Nantes Université

US DEPRESCRIBING NETWORK · WEBINAR

Scaling patient-centred deprescribing

The **DEPRESCR-IPP** population-based cluster-randomized trial of a patient- and GP-facing PPI deprescribing intervention

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About the presenter

Family physician

4 clinical sessions/week

Professor

Teaching and training GP residents

Researcher

MSc, PhD, postdoc in pharmacovigilance and pharmacoepidemiology

Deprescribing community

Organizer of ICoD 2024 (Nantes)
Member of the EUDeN workgroup

Affiliations & networks

DMG Nantes
Département de Médecine Générale

SPHERE
methodS in Patient-centered outcomes & HEalth ResEarch

MSP Maison de Santé Pluriprofessionnelle Chantenay Ste-Anne

pops

Disclosures

Funding

National research grant (French Ministry of Health, PREPS-19-0040, €207 811).
The funder had no role in design, conduct, analysis, or reporting.

Conflicts of interest

No financial conflicts of interest

Trial registration

ClinicalTrials.gov NCT04255823 — registered 5 February 2020.

Ethics & data

Approved by the CNGE ethics committee; CESREES and CNIL authorizations.

Use of AI

Generative-AI tools were used to help prepare this webinar presentation (drafting and figure layout).
All scientific content was authored and verified by the investigators.

Publications

Eur J Clin Pharmacol 2019 · BMC Health Serv Res 2022 · Res Social Adm Pharm 2024 · JAMA Internal Medicine 2026.

Why PPI deprescribing remains important

Inappropriate long-term PPI use is common, costly, and linked to a wide range of adverse outcomes.

Kidney injury

Acute interstitial nephritis, CKD

Infections

C. difficile, resistant colonization

Pneumonia

Increased respiratory infection risk

Fractures

Reduced bone density

Dementia

Association under discussion

CV & mortality

Long-term use signals

$12B PPI reimbursement, USA (2015)

87% and 89%

of PPI prescriptions in France initiated / renewed by GPs (2020)

THE UNANSWERED QUESTION

From regional priorities to a population-scale question

Regional Health-Insurance research priorities (2018)

- Deprescribing long-term ~~ULT-p~~opulation-wide
- Deprescribing PPIs using ~~N-of-1 trials~~

“Can *patient-centred* PPI deprescribing interventions be successfully *scaled*?”

l’Assurance Maladie
Agir ensemble, protéger chacun

Nota bene

- No implementation-science expertise
- No advanced patient & public involvement

BUILDING THE INTERVENTION

A 7 year-long research program

RESEARCH & TRIAL

2019

Evidence review

Suitability of existing PPI patient-education materials (SAM)

Eur J Clin Pharmacol

2019–20

Brochure built

Patient brochure developed in a mixed-methods study

Ann Pharmacother

2020-21

Trial

Population-based pragmatic cluster-RCT designed & registered

BMC Health Serv Res

2026

Trial results

Effectiveness demonstrated at system scale

JAMA Internal Med

MEASUREMENT & PSYCHOMETRICS

Patient attitudes 2024

Handling missing data in the rPATD

Res Soc Adm Pharm

Patient attitudes In progress

Differential item functioning (DIF) & response shift in rPATD

Ongoing analysis

BUILDING THE INTERVENTION

What was already out there?

A focused review (SAM instrument) of patient-education materials for PPI deprescribing

European Journal of Clinical Pharmacology
https://doi.org/10.1007/s00228-019-02779-x
REVIEW

Suitability of patient education materials on proton-pump inhibitors deprescribing: a focused review

Jérôme Nguyen-Soenen[1] · Cédric Rat[1] · Jean-Pascal Fournier[1]

7 materials identified

Strengths

- Good content, motivation & learning stimulation
- Sound typography and layout

Key weaknesses

- Inappropriate or distracting graphics
- Reading grade level too demanding for the target audience

→ *may reduce attention, comprehension & effectiveness*

- Lack of Inclusion of summaries

BUILDING THE INTERVENTION

Developing the patient brochure

Research Report

Annals of Pharmacotherapy
1–9
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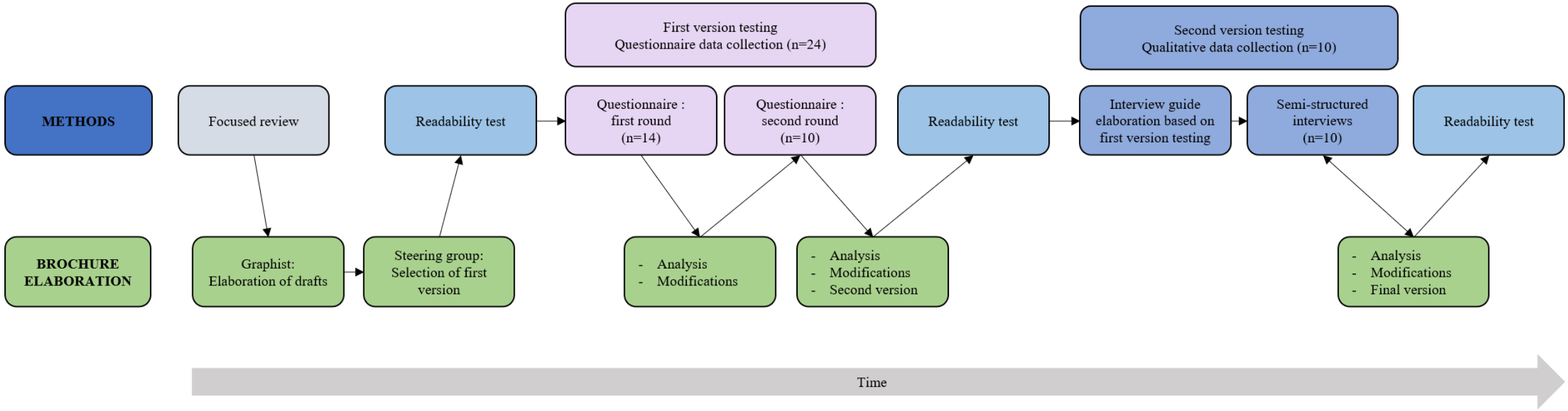
Development of Patient Education Material for Proton Pump Inhibitor Deprescribing: A Mixed-Methods Study

Jérôme Nguyen-Soenen, MD, MSc[1], Maud Jourdain, MD, MSc[1], and Jean-Pascal Fournier, MD, PhD[1]

Explanatory sequential mixed-methods study

Designed to:

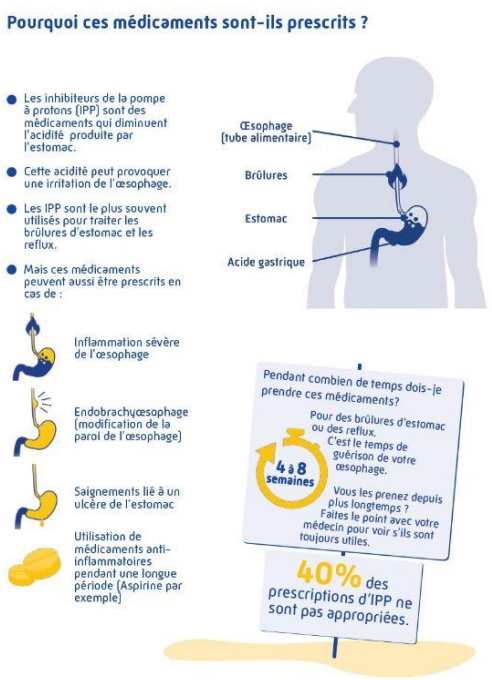
- increase patient knowledge about PPIs and alternatives
- address readability & graphics weaknesses found in the review
- encourage patients to discuss dose reduction or discontinuation with their health professional



BUILDING THE INTERVENTION

Developing the patient brochure

- 4 pages A4 brochure + covering letter
- Readability score : > junior secondary school
- Improved layout and actionability
- Inclusion of a take-home message



Research Report

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Jérôme Nguyen-Soenen, MD, MSc[1], Maud Jourdain, MD, MSc[1], and Jean-Pascal Fournier, MD, PhD[1]

BUILDING THE INTERVENTION

The final intervention model

A two-component, mailed intervention — no added clinical visits required

To patients

- Patient education brochure on PPI deprescribing
- Motivational cover letter
- Posted directly to the patient's home

+

To GPs

- Personalized letter
- Bruyère / deprescribing.org PPI algorithm
- Highest AGREE II score of algorithms reviewed

Combined patient- and GP-facing intervention
Delivered once, by post, across an entire health-care system

l'Assurance Maladie
Agir ensemble, protéger chacun

DIRECTION GÉNÉRALE DE L'OFFRE DE SOINS

Ministry of health
PREPS-19-0040 (207 811 euros)

STUDY PROTOCOL Open Access

Effectiveness of a multi-faceted intervention to deprescribe proton pump inhibitors in primary care: protocol for a population-based, pragmatic, cluster-randomized controlled trial

Jérôme Nguyen-Soenen[1,2*], Cédric Rat[1], Aurélie Gaultier[1,3], Solène Schirr-Bonnans[4], Philippe Tessier[2,4] and Jean-Pascal Fournier[1,2]

Objectives

PRIMARY

To evaluate the effectiveness of a patient- and GP-facing deprescribing intervention in reducing potentially inappropriate PPI use in primary care, at health-system scale.

SECONDARY

GERD symptom recurrence

GERD Impact Scale (GIS) — does deprescribing trigger acid rebound?

Patient attitudes

Revised Patients' Attitudes Towards Deprescribing (rPATD)

Cost-utility

EQ-5D-5L & national insurance database

Trial design

Pragmatic trial

Cluster-randomized: Unit = GP practice, 1:1:1

3 parallel arms

Setting: Western France (Loire-Atlantique & Vendée), ~2.16 million inhabitants.

Duration: 12-month follow-up 12 Nov 2020 → 11 Nov 2021

Three randomized arms

1 Patient + GP-facing

- Brochure + cover letter posted to patients
- Letter + algorithm to GPs

HYPOTHESIZED MOST EFFECTIVE

2 GP-facing only

- Letter + deprescribing algorithm to GPs
- No patient intervention

3 Usual care

- No intervention
- Routine primary care only

Population & eligibility

Patients

- Adults > 18 years
- > 300 DDD of PPIs dispensed in the prior year (≈ ≥1 DDD/day, ≈80% adherence)
- Affiliated to the general scheme (~92% of French population)

Not included — at risk of gastroduodenal lesions:

- NSAIDs + age > 65 years
- Corticosteroids, anticoagulants or antiplatelet agents

General practitioners

- Practice list > 100 patients at baseline
- Not included: exclusive acupuncture, allergology or angiology practice

Data source

National Health Insurance database (SNDS) — reimbursed care for ~99% of the French population. Outcomes proxied by reimbursement claims.

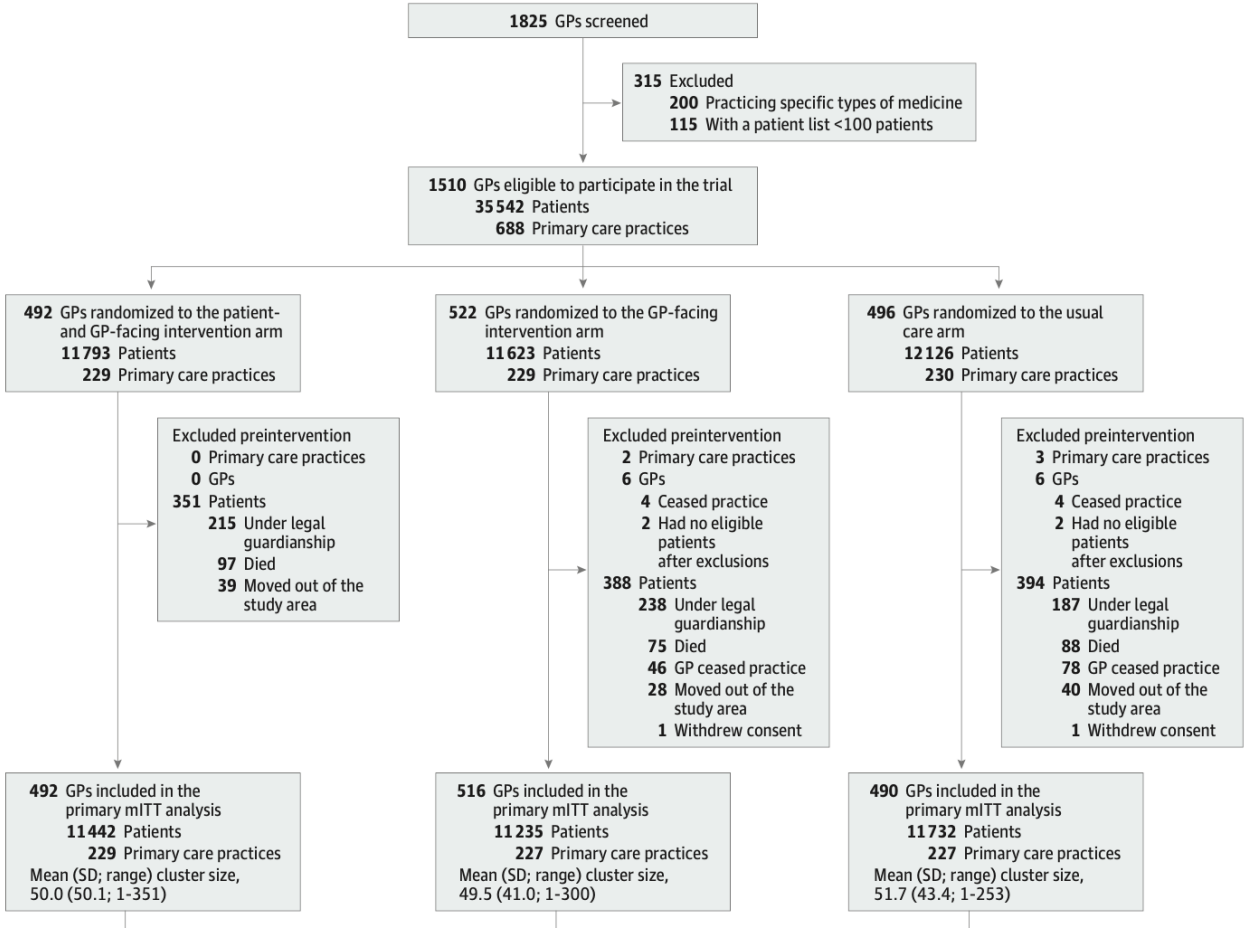
Outcomes — definitions & data collection

How each outcome was defined and measured

Outcome	Definition	Data source / collection
PPI dose reduction	≥50% reduction in annual PPI use (DDDs) at 1 year vs the prior year	National insurance claims (SNDS) — full mITT population
GERD symptoms	GERD Impact Scale (GIS) scores at 12 months — acid-rebound check	Postal questionnaire (10% random patient subsample)
Patient attitudes	Revised Patients' Attitudes Towards Deprescribing (rPATD)	Postal questionnaire (10% random patient subsample)
Cost-utility	QALYs (EQ-5D-5L) and costs over a 1-year horizon	(10% random patient subsample + SNDS reimbursement/cost data

Primary outcome proxied by reimbursement claims; secondary outcomes combine questionnaires and claims data.

Trial flow (CONSORT)



Randomized

688 practices · 1 510 GPs

35 542 patients (1:1:1)

Patient + GP	**11 442**
GP-facing	**11 235**
Usual care	**11 732**

Analysed (mITT): 1 498 GPs · 683 practices · 34 409 patients

Baseline characteristics

Three well-balanced groups — counts shown as n (%)

Characteristic	Patient + GP (n=11 442)	GP-facing (n=11 235)	Usual care (n=11 732)
Age, mean (years)	68.8	68.2	68.8
Female	6 453 (56.4)	6 318 (56.2)	6 736 (57.4)
≥10 medications	5 197 (45.4)	4 992 (44.4)	5 266 (44.9)
Baseline PPI use, mean DDD/yr	412.7	413.4	414.9
Chronic condition	6 865 (60.0)	6 710 (59.7)	7 080 (60.3)
Low socioeconomic status	712 (6.2)	662 (5.9)	660 (5.6)

Low socioeconomic status proxied by complementary universal health coverage (CMU-C). No clinically meaningful imbalance across arms.

Primary outcome — where the effect comes from

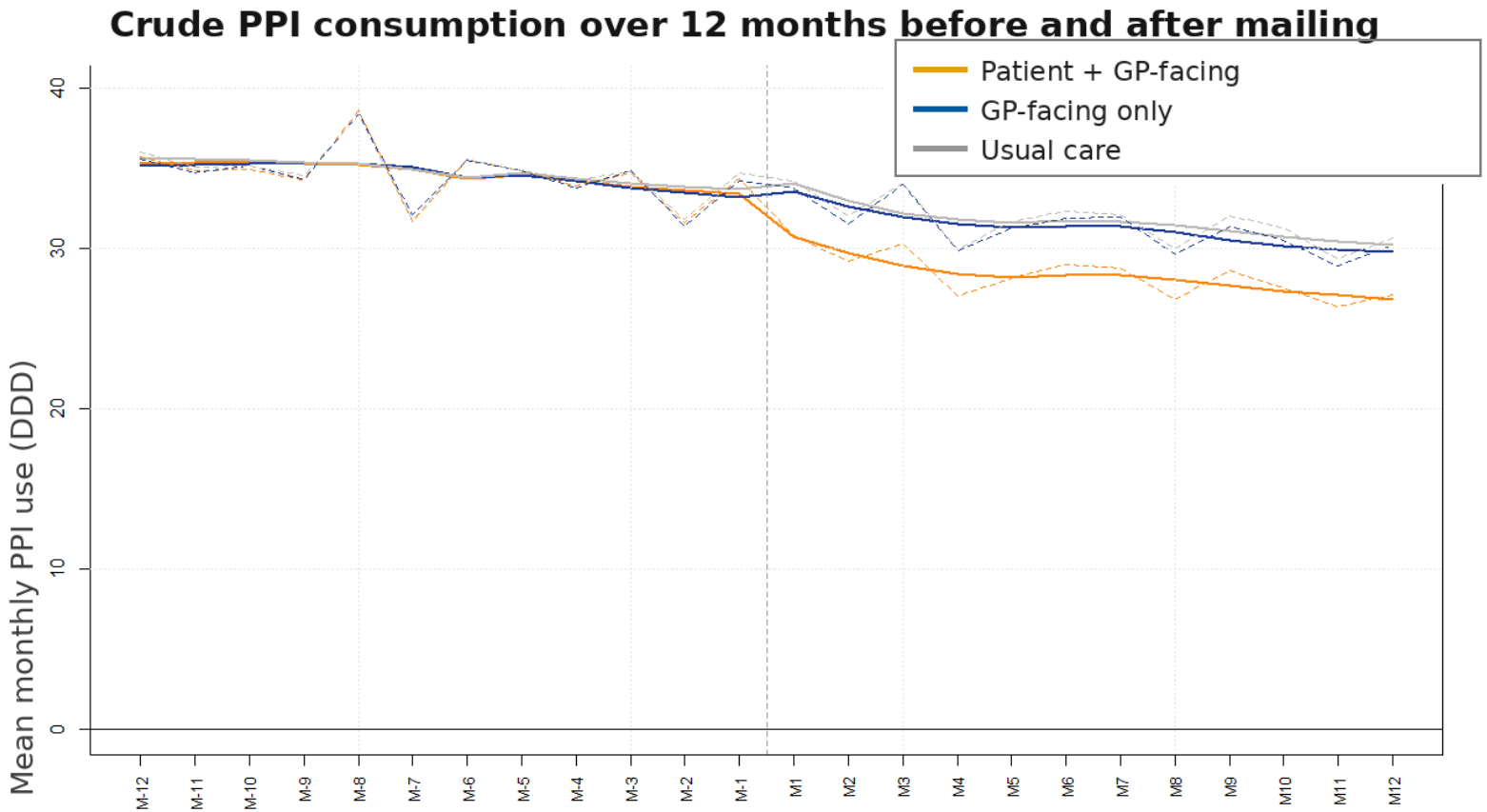
≥50% reduction in annual PPI DDDs at 1 year, and crude PPI use over the trial period

14.9%
Patient + GP-facing
1 710 / 11 442

7.7%
GP-facing only
862 / 11 235

7.0%
Usual care
825 / 11 732

aAD +6.9% vs usual care
(95% CI 5.7–8.3) · +6.7% vs GP-only
≈ 13 patients needed to be mailed per extra PPI dose reduction



Subgroup analyses

Patient + GP-facing vs usual care, across prespecified subgroups

Subgroups examined

- Age
- Sex
- Chronic-condition status
- Socioeconomic status
- rPATD attitudes towards deprescribing
- GP patient volume & consultation load (post-hoc)

No effect modifiers

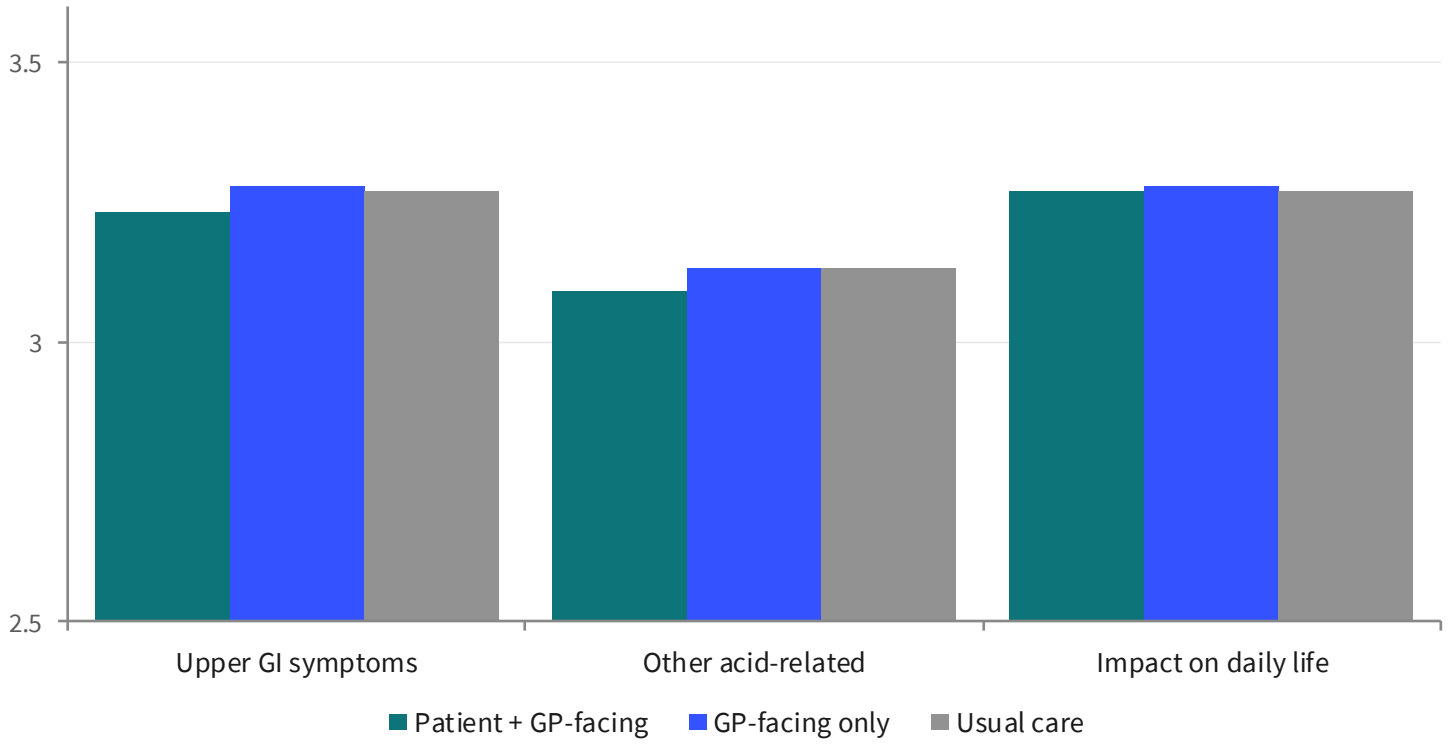
No meaningful patient- or GP-level factor differentiated the treatment effect.

Exceptions: patients > 75 years or with a chronic condition showed a significant difference vs usual care.

→ Target population could not be refined.

Safety: GERD symptoms

GERD Impact Scale (GIS) at 1 year — 10% random patient sample



GIS scores did not differ significantly between any groups. Deprescribing was not associated with rebound GERD activity at 1 year.

Sensitivity analyses

The primary result held across every robustness check

Per-protocol analysis

Excluding patients lost to follow-up (death, moved away…)

Imputation strategies

Multiple / no / worst-case / mean / LOCF for hospitalised patients

Death handled as failure

Deceased patients counted as not achieving the outcome

Population & outcome definitions — alternative specifications

Alternative outcome definition	Comparison	Adjusted OR [95% CI]	P value
≥50% PPI reduction in the final *vs.* preceding trimester	Patient+GP vs usual care	1.96 [1.79–2.16]	<.001
	Patient+GP vs GP-only	1.83 [1.66–2.02]	<.001
≥50% reduction maintained until end of follow-up	Patient+GP vs usual care	1.52 [1.29–1.79]	<.001
	Patient+GP vs GP-only	1.55 [1.31–1.86]	<.001

Results were similar across all main and sensitivity analyses — the effect is robust.

INTERPRETATION

What DEPRESCR-IPP shares with prior programs

Patient involvement works	Multifaceted interventions that actively involve patients outperform prescriber-only approaches — consistent with trials in Australia, the US and Europe.
Australia — national QI program	8-year sequenced education to patients, physicians, pharmacists & nurses achieved a 21% relative decrease in PPI use.
US Veterans Affairs	Limiting PPI refills + patient and clinician education led to a 7.3% reduction within a regional network.

INTERPRETATION

Limitations

Claims-based outcome

PPI use is proxied by reimbursement claims (DDDs), not measured intake
Estimates combine the intervention with the natural decline in use.

Modest absolute effect

Relative effect is large, absolute effect moderate.

Limited safety capture

GIS recurrence only
Assessed in a 10% sample (~53% response) and only at 1 year; early or transient acid-rebound episodes may be missed.

Generalizability & design

Two French regions, general scheme only, open-label
Subgroups gave little targeting signal.

INTERPRETATION

Implications for future programs

Make patient-facing components core	The patient intervention (not the prescriber intervention) drove the effect. Future programs should treat patient activation as essential, not optional.
Embrace low-contact, scalable delivery	Simple mailed materials can move population-level prescribing without new clinical infrastructure.
Plan richer contextual analyses	Subgroups gave little targeting signal. Future trials need complementary analyses of contextual & individual factors.
Measure rebound earlier	Assess GERD / acid rebound before 1 year to capture early episodes.

LOOKING AHEAD

What's next for the DEPRESCR-IPP program

Two analyses are ongoing and will complete the program's evaluation.

Medico-economic analysis

- Cost-utility of the mailed intervention at health-system scale
- Incremental cost-effectiveness vs usual care over a 1-year horizon

Psychometric analysis of rPATD

- Differential item functioning (DIF) across groups & over time
- Response shift (RS) at 12 months

Analyses in progress — results to be completed and reported.

TAKE-HOME MESSAGES

Patient activation remains effective at population scale

Engaging patients directly — through something as simple as a posted brochure — is not only effective in tightly controlled trials. It scales.

1	**It works at scale**	A simple, mailed patient- and GP-facing intervention more than doubled PPI deprescribing (14.9% vs 7.0%) — without rebound GERD.
2	**The patient drives it**	The GP-only arm matched usual care. Nearly the entire effect came from the patient-facing brochure.
3	**Patient activation scales**	Directly engaging patients works even at population level — low-contact, low-cost, deployable across a health system.

Low-contact | **Low-cost** | **Scalable**

THANK YOU

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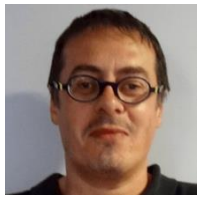

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