



***The EMMIE program***

***From PromoVac studies to  
a provincial public health program***

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# Plan

- Implementation science
- PromoVac concept
- Motivational Interviewing of Miller and Rollnick
- PromoVac studies
- From promoVac results to the EMMIE program

# Canadian Institutes of Health Research

## Institute of Population and Public Health (IPPH)

### strategic plan 2009-2014

- **Priority 2: Population Health Interventions**
- **Priority 3: Implementation Systems for Population Health Interventions in Public Health and Other Sectors**
- *“Population health intervention research involves the use of scientific methods to produce knowledge about policy and program interventions that operate within or outside of the health sector and have the potential to impact health at the population level” [\(Edwards et al., 2011\)](#)*

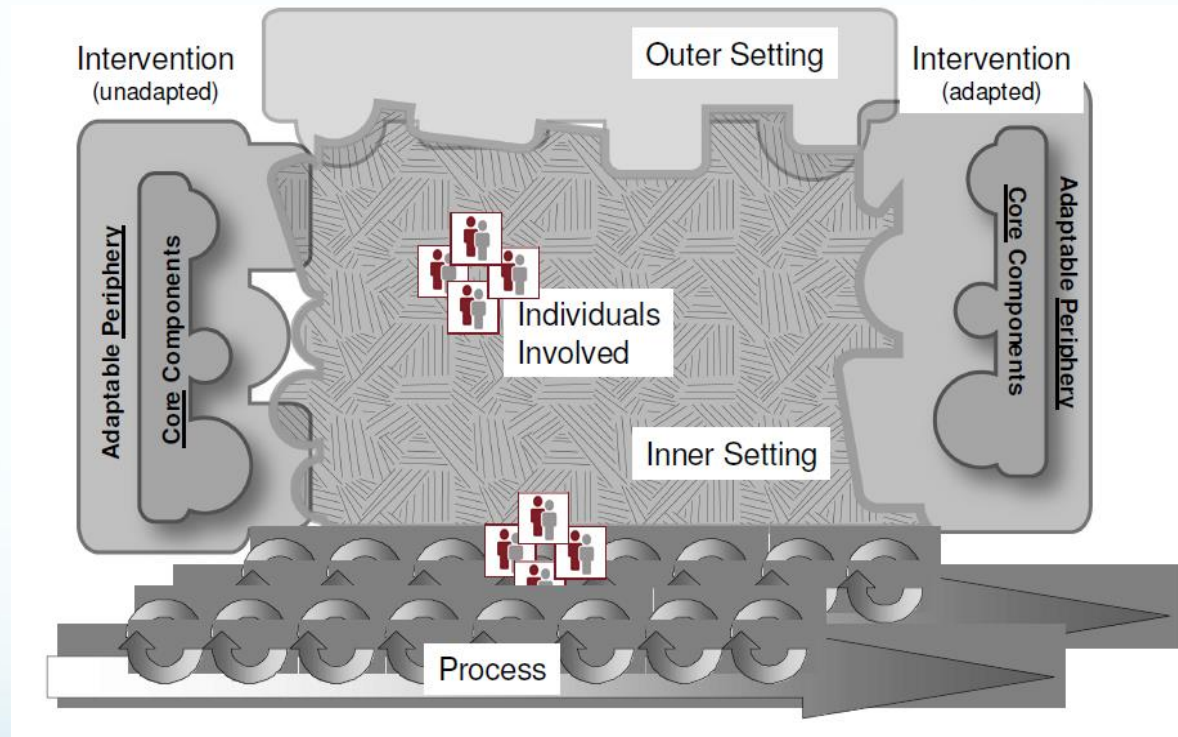
# Implementation science

- Study of strategies leading to the adoption of research results or evidence-based practices in health care
- Evaluation
  - Not only the outcome of the intervention but also the underlying processes
  - Understand why an intervention worked in a specific context
  - To optimize the benefits of the intervention.
  - To ensure its sustainability
  - To generate knowledge that can be applied to other contexts
- Focus
  - Not only on the effectiveness
  - Evaluation of the process of implementing an intervention
  - The effect of the process on the intervention itself

# Type of evaluations

Evaluation type	Definition	Uses	EMMIE program
Process	<p>Determines if specific program strategies were implemented as planned</p> <p>Focuses on program implementation</p>	<p>To determine why program has changed over time</p> <p>To address inefficiencies in program delivery of services</p>	<p>Protocol of implementation</p> <p>EMMIE organizational framework (comitees)</p>
Formative	<p>Evaluates a program during development in order to make early improvements</p> <p>Helps to refine or improve program</p>	<p>When starting a new program</p> <p>To assist in the early phase of program development</p>	<p>EMMIE organizational framework (comitees)</p> <p>MI training (3 to 6, additional supervision)</p> <p>Counsellors dashboard (Target of parents/maternity; Acceptability)</p>
Summative	<p>Provides information on program effectiveness</p> <p>Conducted after the completion of the program design</p>	<p>To help decide whether to continue or end the program</p> <p>To help determine whether a program should be expanded</p>	<p>Final evaluation</p> <p>In order to prepare the program phase 2</p>
Outcomes	<p>Focuses on the changes in comprehension, behaviors, and practices that result from programs activities</p> <p>Can include both short and long term results</p>	<p>To decide whether program/activity affect participants outcomes</p> <p>To establish and measure clear benefits of the program</p>	<p>Implementation outcomes</p> <p>Impact outcomes</p>

# Consolidated Framework For Implementation Research (CFIR)



# Consolidated Framework For Implementation Research (CFIR)

Topic/Description	Short Description
<b>I. INTERVENTION CHARACTERISTICS</b>	
A Intervention Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B Evidence Strength & Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C Relative advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E Trialability	The ability to test the intervention on a small scale in the organization [8], and to be able to reverse course (undo implementation) if warranted.
F Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement
G Design Quality and Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled
H Cost	Costs of the intervention and costs associated with implementing that intervention including investment, supply, and opportunity costs.

# Consolidated Framework For Implementation Research (CFIR)

<b>II. OUTER SETTING</b>		
A	Patient Needs & Resources	The extent to which patient needs, as well as barriers and facilitators to meet those needs are accurately known and prioritized by the organization.
B	Cosmopolitanism	The degree to which an organization is networked with other external organizations.
C	Peer Pressure	Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or in a bid for a competitive edge.
D	External Policy & Incentives	A broad construct that includes external strategies to spread interventions including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting.
<b>III. INNER SETTING</b>		
A	Structural Characteristics	The social architecture, age, maturity, and size of an organization.
B	Networks & Communications	The nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization.
C	Culture	Norms, values, and basic assumptions of a given organization.
D	Implementation Climate	The absorptive capacity for change, shared receptivity of involved individuals to an intervention and the extent to which use of that intervention will be rewarded, supported, and expected within their organization.
1	Tension for Change	The degree to which stakeholders perceive the current situation as intolerable or needing change.
2	Compatibility	The degree of tangible fit between meaning and values attached to the intervention by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the intervention fits with existing workflows and systems.
3	Relative Priority	Individuals' shared perception of the importance of the implementation within the organization.
4	Organizational Incentives & Rewards	Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary and less tangible incentives such as increased stature or respect.
5	Goals and Feedback	The degree to which goals are clearly communicated, acted upon, and fed back to staff and alignment of that feedback with goals.
6	Learning Climate	A climate in which: a) leaders express their own fallibility and need for team members' assistance and input; b) team members feel that they are essential, valued, and knowledgeable partners in the change process; c) individuals feel psychologically safe to try new methods; and d) there is sufficient time and space for reflective thinking and evaluation.
E	Readiness for Implementation	Tangible and immediate indicators of organizational commitment to its decision to implement an intervention.
1	Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the implementation.
2	Available Resources	The level of resources dedicated for implementation and on-going operations including money, training, education, physical space, and time.
3	Access to knowledge and information	Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.



# Consolidated Framework For Implementation Research (CFIR)

<b>IV. CHARACTERISTICS OF INDIVIDUALS</b>		
A	Knowledge & Beliefs about the Intervention	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.
B	Self-efficacy	Individual belief in their own capabilities to execute courses of action to achieve implementation goals.
C	Individual Stage of Change	Characterization of the phase an individual is in, as he or she progresses toward skilled, enthusiastic, and sustained use of the intervention.
D	Individual Identification with Organization	A broad construct related to how individuals perceive the organization and their relationship and degree of commitment with that organization.
E	Other Personal Attributes	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.
<b>V. PROCESS</b>		
A	Planning	The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance and the quality of those schemes or methods.
B	Engaging	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modeling, training, and other similar activities.
1	Opinion Leaders	Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing the intervention
2	Formally appointed internal implementation leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.
3	Champions	"Individuals who dedicate themselves to supporting, marketing, and 'driving through' an [implementation]" [101](p. 182), overcoming indifference or resistance that the intervention may provoke in an organization.
4	External Change Agents	Individuals who are affiliated with an outside entity who formally influence or facilitate intervention decisions in a desirable direction.
C	Executing	Carrying out or accomplishing the implementation according to plan.
D	Reflecting & Evaluating	Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.

# Vaccine hesitancy : The information paradox

## Traditional educational approach

- Information, facts and education alone do not change beliefs or behaviour
- Facts even backfire
- Give more facts about vaccines
- Give more facts about vaccine-preventable diseases
- Use prescriptive language
- Use fear-based tactics

Ineffective to address vaccine hesitancy



**Worst:** can back-fire and reinforce vaccine hesitancy

*Sadaf F. Vaccine 2013*

*Kaufman J. et al., Cochrane Database of Systematic Reviews 2018*

*Nyhan B et al. Pediatrics. 2014*

*Dubé E. Clin Microbiol Infect. 2017*

# Vaccine hesitancy : The information paradox

## Parents' views and experiences of communication about routine childhood vaccination

- **Parents wanted more information than they were getting**
- Balanced information about vaccination benefits and harms
- Presented clearly and simply
- Tailored to their situation
- In good time



How do we overcome the challenge of providing adapted factual information on vaccination to parents ?

# The PROMOVAC concept



Need for an early strategy of promoting vaccination to avoid delays in first vaccines

- First vaccines at 2 months of age
- Delays in first vaccines were associated with delayed or incomplete vaccination schedule in childhood
- Nurseries should be a place for a early strategy of promoting vaccination



Failure of traditional educational or information's strategies

Motivational Interviewing of Miller and Rollnick and trans-theoretical model of Prochaska should be adapted to vaccination promotion

# Motivational interviewing is ...

- a **collaborative, goal-oriented** style of **communication**
- with particular attention to the **language of change**.
- It is designed to **strengthen personal motivation** for and commitment to a specific goal
- by eliciting and exploring the **person's own reasons for change** (solving their own ambivalence)
- within an atmosphere of **acceptance and compassion**





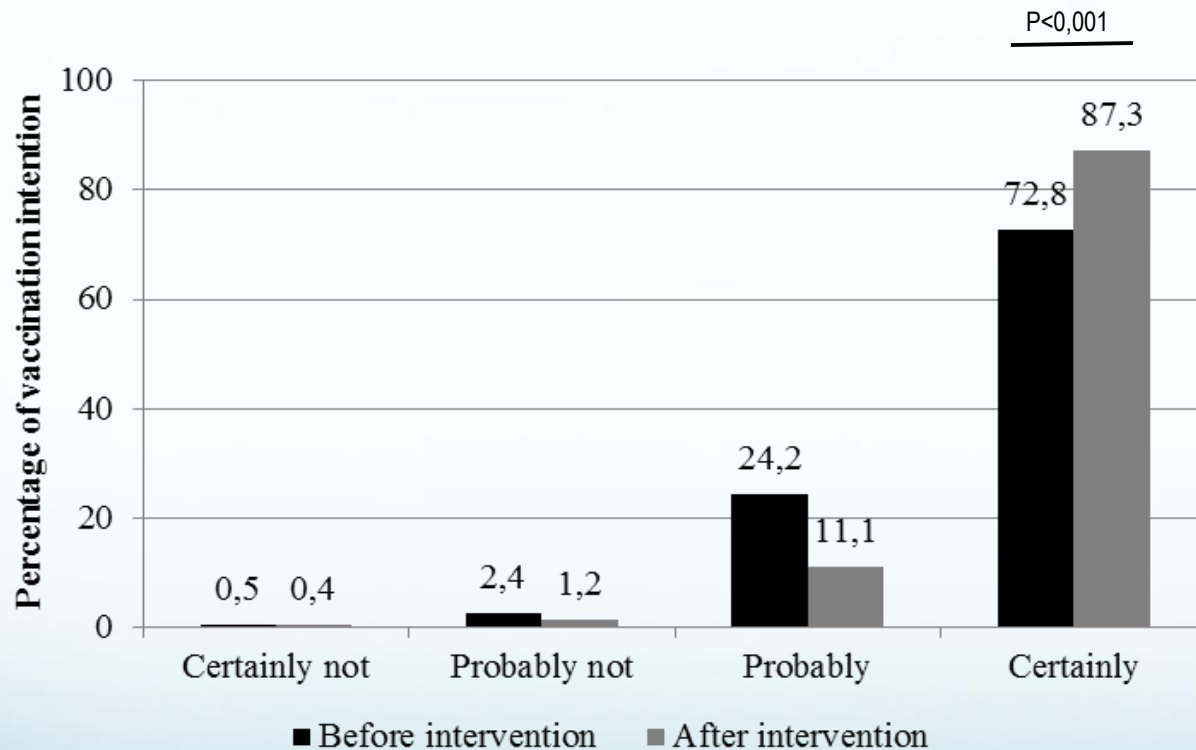
# PromoVac studies

## “PromoVac and PromoVaQ”

Assess the effectiveness of an information session targeting immunization based on motivational interviewing techniques in nurseries on vaccination intention and vaccination coverage on infants

# Impact on parents' vaccination intention

## Pre and post intervention parents' vaccination intention

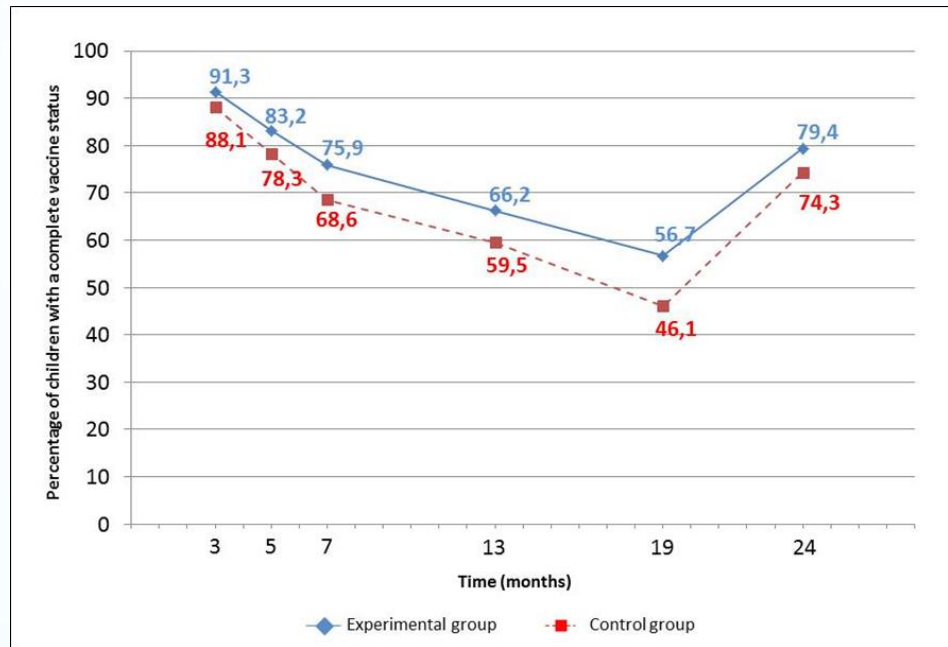


# Impact on infants' vaccination coverage

Vaccination coverage (VC)	Expérimental Group	Control Group	Increase of VC (%)	p	RR (95% CI)
	n = 1140	n = 1249			
	n (%)	n (%)			
3 m	1041 (91,3)	1101 (88,1)	+3,2	0,01	1,04 (1,01-1,06)
5 m	948 (83,2)	978 (78,3)	+4,9	< 0,01	1.06 (1,02-1,10)
7 m	865 (75,9)	857 (68,6)	+7,3	< 0,001	1,11 (1,05-1,16)



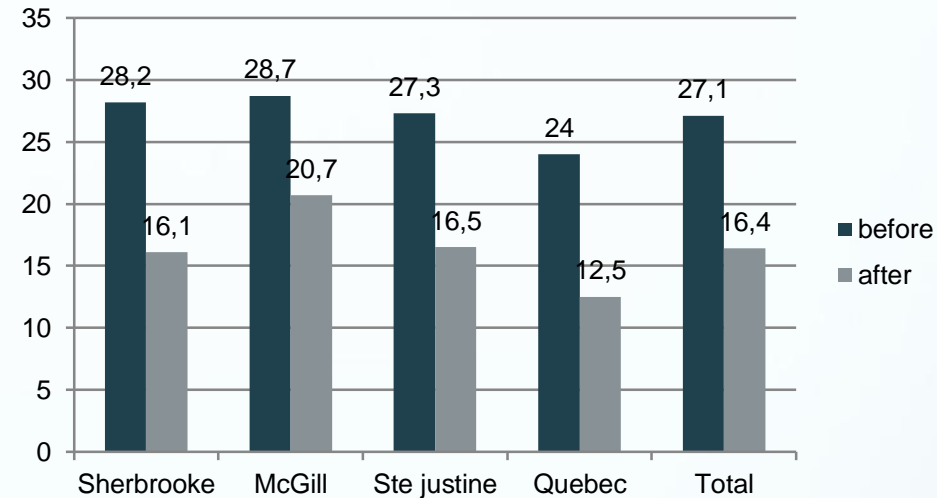
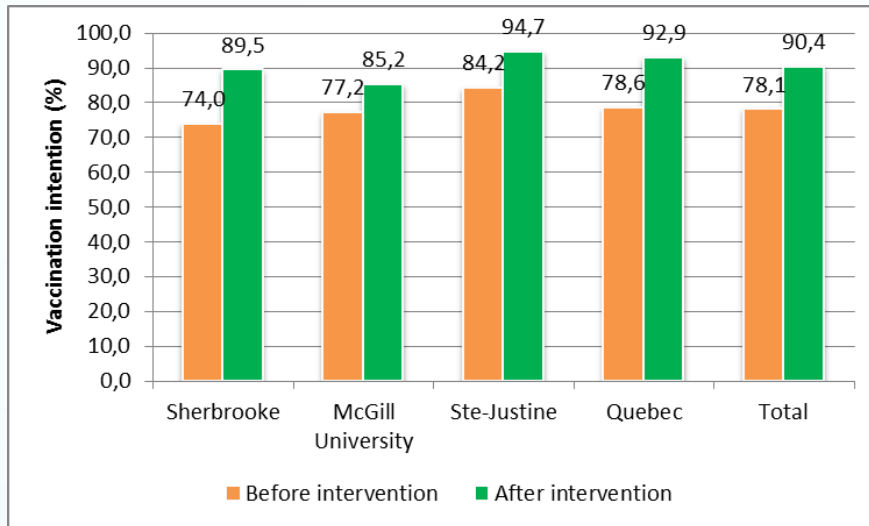
# Impact on 0-2 years infants' vaccination coverage



RR (95% CI)	<i>p</i>
1.09 (1.05-1.13)	<0.001

Univariate logistic regressions with repeated measures according to the Generalized estimating equations (GEE) procedure with Poisson distribution :  
To estimate the chance for a child to have a complete vaccine status during early childhood

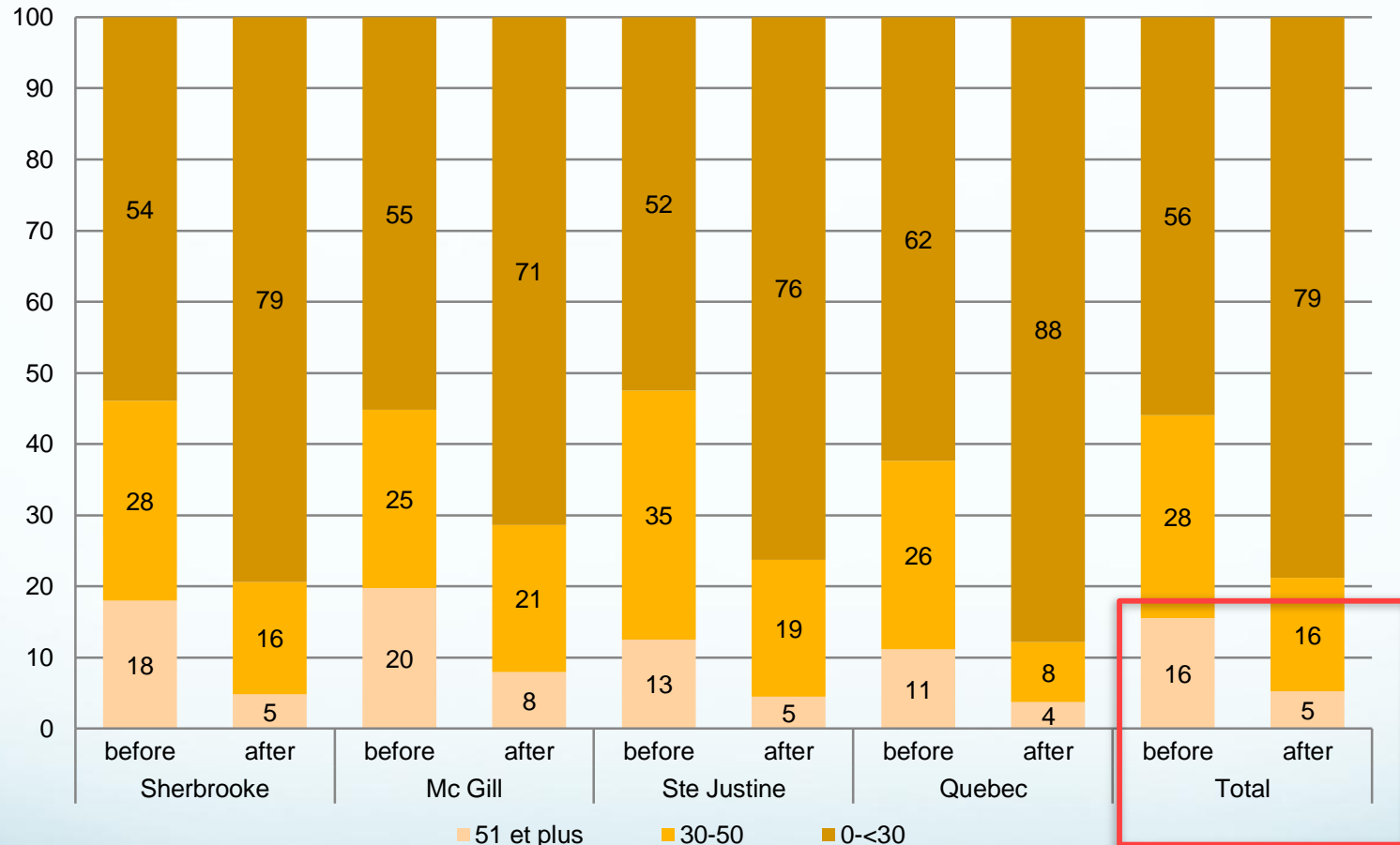
# Impact on parents' vaccination intention and hesitancy



**A significant increase in vaccination intention was observed in each center after the intervention, with a global increase of 12% ( $p < 0.0001$ ).**

**A significant decrease in Opel's vaccine hesitancy score was also observed in each maternity ward after the intervention, with a global decrease of 40% ( $p < 0.0001$ ).**

# Impact on parental vaccination hesitancy score



< 30      Low level of VH  
 30-50    Intermediate level  
 > 50      High level

## Impact on vaccination coverage (2/4 nurseries)

Vaccination coverage (VC)	intervention	Control	Increase of VC (%)	p
	Group	Group		
	n = 629	n = 627		
	n (%)	n (%)		
3 m	558 (88.7)	525 (83.7)	+ 5.0	0,01
5 m	526 (83.6)	510 (81.3)	+ 2.3	0.29
7 m	503 (80.0)	463 (73.8)	+ 6.2	0,01

# Decisional process

Vaccination ?



**CONTROVERSIES**

Vaccines risk

Subjectives norms

Perceived severity or vulnerability to

**AMBIVALENCE**

Distrust in public Health authorities

Perceived necessity of vaccines

Vaccines benefits

YES

NO

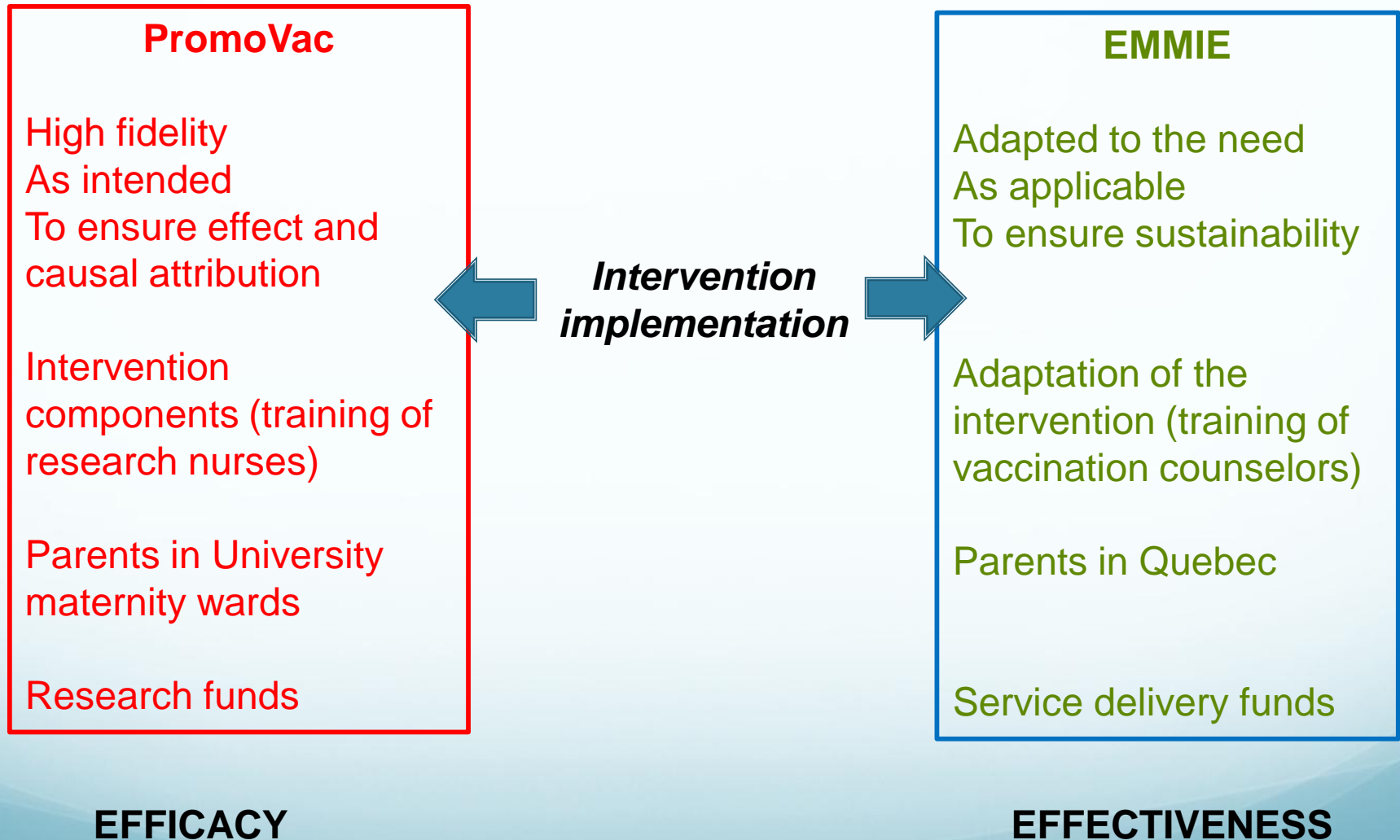
?



# PROGRAMME **emmie**

ENTRETIEN MOTIVATIONNEL EN MATERNITÉ  
POUR L'IMMUNISATION DES ENFANTS

# From PromoVac to EMMIE : Challenges



# EMMIE program

- Immunization Partnership Fund (IPF) : Subvention grants of 2-3M\$/year for projects aimed at improving vaccination coverage in Canada.
- Application of the Quebec Ministry of health to implement the PromoVac strategy in maternity wards in Quebec.
- EMMIE program phase 1:
  - Funds (IPF 0.5 M\$ and MSSS 2 M\$/year)
  - Period 2017-2019
  - Maternity wards  $\geq$  2500 annual births
    - 55% of Quebec annual births (45 000 neonates)
    - 13 maternity wards in 6 administrative regions.



# EMMIE program : Aims

- To assess implementation and impact of the program in real life
- Vaccination counsellors
  - Specific immunization training
  - MI training (*Gagneur et al. Motivational interviewing training specific for vaccination promotion among nurse care practitioners. JAN 2018 Submitted*)
- Specific aims
  - Description of the implementation of the program
  - Identification of barriers and facilitators of implementation
  - Assess the impact of the program on
    - Vaccine intention and vaccine hesitancy score in parents
    - Vaccine coverage in children in Quebec
- EMMIE program phase 2 (2019-)
  - Implementation in all maternity wards in Quebec

# EMMIE : Organisational framework

Comitee	Leader (s)	Members	Fonctions
<b>Directory</b>	A.Gagneur D. Auger (co-leader)	J.Sanson C.Albert V.Gosselin (coordinator)	Decisional level Responsability : Timeline, budget, gestion tools, project redaction Long term vision (phase 2) of the program Program's supervision Evaluation's program supervision
<b>Coordination</b>	D.Auger A. Gagneur (co-leader)	V.Gosselin, C. Albert, J. Sanson, M. Landry, N. Sicard, A. Farrands, J. Bergeron	Link between differents phases and functions of the program Program management Implementation support (program presentation to the hospitals) Evaluation support
<b>Planification/ organisation</b>	D. Auger J. Sanson	C.Albert M.Landry N.Sicard	Links between MSSS's directions Communication plan Links between hospitals' directors, public Health's directors First steps of implementation support
<b>Opérationnel</b>	C. Albert V.Gosselin	A.Gagneur, A.Farrands, J.Bergeron D.Pinsenault	Program's presentation to the hospitals Selection of resources comitee (vaccination counsellors) Training and supervision of vaccination counsellors
<b>Évaluation</b>	A.Gagneur V.Gosselin	M.Guay, E.Dubé. J.Sanson, N.Sicard, J.Bergeron, N.Boulianne, E.Toth	Evaluation plan development Evaluation management (implementation and impact) Evaluation plan redaction Link between ethics comitee

# EMMIE program : Evaluation-Implementation

Population	Outcomes	Data source- instruments
<b>Vaccination counselors</b>	MI knowledge and competences MI training satisfaction % of parents meet during post-partum stay (characteristics of non-met parents) % refusal (characteristics of parents) Duration of interventions % parents acceptance of registry access Acceptation in maternity wards team Satisfaction about the program Suggestions to improve the program	Self administered questionnaire before and after training MITI 4.2 Administrative data of maternity wards dashboard of counsellors Individual meeting
<b>Maternity wards HCP</b>	Program's impact on activity Satisfaction about the program Barriers and facilitators Suggestions to improve the program	Self administered questionnaire Individual meeting
<b>Managers, administrators</b>	Satisfaction about the program Barriers and facilitators Suggestions to improve the program	Individual meeting

# EMMIE program : Evaluation-Implementation

Population	Outcomes	Data source- instruments
Parents	<p>Program acceptability</p> <p>Satisfaction about the program</p>	<p>Self administered questionnaire before and after intervention</p>
Research team	<p>Number and % of HCP and administrators met during the program presentation</p> <p>Fidelity and difference between anticipated and real timeline for recruitment and training of counselors</p> <p>Numbers of recruited and trained counselors</p> <p>Annual counselors renewal rate</p> <p>Duration of training period</p> <p>Directs costs of the program</p> <p>Costs/additional vaccinated child</p>	<p>Dashboard of counselors recruitment and training process.</p> <p>Hospital administrative data</p>

# EMMIE program : Evaluation-Outcomes

Population	Outcomes	Data source- instruments
<b>Parents</b>	Socio-demographics data Vaccination intention score Vaccination hesitancy score Knowledge about vaccination Fidelity and differences between PromoVac studies results	Self administered questionnaire before and after intervention
<b>Children recruited in the program</b>	VC at 3,5,7,13,19 and 24 months Long-term VC (3,6,12 years) Age at vaccination Number of days underimmunized Vaccination place Address Socio-demographics data Fidelity and differences between PromoVac studies results	Quebec provincial registry of vaccination

# Preliminary results : Formative evaluation

- Vaccination counsellors (vaC)
  - Targeted recruitment : 17,5/20 FTE (43 VaC)
  - Training : 3 sessions to 6 sessions during the period
  - Development of a community of practice
  - Training evaluation
    - High level of satisfaction of trainees
    - Final evaluation of MI competence : 38/43 (additional supervision for 5 VaC)
    - Use of the MISI questionnaire (*Gagneur et al. PEC 2018 submitted*)

	n	Score	Score PRE formation 1 (moy. ± é.-t.)	Score POST formation 1 (moy. ± é.-t.)	Score POST formation 2 (moy. ± é.-t.)	p
Knowledge acquisition	29	100	75,86 ± 11,90	76,53 ± 12,37	78,54 ± 11,47	0,307
MI-skills application	26	-	5,81 ± 2,77	7,96 ± 3,48	9,38 ± 2,79	0,001
Self-confidence to apply MI related skills	28	100	72,32 ± 10,41	78,87 ± 8,89	83,63 ± 8,30	<0,001

# Preliminary results : Formative evaluation

- Vaccination counsellors - dashboard
  - Population reached :
    - 18 880 parents received the program (september 15<sup>th</sup>)
    - 16851/21138 (80%) of parents were reached by the program (August 18<sup>th</sup>)
    - 41 to 94% of parents according to maternity wards
    - Acceptability : 97% (16234/16851)

# Preliminary results : Implementation outcomes

- Methods and population
  - Pre-post test design
  - Questionnaires validated in PromoVac studies
  - Period : January 10<sup>th</sup> to May 26<sup>th</sup>
  - 9022 parents benefited of the program (random selection of 2575)
  - 2219 pre and post intervention questionnaires available
- Preliminary results
  - Satisfaction:
    - 95% of parents appreciated participating in the EMMIE program
    - 96% of parents recommend that this program be offered to other parents
    - 98% of parents feel that the counselor respected their point of view regarding vaccination
  - Increase of the feeling to have sufficient information to take the decision of vaccination : 57 vs 94%



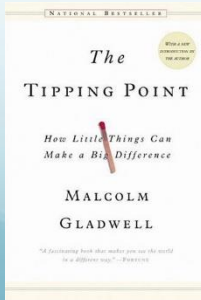
# Preliminary results : Implementation outcomes

- Global vaccination intention of 76% (68 to 81% according to maternity wards)
- Increase of vaccination intention of 11,5% (76,3 vs 87,8%)
- Decrease in VH score of 29% (25 vs 17,8)
- Level of VH

VH score	Before intervention % (n)	After intervention % (n)
0-<30%	61,9 (1373)	74,6 (1656)
30-<50%	24,5% (544)	18,9 (419)
50% and more	13,6 (302)	6,4 (143)

# Perspectives

- Phase 2
  - Core component of the intervention
    - VaC dedicated
    - MI techniques and supervision by MI expert
    - Maternity wards
  - Adaptable components
    - Training in immunization and MI (moving to e-learning and web supervision)
    - HCW involved (maternity wards nurses, post-partum nurses, ...)
- Change of vaccination perception in the population ?
  - 90 000 annual births      180 000 parents = 2% of Quebec population
  - The program could be reached 20% of the Quebec population in 10 years



Sufficient critical mass population to change the vaccination perception in Quebec ?

Herd immunity about vaccination perception ?

# Acknowledgements

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EMMIE collaboration team :

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Carole Albert, Johanne Sanson, EMMIE managers

Virginie Gosselin, EMMIE coordinator

Julie Bergeron, post-doc student

Anne Farrands, Danielle Pinsenault, MI trainers

Members of EMMIE comitees : Eve Dubé, Monique Landry, Maryse Guay, Nadine Sicard, Evelyne Toth, Nicole Boulianne,

*The art of persuasion is as much about agreeing as it is about convincing....*

*Blaise Pascal (1623-1662)*