Evaluation of interventions to improve vaccination promotion by healthcare professionals?

Which interventions? How to evaluate them?

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Aucun conflit d'intérêt

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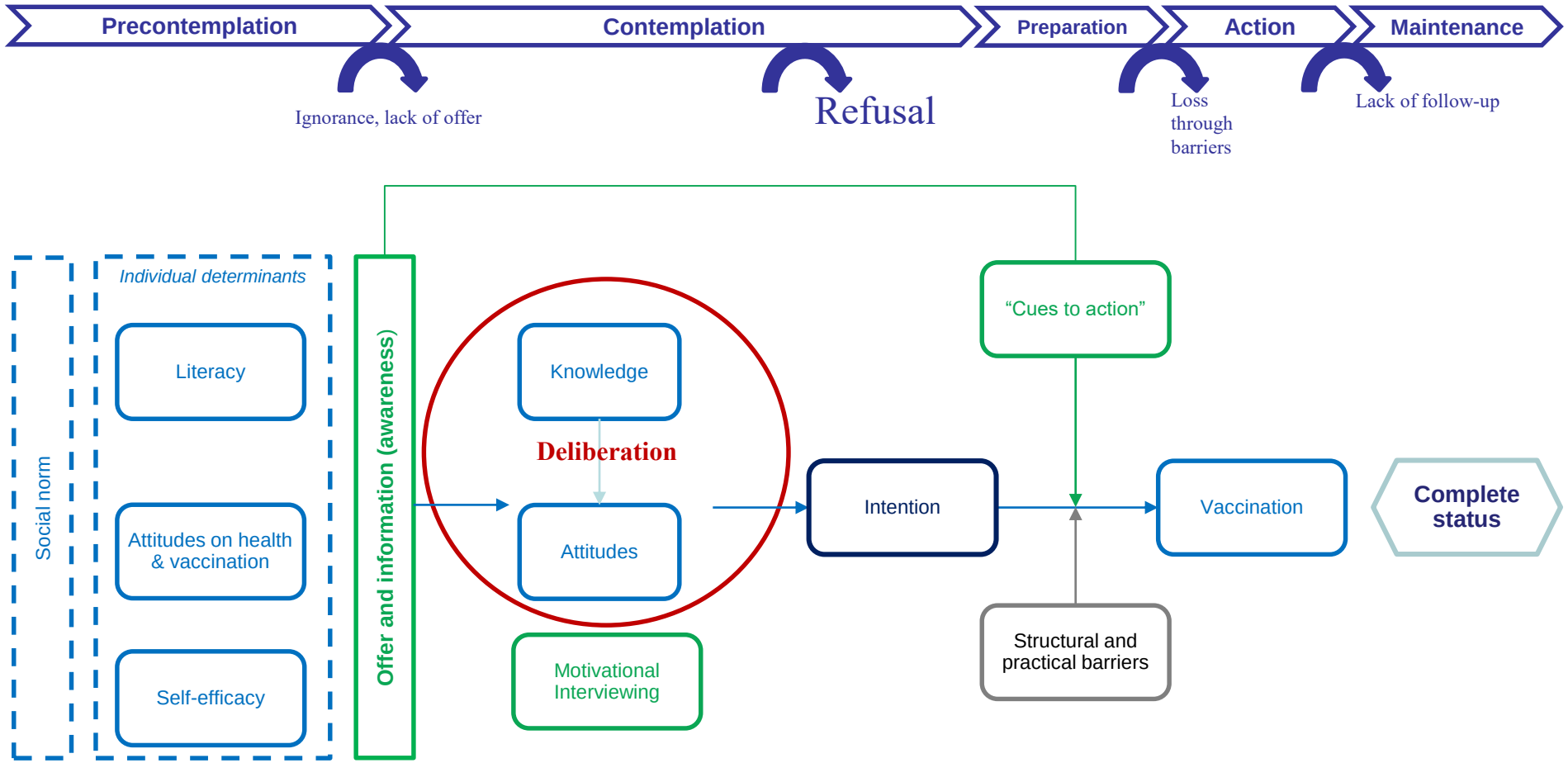
Vaccine uptake, a dynamic process



Mesure of « vaccine hesitancy »
(definition by WHO SAGE)

Prevalence of vaccine hesitancy according to the WHO SAGE definition in population sub-groups, Health Barometer, France 2016, (n = 6,356[a])

Questions adapted from the WHO SAGE group's definition of vaccine hesitancy	Parents of children aged 1–15 years (n = 3,938)		Parents of girls aged 11–15 years (n = 959)	65–75 year-olds (n = 2,418)
	1–9 years (n = 1,811) % (95% CI)	10–15 years (n = 2,127) % (95% CI)	% (95% CI)	% (95% CI)
Has refused a vaccine recommended by their physician they considered dangerous or useless (yes)	22.8 (20.8–24.7)	29.4 (27.5–31.4)	29.3 (26.4–32.1)	16.1 (14.7–17.6)
Has delayed a vaccine recommended by their physician because of doubts about it (yes)	15.3 (13.6–16.9)	18.1 (16.5–19.8)	18.9 (16.4–21.4)	15.9 (14.5–17.4)
Has had a vaccine despite doubts about its efficacy (yes)	26.7 (24.6–28.7)	27.0 (25.2–28.9)	26.9 (24.1–29.7)	19.1 (17.6–20.7)
Vaccine hesitancy (defined as a 'yes' response to at least one of these three questions)	42.9 (40.6–45.2)	48.5 (46.3–50.6)	48.2 (45.1–51.4)	34.5 (32.6–36.4)

Infant coverage
>78% thanks to HCP
PCV: >90%

HPV coverage
Could be >70%

Flu coverage
Could be >86%

But insufficient offer by HCP

PrevHPV trial baseline 2021-22

1889 parents of students aged 11-14 years
86.7% declare having had a recent visit at their GP
9.6% of those with a recent visit declare never having heard about HPV vaccination

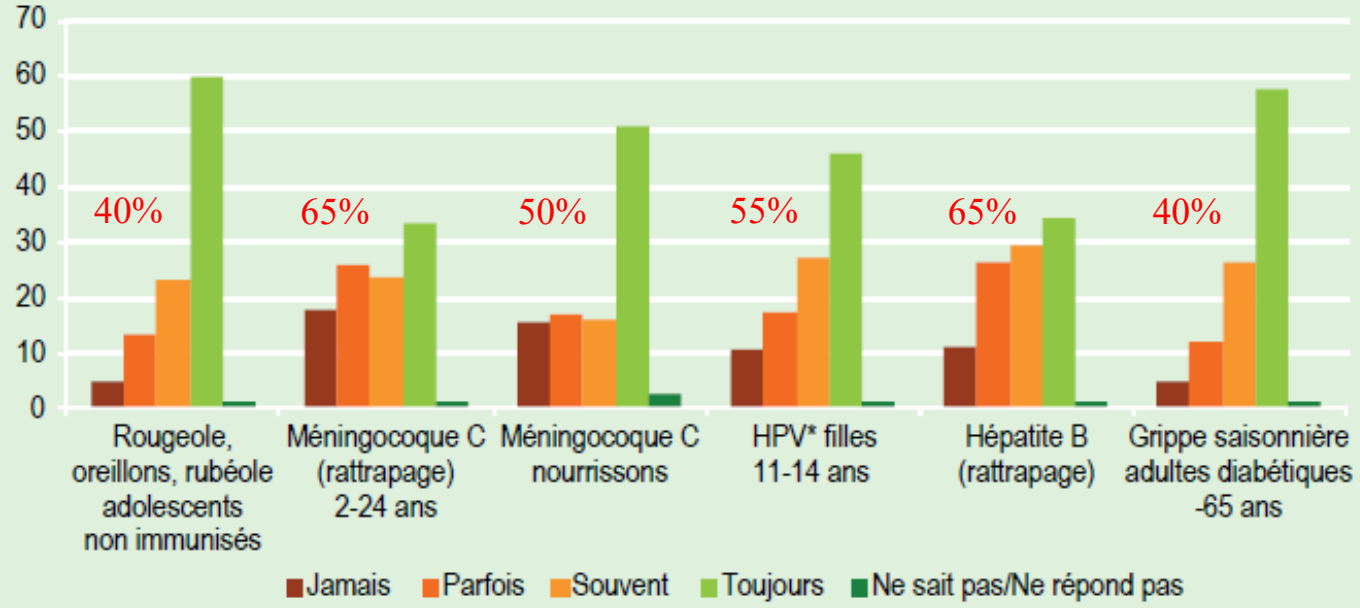
1049 parents of students 11-14 years who are not vaccinated against HPV
84.3% declare having had a recent visit at their GP
45.4% declare never having received a HPV vaccination offer

General practitioners

Percentage of GP who do not systematically recommend a given vaccine,
despite NITAG recommendation + reimbursement

GRAPHIQUE 3

Recommandations des médecins généralistes à propos de divers vaccins chez différents publics



* HPV : infections à papillomavirus humains.
Champ • Médecins généralistes de l'échantillon national, données pondérées.

Sources • DREES, Unions régionales des professions de santé (URPS), observatoires régionaux de la santé (ORS), Panel d'observation des pratiques et des conditions d'exercices en médecine de ville, avril-juillet 2014.

Collange et al., Etudes et Résultats 2015

General practitioners

Mesures que les médecins généralistes trouveraient utiles dans leur pratique quotidienne de vaccination. Enquête nationale auprès de médecins généralistes, France, 2014 (données pondérées*)

Mesure	Perçue comme utile % (N=1 582) [IC95%]	Rapport national où cette mesure est recommandée (référence)	Mesure déjà existante en France (référence)
Des campagnes d'information grand public sur les vaccins	80,6 [78,7-82,5]	[6-8]	Disponible pour la grippe saisonnière sur le site de l'Assurance maladie [15]
Des argumentaires sur les bénéfices et les risques de chaque vaccin	79,1 [77,2-81,1]	–	Disponibles pour les vaccins : hépatite B, HPV, ROR, coqueluche, pneumocoque, grippe saisonnière et tuberculose [16]
Des livrets d'information pour les patients sur les bénéfices et les risques de chaque vaccin	77,9 [75,9-79,9]	[6-8]	Disponibles pour les vaccins : hépatite B, HPV, méningocoque, ROR, coqueluche, pneumocoque et pour la vaccination en général [17]
Un carnet de vaccination électronique intégré au logiciel métier	75,2 [73,1-77,2]	[6-8]	mesvaccins.net, mais payant dans sa version accessible aux professionnels de santé et non intégré au logiciel métier [18]
Une lettre électronique gratuite informant des nouveautés sur les vaccins	66,8 [64,5-69,1]	–	Disponible sur Infovac [19], mais payante, et gratuitement sur le site Vaccination Info Service [14]
Une ligne gratuite de conseil téléphonique sur les vaccins pour les médecins	56,8 [54,5-59,2]	–	Certains services hospitaliers d'infectiologie proposent une ligne de conseil consacrée aux maladies infectieuses, dont la vaccination [20]
La mise à disposition de vaccins au cabinet	56,8 [54,5-59,2]	[7,8]	–
Un rappel automatique, par SMS, aux patients, de leurs dates de vaccination	54,9 [52,6-57,3]	–	–
Une cotation spécifique pour une consultation dédiée à la vaccination	30,3 [28,1-32,5]	[8]	–
Autres mesures existantes, mais non proposées dans notre enquête :			
Site Internet unique d'information sur la vaccination (pour le grand public et les professionnels de santé)		[7,8]	Site Internet Vaccination Info Service [14]
Programmes de formation à l'école		[6,8]	Programme E-bug [21]

Le Maréchal, et al. BEH 2017

How to improve vaccine promotion by HCP? - Policies

- Mandatory systematic vaccine offer
- Improved context for vaccine promotion (literacy, awareness in the general public)
- Having vaccines in stock at consultation (not the case in France!)
- Larger circle of HCP who can promote, prescribe and administer vaccination

⇒ Evaluation of policy changes => economics

⇒ « Expérimentations » in some admin. regions of France: pharmacists, school-based promotion, vaccination in hospitals

⇒ At best pre-post comparison

⇒ Rarely in the context of interventional research

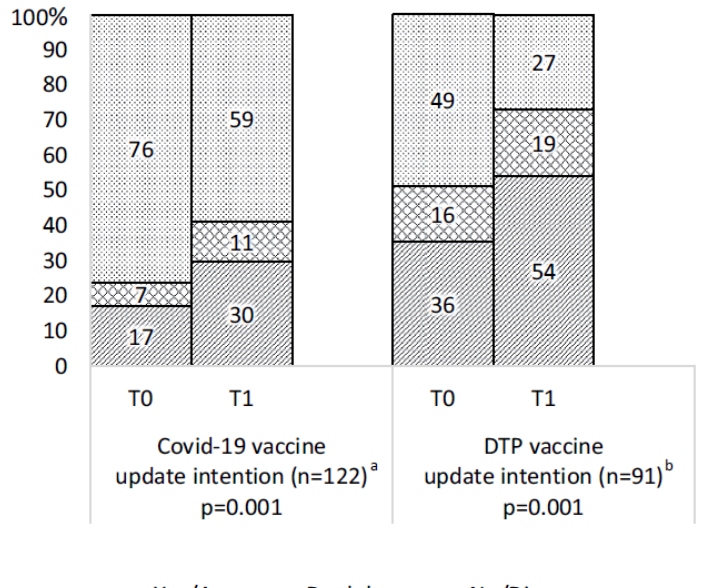
MI-trained health mediators

Disadvantaged population, Marseille

Table 1. Means and comparisons of the health mediators' pre- and post-training scores for motivational interviewing (MI) skills.

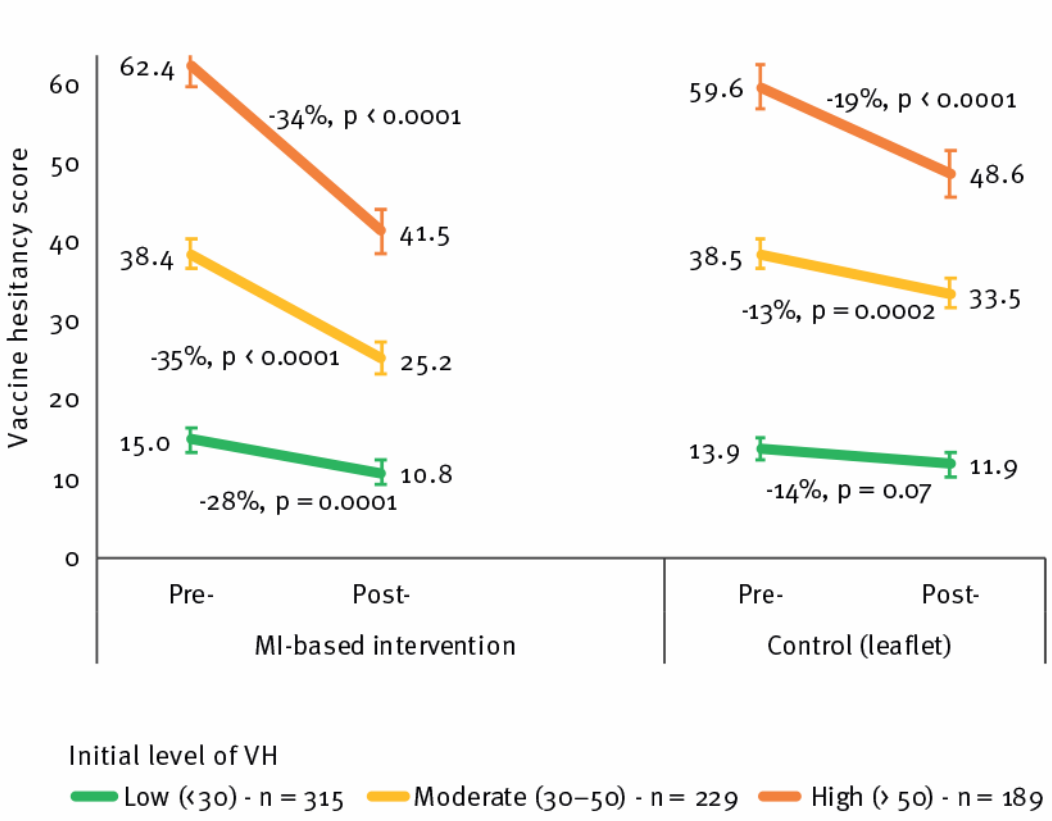
Section	n	Mean score before training	Mean score after training	Change	Before/After comparison* *(p-value)*
MI knowledge (Q1-Q6)/100	16	**51.5 ± 19.5**	**76.0 ± 16.5**	+48%	.001
Perceived application of MI skills (Q8)/100	15[a]	**53.6 ± 23.4**	**78.4 ± 15.5**	+46%	.003
Self-confidence in using MI (Q9)/100	13[b]	**65.7 ± 10.9**	**77.8 ± 8.2**	+18%	.011
Application of MI skills (open-response item) (Q7)[c]	16	**3.3 ± 3.1**	**7.8 ± 3.5**	+4.5 points	.006

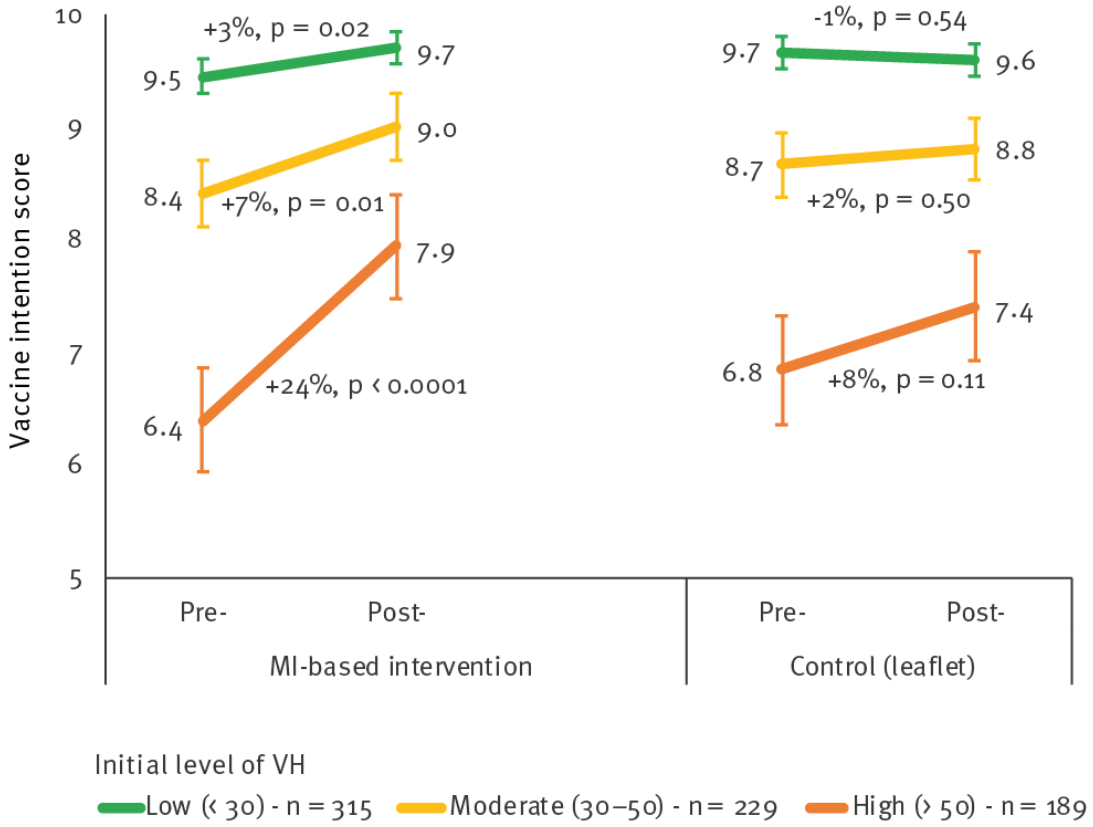
Before-after change in intention



MI-trained midwives in maternity wards

RCT, MI by midwive vs. leaflet





See also PromoVaq RCT, Canada

Alerts, training, rate feedback for clinicians

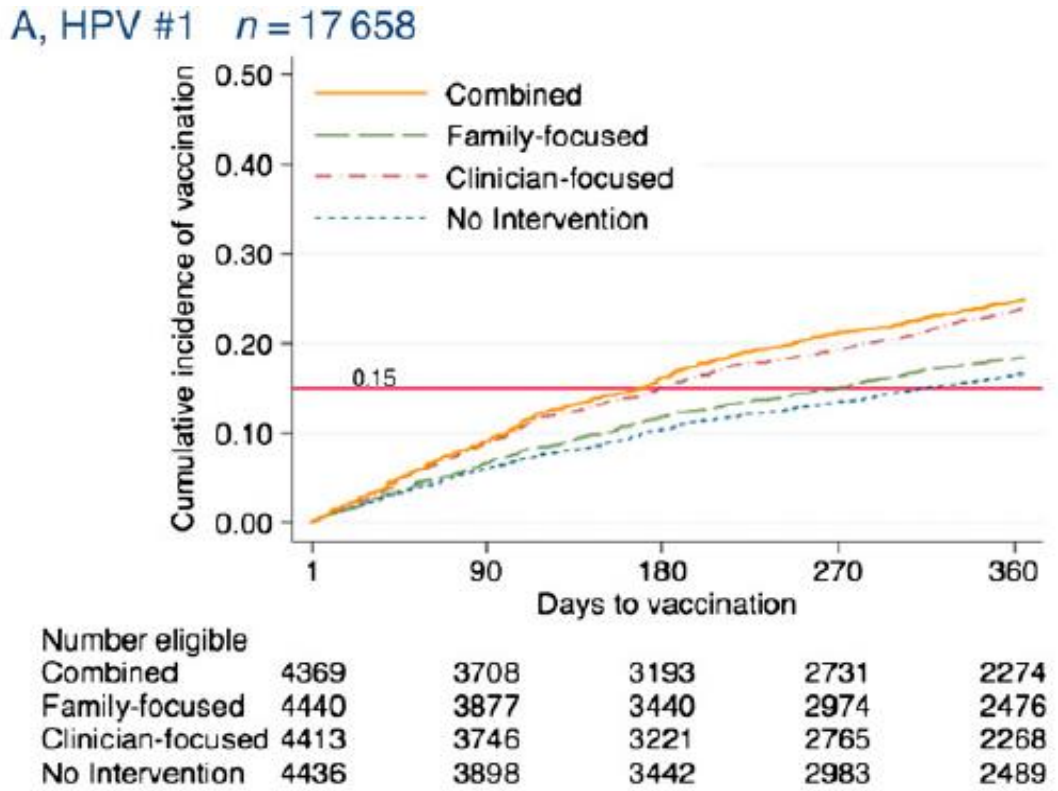


TABLE 2 Hazard Ratios of Vaccine Receipt During the 12-Month Study P

Intervention Arm	HPV #1[a] (*n* = 17 658)	
	Hazard Ratio[b] (95% CI)	*P*
Combined versus none	1.6 (1.2–2.1)	.001
Clinician only versus none	1.5 (1.2–2.0)	.003
Family only versus none	1.1 (1.0–1.2)	.03
Combined versus clinician only	1.1 (0.9–1.2)	.2
Combined versus family only	1.4 (1.2–1.8)	.001
Family only versus clinician only	0.7 (0.6–0.9)	.007

How to improve vaccine promotion by HCP? - Training

Syllabi for initial and continued training

- On vaccination
  - Shared decision making tools
- On vaccine hesitancy
- On motivational interviewing techniques

HPV: Complex intervention, RCT, uptake outcome (Dempsey)

5-component intervention on HCP Communication

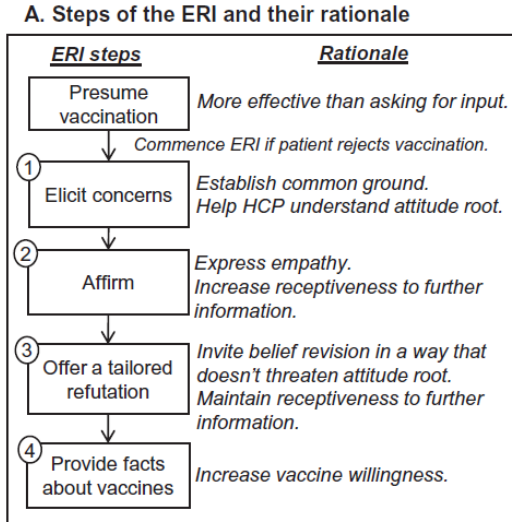
- Fact sheet library
- Disease images
- Decision aid tool
- Communication training for HCP (presumptive approach+MI)
- Parent education website

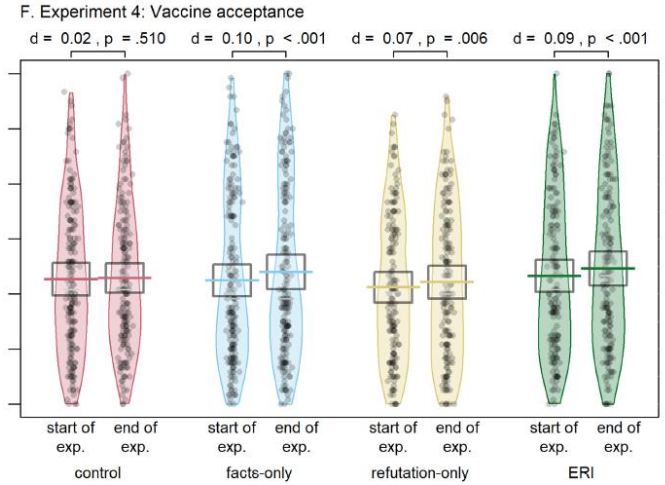
Variable	Study Period	Control: No. Eligible for HPV Dose	Control: % Of Eligible Who Received HPV Dose	Intervention: No. Eligible for HPV Dose	Intervention: % Of Eligible Who Received HPV Dose	Difference in Differences[b]: Unadjusted	Difference in Differences[b]: Adjusted[c]
Medical Specialty[c]							
Family medicine	Baseline	290	14.1	401	24.7	0.58 (0.17-1.95)	0.58 (0.17-1.94)
	Postintervention	268	22.0	381	24.9		
Pediatrics	Baseline	7956	37.9	7356	32.0	1.53 (1.37-1.72)	1.53 (1.37-1.72)
	Postintervention	7027	39.6	7782	43.8		
Practice Type[d]							
Public	Baseline	1337	52.8	2333	46.5	0.92 (0.69-1.23)	0.99 (0.73-1.36)
	Postintervention	972	56.2	2482	48.7		
Private	Baseline	6909	34.0	5424	25.2	1.77 (1.54-2.02)	1.82 (1.59-2.08)
	Postintervention	6323	36.2	5681	40.3		
Encounter Type							
Routine checkup	Baseline	6079	44.2	5415	38.3	1.58 (1.40-1.78)	1.61 (1.43-1.82)
	Postintervention	5557	45.2	6043	51.5		
Sick visit	Baseline	4848	7.0	4626	7.5	1.16 (0.90-1.50)	1.18 (0.92-1.53)
	Postintervention	4053	7.3	4098	8.5		

Content of MI ?

Studies on lay volonteers not involving HCP

Empathetic refutational interview: randomized lab experiments

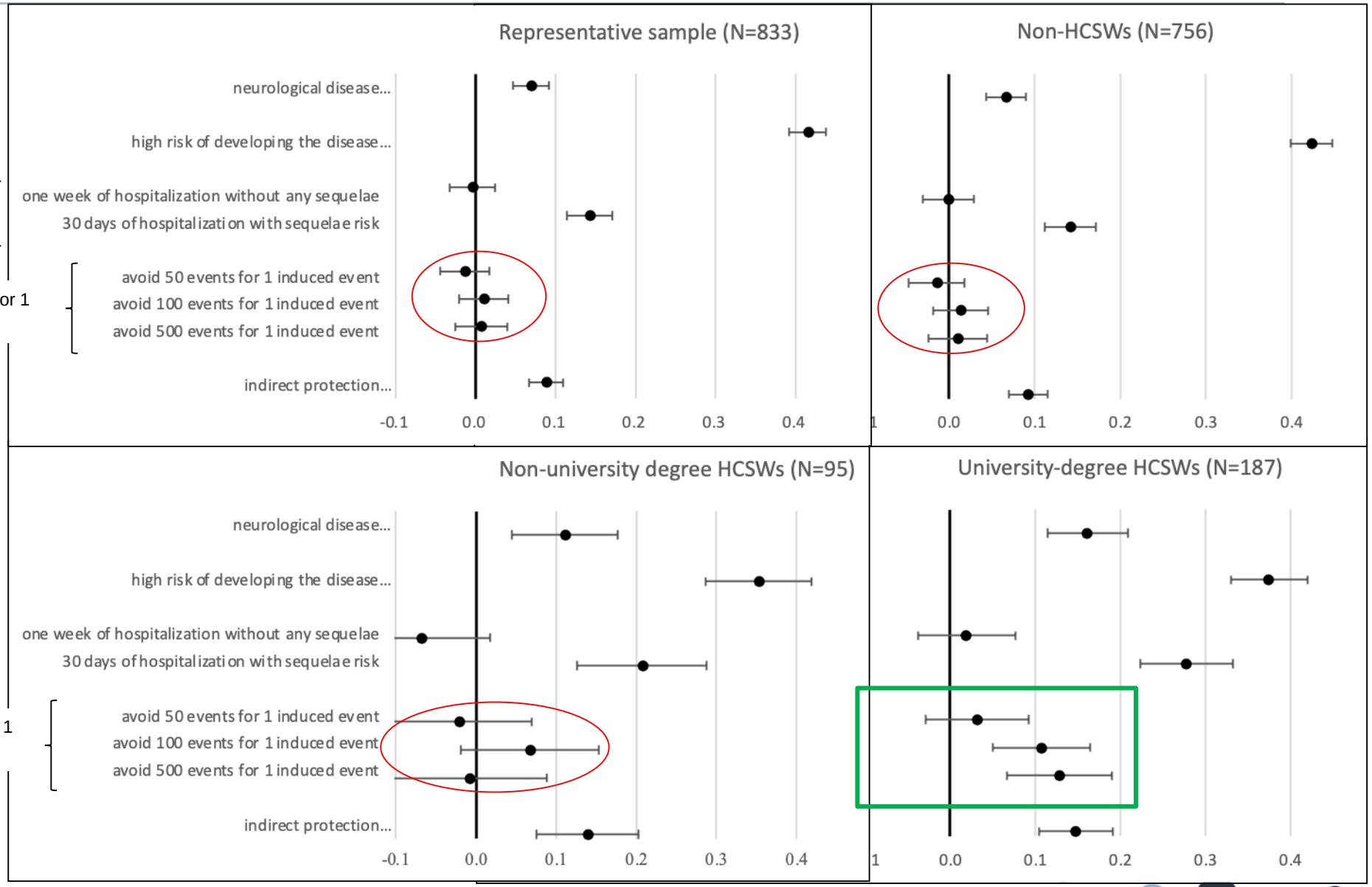




Identifying *Don't s* in communication

scenario-based studies: vignettes, discrete-choice experiments

Changes in probability of acceptance of a hypothetical vaccination against an emergent disease, in relation to increases of the vaccine's benefit-risk ratio



HCSW: Healthcare sector worker

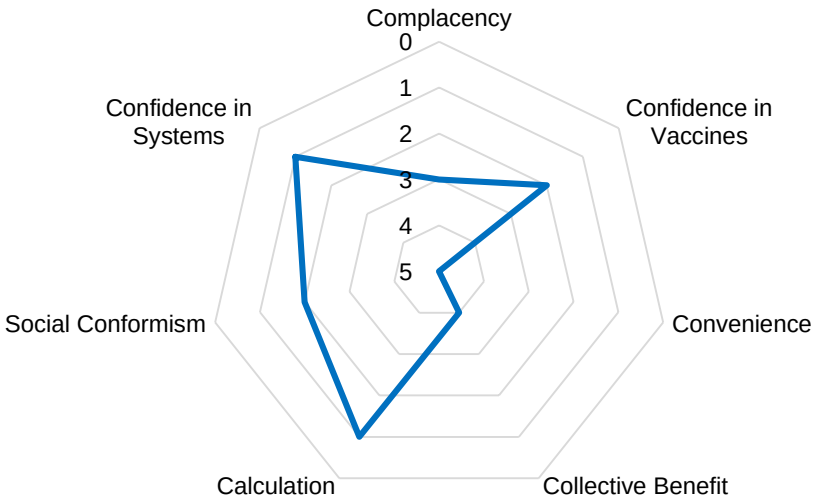
A tool for Pre-Consultation Positioning and Reflexivity?

Short **M**otivational **In**terviewing **T**raining (**MINT**)

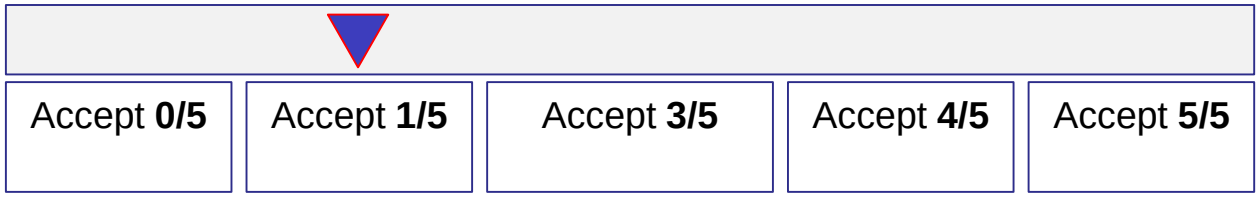
Short **M**apping **A**nd **R**eflexivity **T**ool (**SMART**)

- Questionnaire for 7C profile
- Scenario-based acceptance profile

Questionnaire to establish a 7C profile

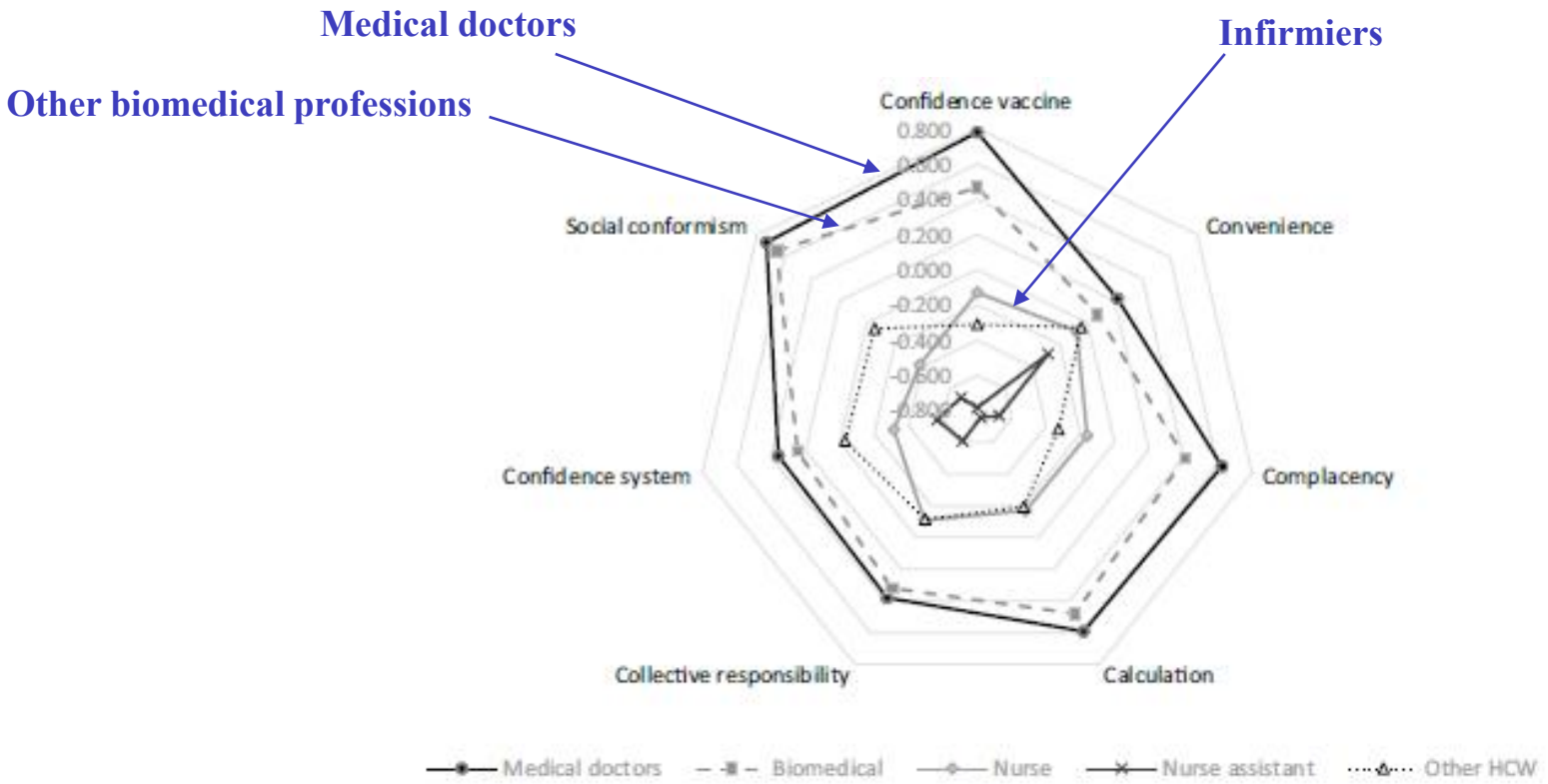


Vaccine acceptance in a series of 5 scenarios



HCP are not all for vaccines …

7C psychological antecedents of Covid-19 vaccination, HCPs' in France, Winter 2020-2021



Oudin Doglioni et al., Sci Reports 2023

Which attitude should be improved?

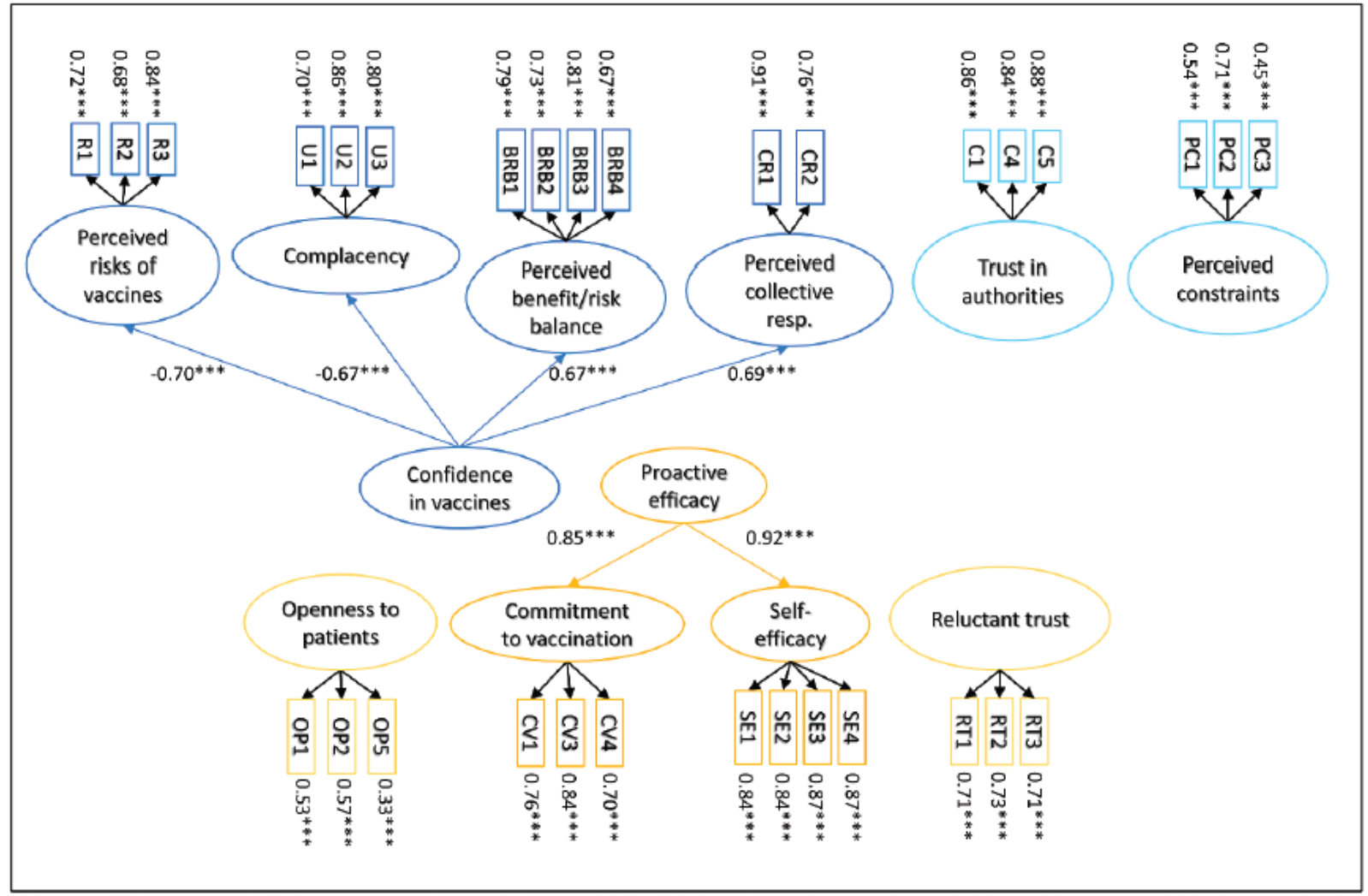
Reduction of vaccine coverage/intention (%) attributable to 7C items among HCP

	Statut vaccinal Winter 2020-2021 (N=5234) P1	**Statut vaccinal** Summer-autumn 2021 (N=339) P2	**Intention vaccinale** booster Winter - spring 2022 (N=306) P2	**Statut vaccinal booster** Winter - spring 2022 (N=351) P3	**Intention vaccinale** 2º booster Autumn 2022 (N=329) P3	**Intention vaccinale** 3º booster Winter 2023 (N=360) P4
Calculation : «I think that COVID-19 vaccination has more benefits than risks for me.»						
Don't agree	**-14.07**	-1.71	-9.02	-2.02	-7.28	-11.13
Convenience : «In practice, il will be dificult for me to get vaccinated.»						
Agree	-0.22	-0.39	0.49	0.46	0.13	0.43
Collective Responsibility : «To get vaccinated is also a collective action to control the COVID-19 crisis.»						
Don't agree	-7.03	-6.68	-4.59	-2.02	-7.08	-6.56
Social Conformism : «How would you describe the majority opinion about COVID-10 vaccination among your family and friends ?						
Sceptical	-7.06	-0.93	-2.21	-1.10	-2.35	-0.95
Complacency : «I'm afraid of getting a severe form of COVID-19.»						
Don't agree	-1.97	-1.03	0.00	0.26	-2.21	-4.31
Confidence in COVID-19 vaccine : «I'm afraid of having a severe side effect of COVID-19 vaccination.»						
Agree	**-19.79**	-1.62	**-18.88**	-7.44	**-26.16**	-2.44
Confidence in systems : «If my employer incites me to get vaccinated against COVID-19, this … »						
Dissuades me	-1.59	0.32	-5.10	-0.23	-1.16	-2.44

1ère période d'étude (P1): 18 décembre 2020 to 1 février 2021
2ème période d'étude (P2): 13 juillet to 30 novembre 2021
3ème période d'étude (P3): 1 février and 28 mars 2022
4ème période d'étude (P4): 12 janvier to 13 mars 2023

Hypothetical Future Vaccine Intention: exploré parmi les vaccines à partir de la question "Accepteriez-vous un rappel de ce vaccin (en dehors de toute obligation)"

HCW's hesitancy and promotion skills (Pro-VC-Be)



RMSEA=0.027 [0.025;0.030] ; CFI=0.96 ; TLI=0.95 ; SRMR = 0.04

Verger et al., Exp Rev Vaccines 2022

Does MI training in medical interns change their Pro-VC-Be ?

	Score pre-session 1	Score difference between post-session 2 and pre-session 1		
Dimension (/100)	Mean ± SD	Mean ± SD	*p*-value*	Effect size *r*
Confidence in vaccines	88.4 ± 10.6	1,5 ± 11.9	.14	0.25 [0.02;0.54]
Perceived risks of vaccines	16.2 ± 20.6	−3.8 ± 23.9	.10	0.28 [0.02;0.57]
Complacency	7.3 ± 13.7	−4.8 ± 13.3	.054	0.33 [0.05;0.58]
Perceived benefit/risk balance	89.2 ± 15.4	1.8 ± 21.5	.30	0.18 [0.01;0.47]
Collective responsability	88.1 ± 13.8	−4.5 ± 18.7	.19	0.22 [0.01;0.52]
Trust in authorities	65.1 ± 25.4	**9.5 ± 17.2**	**.01**	0.44 [0.12;0.69]
Proactive efficacy	55.3 ± 12,5	**23.2 ± 18.7**	**<.0001**	0.79 [0.66;0.87]
Commitment to vaccination	74.6 ± 15.6	**10.5 ± 20.5**	**.001**	0.52 [0.24;0.75]
Perceived self-efficacy	36.0 ± 17.1	**36.0 ± 25.8**	**<.0001**	0.83 [0.73;0.87]
Openness to patients	47.8 ± 17.8	**18.7 ± 17.0**	**<.0001**	0.78 [0.65;0.86]
Vaccine recommendation frequency (*n* = 26)	49.9 ± 18.0	3.1 ± 22.8	.67	0.08 [0.01;0.46]

Which interventions, outcomes, designs in evaluating HCP interventions?

Policy

Medical practice

HCPs' attitudes

Vaccine acceptance, 7C, Pro-VC-Be

Skills, satisfaction, self-rated practice

Vaccine hesitancy among patients

Self-reported success rate

Uptake by previously unvaccinated individuals

Coverage in the served population

Pre-post change

Controlled design

Randomisation

PrevHPV Trial

METHODOLOGY

Objective. Evaluate effectiveness, efficiency, and l'implémentation of three intervention components (alone or in combination)

Design. Pragmatic trial, controlled, cluster-randomised (commune), partial factorial design

Analysis. 91 communes, accounting for intervention intensity

- Only 20-30% of GP participated

91 / 60 communes	LES 3 COMPOSANTES DE L'INTERVENTION		
	Education, Motivation, Mobilisation	Vaccination sur site	Formation des M. généralistes
Gpe 1 (15 / 7)	χ	χ	χ
Gpe 2 (15 / 10)	χ	-	χ
Gpe 3 (16 / 12)	χ	χ	-
Gpe 4 (15 / 9)	χ	-	-
Gpe 5 (15 / 9)	-	-	χ
Gpe 6 (15 / 13)	-	-	-

GP team in PrevHPV

Serge Gilberg & colleagues

Sebastien Bruel & colleagues

Tron *et al. Archives of Public Health* (2024) 82:2
https://doi.org/10.1186/s13690-023-01227-8

Archives of Public Health

RESEARCH Open Access

Barriers and facilitators to the HPV vaccine: a multicenter qualitative study of French general practitioners

Arthur Tron[1*], Vincent Schlegel[2], Juliette Pinot[1], Sébastien BRUEL[3,4,5], Marie Ecollan[1], Josselin Le Bel[1], Louise Rossignol[1], Aurélie Gauchet[6], Amandine Gagneux-Brunon[5,7], Judith Mueller[8], Anne-Sophie Banaszuk[9], Nathalie Thilly[10,11], Serge Gilberg[1] and Henri Partouche[1]

Health Expectations
An International Journal of Public Participation in Health Care and Health Policy

ORIGINAL ARTICLE | Open Access

Co-development of a school-based and primary care-based multicomponent intervention to improve HPV vaccine coverage amongst French adolescents (the PrevHPV Study)

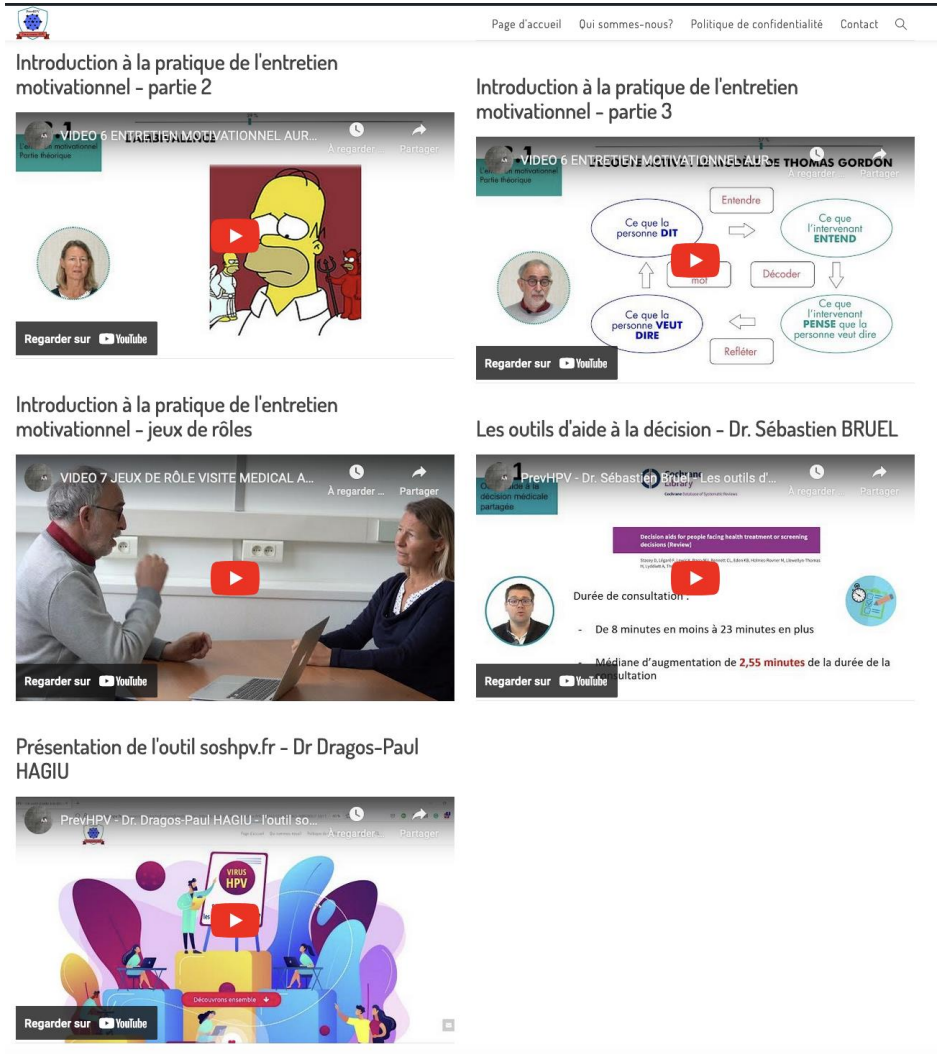
Aurélie Bocquier PhD, Sébastien Bruel MD, MSc, Morgane Michel MD, PhD, Anne-Sophie Le Duc-Banaszuk MD, Stéphanie Bonnay MScA ... See all authors

First published: 13 June 2023 | https://doi.org/10.1111/hex.13778

GP training

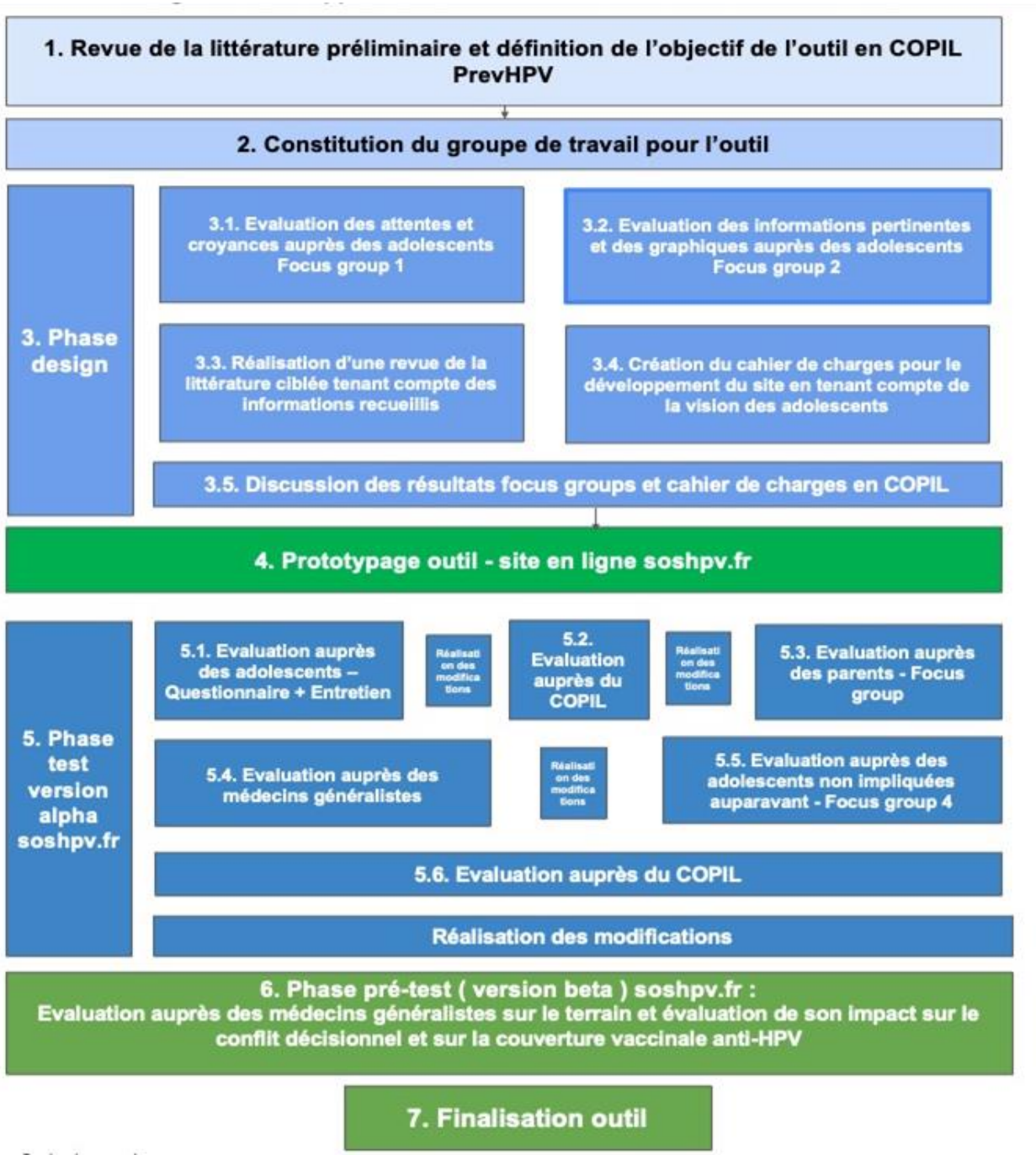
- Formation comprenant 11 vidéos :
  - Jeux de rôle entretien motivationnel
  - Information sur les outils d'aide à la décision
  - Présentation de l'outil soshpv.fr

Des quizz sont proposés entre les différentes vidéos

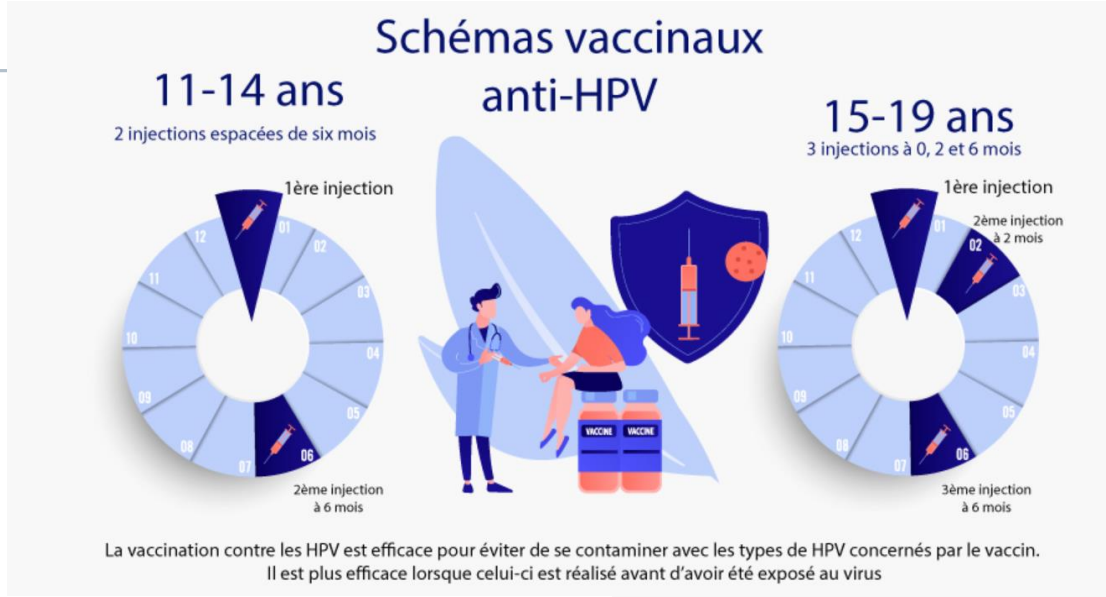


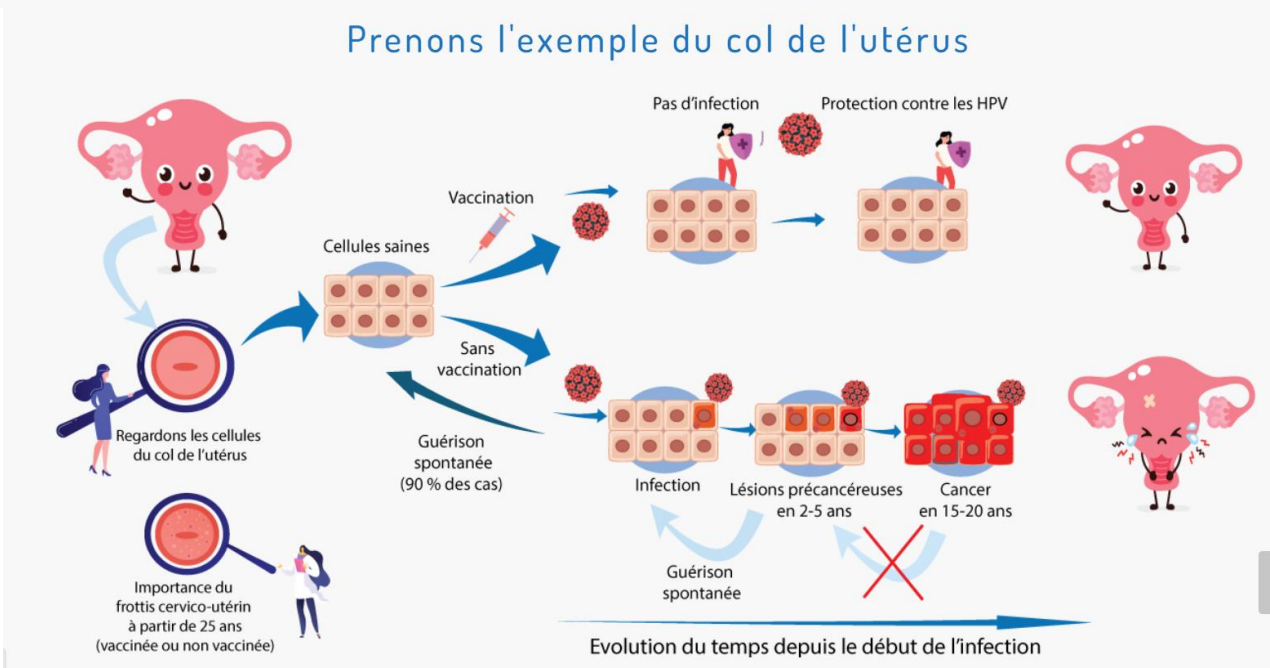
Development of shared decisio making tool

- Pour disposer d'un cadre commun, (patients /soignants, basé sur des données probantes)
- Construction (selon les recommandations des guides internationaux IPDAS)
- Co-construit avec des adolescents, des parents et des médecins généralistes
- Nom de domaine choisi par les adolescents : soshpv.fr



Shared decision making tool





www.soshpv.fr
www.soshpv.fr/formation-mg

Results – decomposed effects

HPV vaccine coverage (≥ 1 dose) (reimbursement)

Coverage increase among 11-14 year-olds

	At 2 months		At 6 months		At 12 months	
	Estimate [a] (IC 95%)	p	Estimate [a] (IC 95%)	p	Estimate [a] (IC 95%)	p
Principal analysis						
Education	-0,08 (-2,54 ; 2,39)	0,95	-1,24 (-3,96 ; 1,48)	0,370	-1,24 (-4,17 ; 1,68)	0,406
GP	-1,46 (-3,44 ; 0,53)	0,15	-1,64 (-3,83 ; 0,56)	0,144	-1,50 (-3,87 ; 0,86)	0,212
School-campaign	5,50 (3,13 ; 7,88)	<0,001	6,17 (3,54 ; 8,80)	<0,001	6,13 (3,30 ; 8,97)	<0,001
Ajusted for intensity						
Education	2,58 (-1,73 ; 6,89)	0,241	0,59 (-4,79 ; 5,97)	0,830	2,03 (-4,00 ; 8,05)	0,509
GP	3,56 (0,02 ; 7,11)	0,049	4,47 (0,03 ; 8,90)	0,048	4,39 (-0,57 ; 9,34)	0,083
School-campaign	11,25 (9,09 ; 13,40)	<0,001	11,70 (9,00 ; 14,40)	<0,001	11,35 [8,33 ; 14,37)	<0,001

[a] Ajusté sur la CV initiale, test d'interaction non significatif

Thillly et al., JAMA Network Open 2024

Changes in attitudes and pratice of GPs

GP

Item scores before-after intervention (N=32), no control group

5-point Likert scale

0: not at all agree → 1: don't agree → 2: undecided → 3: agree → 4: strongly agree

Item	before	after	Pre-post change
	median	median	With favorable change (among the 32)
Favorable towards HPV vaccination	4	4	9 %
Recommends it systematically … to girls	4	4	16 %
… to boys	3	4 *	**31 %**
Has enough time to speak about it	3	3.5 **	**52 %**
Is priority in my consultation	3	4 *	**31 % (F: 47 %, M: 16 %)**
Ease in arguing on HPV vaccine safety	3	4 **	**50 %**
Feels independent from colleagues' opinion on HPV vaccine	1	3 **	**56 %**

* Wilcoxon P<0.05 ** P<0.01

Difficulties

- Recruiting volonteer HCW is difficult, in particular MD and GPs
- In particular if you want to work not only on « highly motivated champions »
- Funding: need to budget indemnisation
- Assignment to a control group without intervention may not be acceptable
- Need to include HCP with high vaccine promotion activity and hesitating patients
- Before-after comparison in activity is challenging if you study a seasonal vaccination (flu)
- Expected increases may be small
- Uptake and coverage are more difficult to observe
- Complex interventions may be most promising => but the lead to the most complex evaluation designs

Thanks Merci !