- ◆ Clinical responsibility to enhance continuity
- ◆ Flexible use of alternative resources
- ◆ Rapid response to emergency situations
- ◆ Intensive community medical intervention, closely linked to social intervention

# SIPA Evaluation – Research Topics

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## SIPA Program



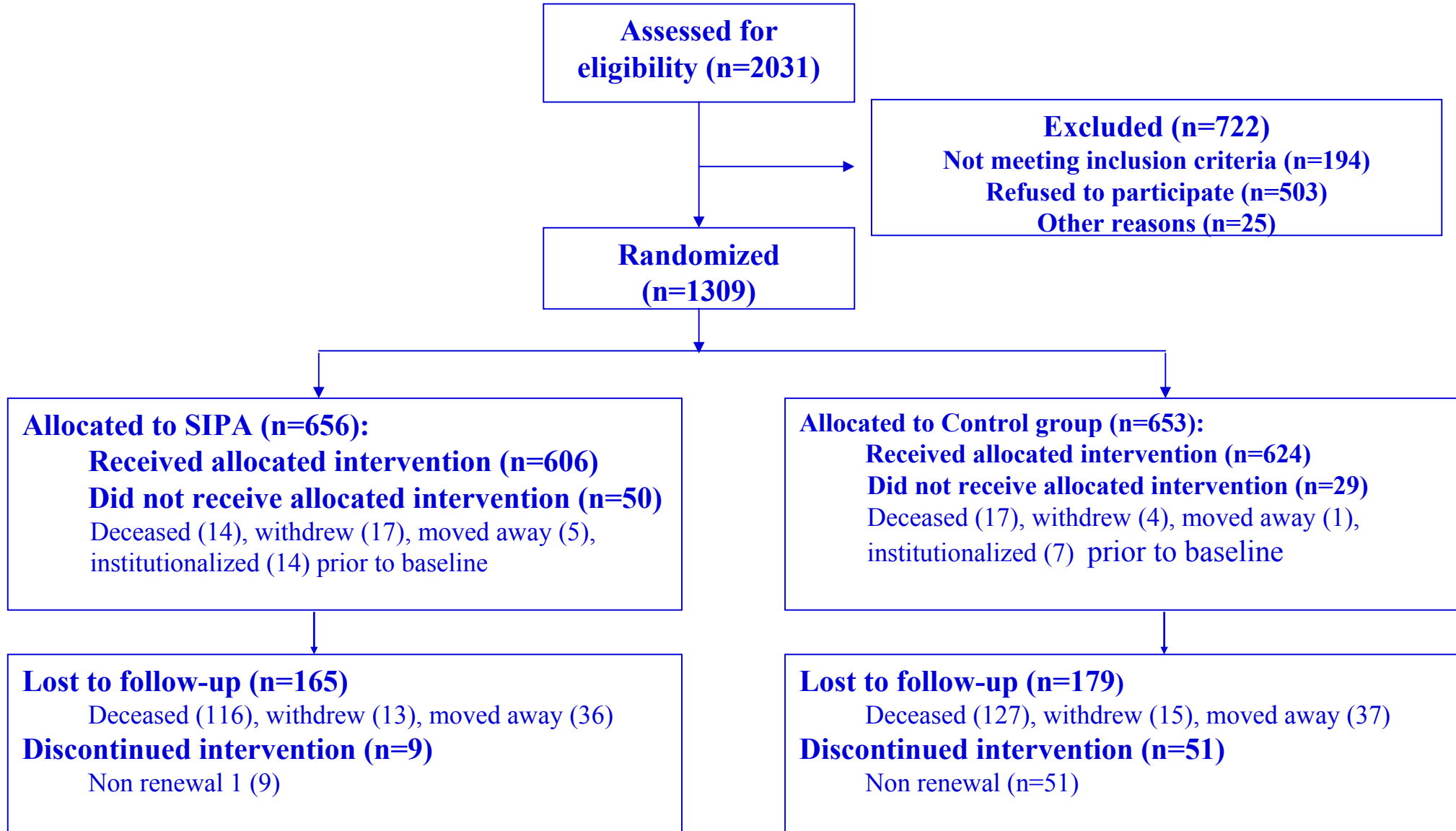
# SIPA Inclusion Criteria

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- ◆ Age > 64
- ◆ Community dwelling
- ◆ Participant or caregiver competent in French or English
- ◆ Caregiver participation (if applicable)
- ◆ Score of 10 or more on SMAF\* (at least moderate disability in IADL or ADL)
- ◆ No pending SNH admission or move out of CLSC area

\* Hébert et al. Age and Ageing 1988; 17(5) 293-302

# Recruitment and Randomization



# SIPA Primary Outcome Measures

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Utilisation (admissions, total days/hours) and public costs

## ◆ Institutional services

- ED
- inpatient acute care
- Day surgery
- alternate level care (ALC)\*
- skilled nursing home (SNH)
- Rehab

## ◆ Community services

- home health care and home social care
- MD, medications, technical aids
- Group homes

\* Patients who after their acute hospital episode cannot return to the community and who await SNH placement in an acute hospital bed (“bed-blockers”)

# SIPA Secondary Outcome measures

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- ◆ Health status
- ◆ Satisfaction with care
- ◆ Out-of-pocket expenses
- ◆ Caregiver burden

# SIPA Sample Size Calculation

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- ◆ Powered ( $\beta = 0.9$ ) to detect outcome (admissions, length of stay, costs) differences of:
  - 25 % hospital
  - 50% SNH
  - At 95% significance level ( $\alpha = 0.05$ )
  - Taking into account expected mortality, refusals to participate and moves out of CLSC areas
  - Based on previous study of resource use in the frail elderly\*

\* Béland et al. Vieillir dans la communauté: Santé et autonomie, Rapport de recherche PNRDS #6605-4570-602, Montréal 1998

# SIPA Evaluation - Sources of Data

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- ◆ Client (2) & caregiver (1) interviews
- ◆ Administrative and clinical records of service providers: SIPA, CLSC, hospital, LTC institutions, etc
- ◆ Provincial administrative databases: RAMQ, Ministry, Regional Board
- ◆ Qualitative evaluation of implementation, organization, quality of care

# SIPA - Data Analysis

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- ◆ Outcome differences tested using multivariate response models:
  - Allow for correlated dependent variables
  - Bivariate and continuous variables used in same model
- ◆ Differences in costs tested on users
- ◆ All cost and length of use data skewed → log-transformed
- ◆ Controlled for socioeconomic factors, health, study site
- ◆ Supplemental analyses to test for interactions:
  - Trial status with socioeconomic factors
  - Trial status with health (costs only)
- ◆ Intention to treat

<b>SIPA and control group participant characteristics at baseline</b>				
	Value range	Control Average or %	SIPA Average or %	P-Value
<b>Socioeconomic Characteristics at baseline</b>				
Age (years)	Range: 64-104	82	82	0.52
Gender	% males	28%	29%	0.61
Education	% high school and over	70%	68%	0.61
Income sufficiency	% with sufficient income	34%	35%	0.70
Live alone	% alone	40%	44%	0.20
<b>Health Status at baseline</b>				
# of chronic diseases	Range: 0-16	5.0	4.9	0.49
Functional limitations	# performed with difficulties	3.3	4.0	0.07
ADL disabilities	# not performed or with help	3.1	3.1	0.70
IADL disabilities	# not performed or with help	4.4	4.4	0.95
Incontinence	% with incontinence	46%	41%	0.12
Cognitive problems	% with 3+ on SPMSQ	32%	31%	0.59
Depression	% with 10+ on GDS	14%	12%	0.41
Perceived Health	% with good to excellent	51%	53%	0.51

# Results

(12 months 99/06/01 – 00/05/31)

## Quality

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- ◆ ↑ satisfaction/perception of quality for SIPA caregivers\* ; no difference for patients
- ◆ Qualitative study of 20 cases
  - convergence on perception of quality and innovation
  - room for improvement in management of certain problems (diabetes, falls, depression, CHF, medication...)
  - clinical responsibility
  - integration of medical services with the interdisciplinary team is possible but remains a significant problem
  - the analysis of “critical incidents” does not reveal poor management

\* statistically significant

# Results

(12 months 99/06/01 – 00/05/31)

## Health and Burden

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- ◆ Health outcomes – no difference
- ◆ Mortality – no difference
- ◆ No increase in burden or private costs to patients and caregivers

# Results

(22 months 99/06/01-01/03/31)

## Community Services Utilization

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- ◆ ↑ home health and social care accessed\*
- ◆ ↑ 62% hours of care and ↑64% cost for SIPA users of home health care\*
- ◆ No difference in social care hours

\*statistically significant

# Results

(22 months 99/06/01-01/03/31)

## Institutional Services Utilization

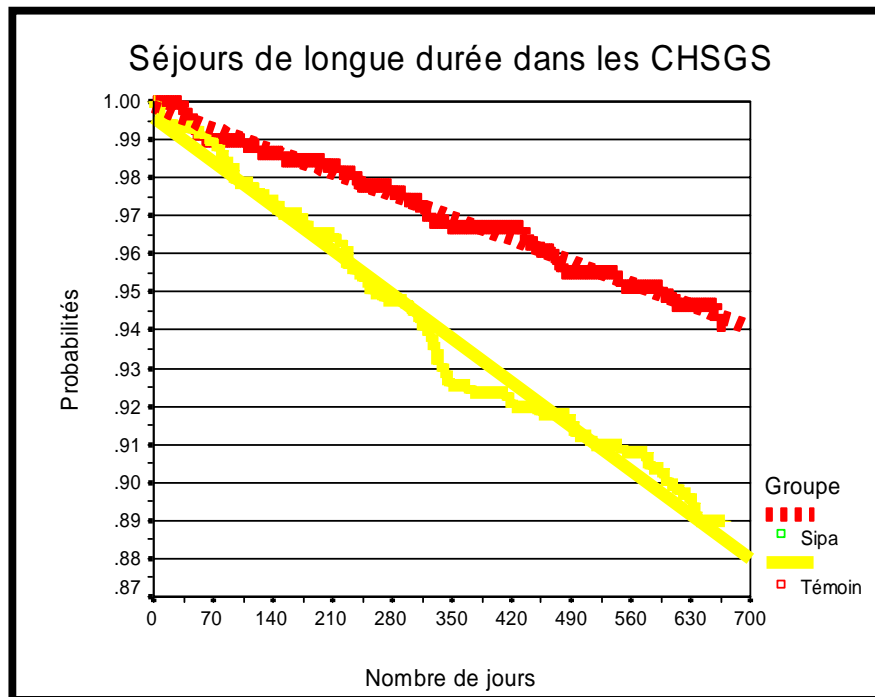
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- ◆ ↓ 50% acute care patients to ALC \*
- ◆ No difference in ED visits/ hours, acute hospital and SNH admissions/days

\*statistically significant

# Patients awaiting placement in acute care hospital

(22 months 99/06/01-01/03/31)



Control: 10%

SIPA: 5%

$P(\text{diff.})=0,001$

# Results

## Combined Community and Combined Institutional Costs (Users)

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◆ ↑ 44% Community\*

◆ ↓ 22% Institutional\*

\*statistically significant

# Average Costs per Study Participant

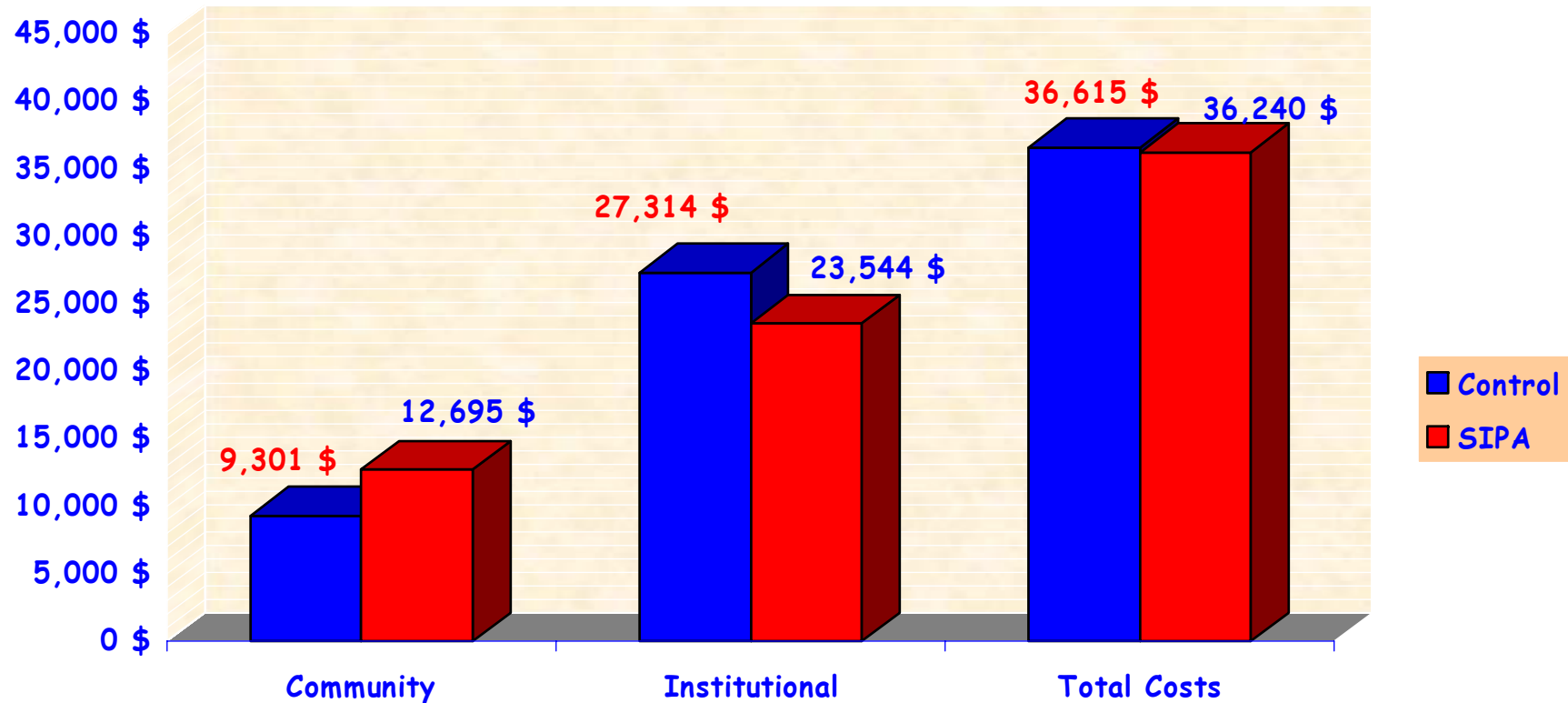
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	SIPA	Control	Differences
Community	12,695	9,301	+ 3,314
Institutional	23,544	27,314	- 3,770
Total	36,240	36,615	- 375

Services communautaires: Médicaments, visites médicales, soutien à domicile, résidences protégées, appareils techniques, hôpitaux de jours.  
Services institutionnelles: Hospitalisation de courte durée, hospitalisation d'un jour, hébergement, urgences hospitalières, réadaptations institutionnelles, soins palliatifs

# Average Costs per Study Participant of Total Community and Institutional Services

(22 months 99/06/01-01/03/31)



Services communautaires: Médicaments, visites médicales, soutien à domicile, résidences protégées, appareils techniques, hôpitaux de jours.  
Services institutionnelles: Hospitalisation de courte durée, hospitalisation d'un jour, hébergement, urgences hospitalières,

# Supplemental Analysis

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- ◆ ↑ home health care costs participants with > 4 chronic diseases\*
- ◆ ↓ acute hospital costs for participants with moderate to severe ADL disability\*
- ◆ ↓ SNH costs participants < 4 chronic diseases\*
- ◆ ↓ SNH costs participants living alone\*

\*statistically significant

# Principal SIPA Impact

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- ◆ ↓ utilization of hospital and SNH utilization in SIPA group
  - As expressed by the ↓ combined costs of hospital and SNH
  - Driven by decreased ALC “admission”; ↓ N.S. differences in utilization in other areas such as ED
- ◆ ↓ hospital utilization for those with increased ADL disability
- ◆ ↓ use of hospital as conduit for SNH placement
- ◆ Delaying SNH placement for those with few chronic diseases (lesser risk) and those living alone (higher risk)
- ◆ Cost neutral

# Study Strengths

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- ◆ Demonstrated feasibility of assessing major change in a system of care of delivery and organization for older persons with disabilities
- ◆ Strengths include:
  - Only RCT of its kind in North America
  - Largest of its kind (N=1230)
  - Longest trial period (22 months)
  - Follows CONSORT Guidelines
  - Clinical and organisational model

# Study Limitations

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- ◆ Powered to test for large differences of 25 to 50%  
→ failure to demonstrate significance of some trends
- ◆ No lead in time to allow for adjustments to new care model, or familiarization with it
- ◆ Limited physician availability
- ◆ Financial accountability not implemented, limiting incentives to reduce utilization
- ◆ Possible contamination between SIPA and control teams
- ◆ Increase in home care budget concurrent with trial

# Conclusion<sup>1</sup>

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The number of elderly and frail elderly, their need for a complex combination of health and social services and the present difficulty in managing their care suggests the need for a paradigm shift to:

- Understand the needs and their evolution
- Meet their needs
- Be cost effective

# Conclusion<sup>2</sup>

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The results of this and other trials demonstrate the potential to change the configuration of utilization of services in a cost-effective manner while maintaining or improving quality and satisfaction for this group of the population which needs a complex combination of health and social services

# The Results point to the necessary conditions for implementation<sup>1</sup>

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## **Clinical**

- ◆ A primary system of care with links with specialty care, in particular geriatric medicine and psychiatry;
- ◆ Change and reform primary medical care in tandem with development of integrated service networks for frail older persons
- ◆ Clinical responsibility throughout system of care
- ◆ Protocols for detection and management: essential tools in integrating medical and social care
- ◆ Target population in terms of need and intensity of intervention
- ◆ Role and function of case management

# The Results point to the necessary conditions for implementation<sup>2</sup>

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## **Governance and management**

- ◆ Governance which respects the diverse components but which fosters decision making and accountability
- ◆ Performance measures which reflect system clinical and management responsibilities at a system level: health, quality, satisfaction, administration, utilization of resources, budget, etc
- ◆ Information and communication systems

# The Results point to the necessary conditions for implementation<sup>3</sup>

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## Financing and allocation of resources

- ◆ Budget and resource allocation which supports intensification of the community intervention, flexibility in the utilisation of resources and allocation of resources based on performance:
  - Per capita
  - Targeted protected budget

# Policy

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- ◆ Important influence in Clair Commission\* recommendations (Family Medicine Groups and Integrated Service networks for frail older persons) and Quebec gov't policy orientation

\*[www.cessss.gouv.qc.ca](http://www.cessss.gouv.qc.ca)

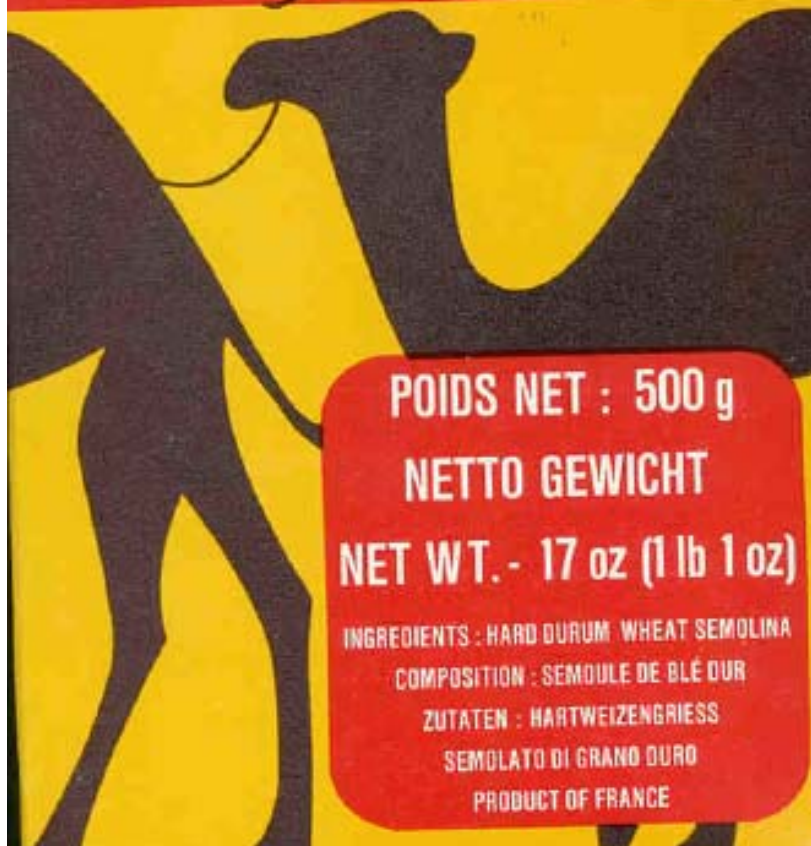
**COUSCOUS**

A SEMOLINA CEREAL

**SIPA**

**MOYEN**

كوسكوس متوسط



**POIDS NET : 500 g**

**NETTO GEWICHT**

**NET WT. - 17 oz (1 lb 1 oz)**

**INGREDIENTS : HARD DURUM WHEAT SEMOLINA**

**COMPOSITION : SEMOULE DE BLÉ DUR**

**ZUTATEN : HARTWEIZENGRIESS**

**SEMOLATO DI GRANO DURO**

**PRODUCT OF FRANCE**