

Invitations, incentives, and conditions: a randomized evaluation of demand-side interventions for health screenings in Armenia

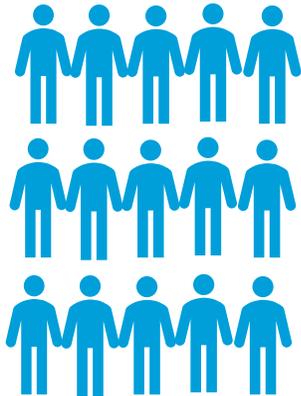
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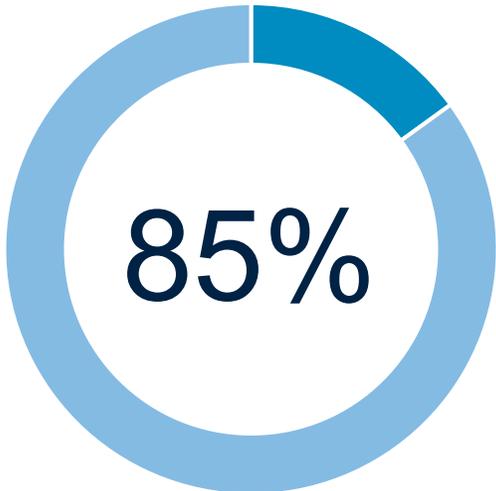
Overview

Personalized messages and financial incentives increased screenings for hypertension and diabetes in Armenia and have been incorporated into the national screening program.

The global challenge of NCDs



Global annual number of premature deaths due to non-communicable diseases (NCDs)
= 15 million

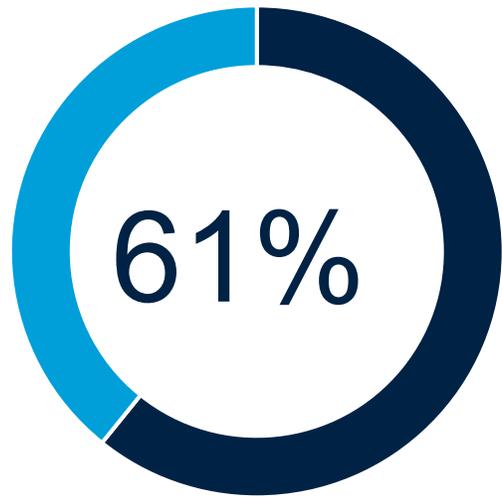


Percentage of premature global NCD deaths in low-and-middle income countries

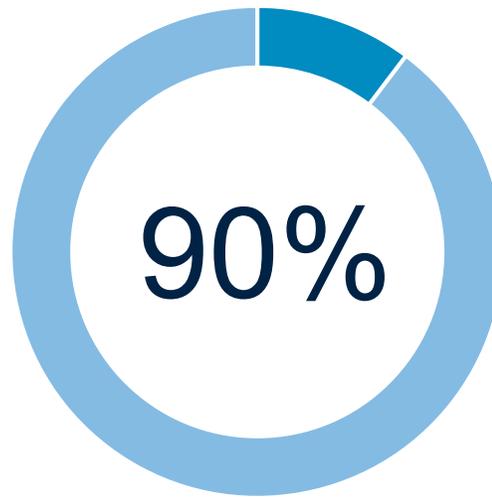


Global NCD cost, medical spending and productivity losses, 2011-31
= US\$ 23 trillion

Under-adoption of screening (secondary prevention) for early diagnosis of NCDs



Percentage **not diagnosed**, of people living with hypertension in LMICs

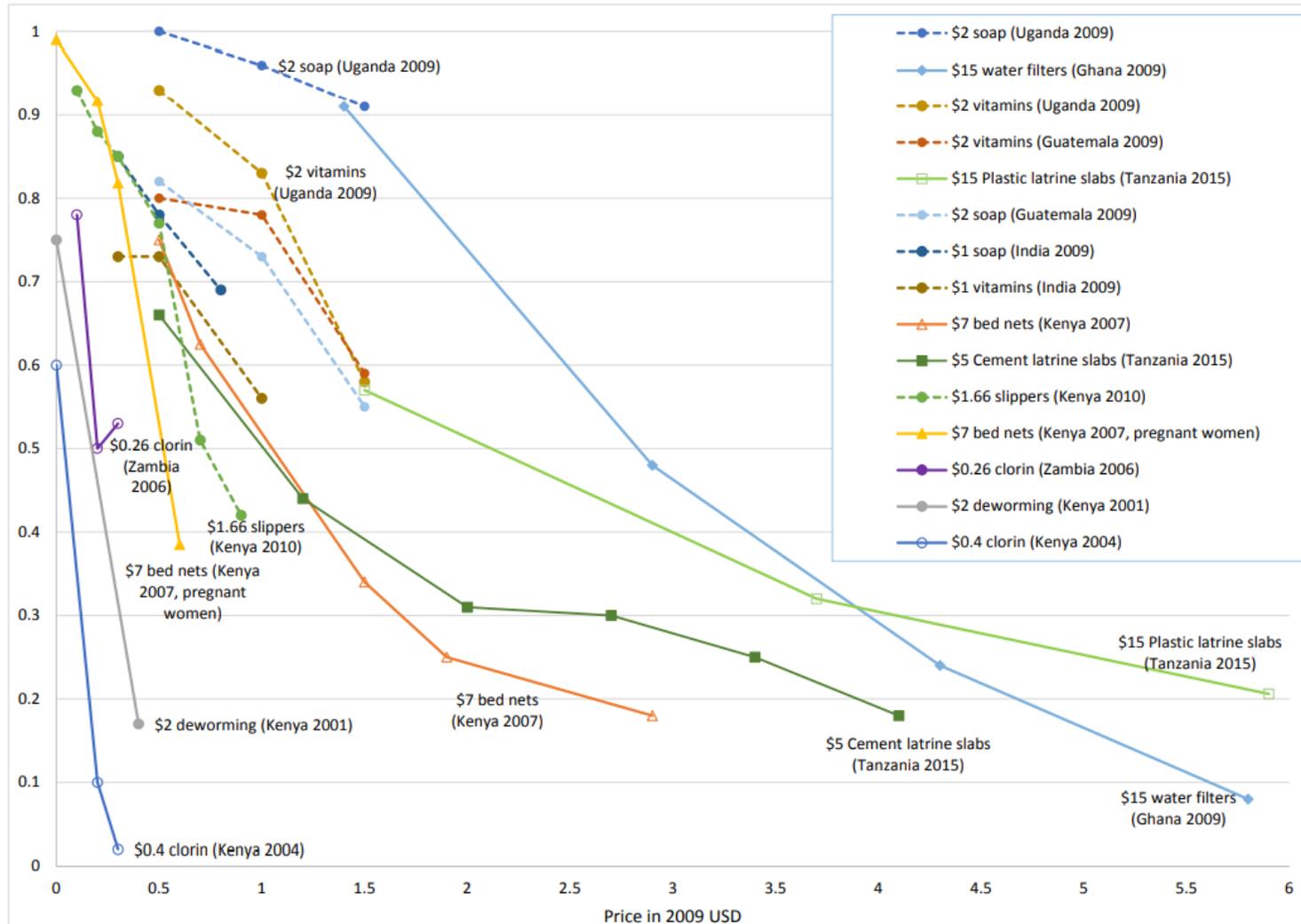


Percentage, estimated **failure** to achieve blood pressure control, among all cases



- Complications, including stroke, cardiovascular diseases.
- Mortality, including premature deaths.

Stylized fact = low demand for (primary) preventive care in LMICs



- Under-adoption of preventive care e.g., deworming, despite relative low cost and significant long-term gain.
- Demand at zero or small non-zero prices is high.
- Increases in price lead to steep drop off in demand.

Why might demand for preventive care be low?

Inaccurate perceptions of risk and returns



Sensitivity to price and hassle



Present bias and procrastination



Why might demand for preventive care be low?

**Inaccurate perceptions
of risk and returns**



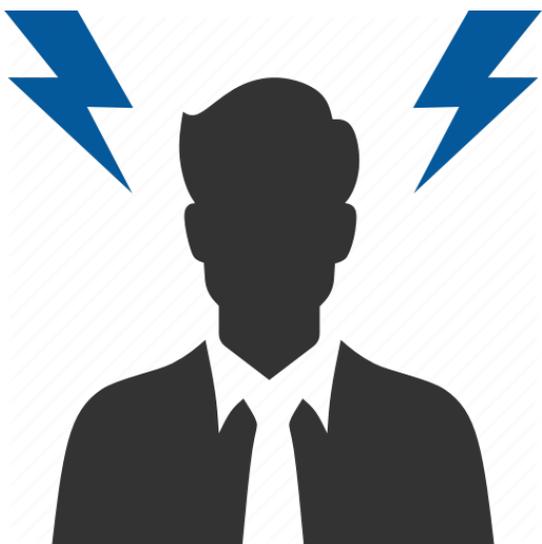
- NCDs are complex diseases, individual risk uncertain.
- Lack of access to accurate information, e.g., low literacy.
- Overweighting some data points over others



- Information that is easy to understand and available.
- Personalized, including benefits and risk.
- Social learning, observing peers, shown to be effective.

Why might demand for preventive care be low?

Sensitivity to price and hassle



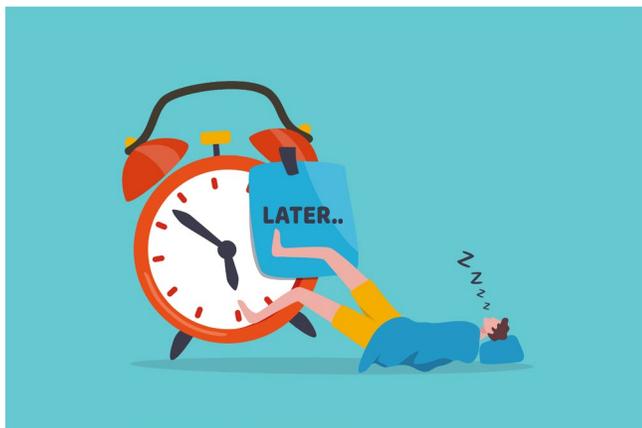
- Revealed preferences smaller than stated preference valuation.
- High demand elasticity to price and inconvenience.
- Consistent finding for preventive care, including bed nets and deworming.



- Reduced hassle and price.

Why might demand for preventive care be low?

Present bias and procrastination

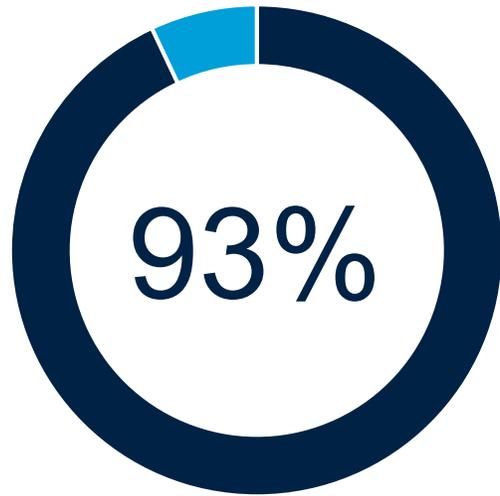


- Immediate costs, delayed benefits, and naivete leads to procrastination.
- For screening, travel cost, laboratory test fees, waiting time, stress of diagnosis? Long-term, better health.
- Evidence suggesting people underestimate the extent of their present bias – naivete is common.

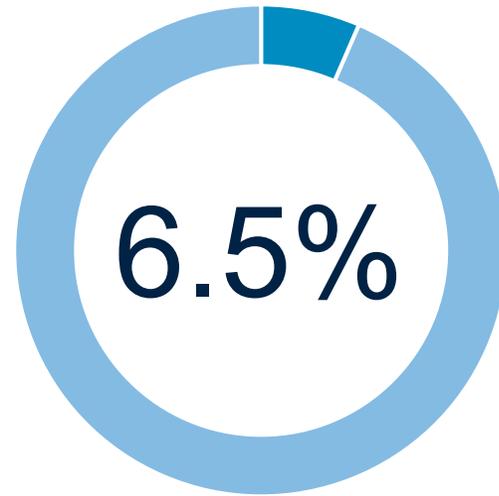


- Time-limited incentives.
- Deadlines.
- Increased awareness of the intention-action gap.

Armenia – similar to the broader picture in LMICs



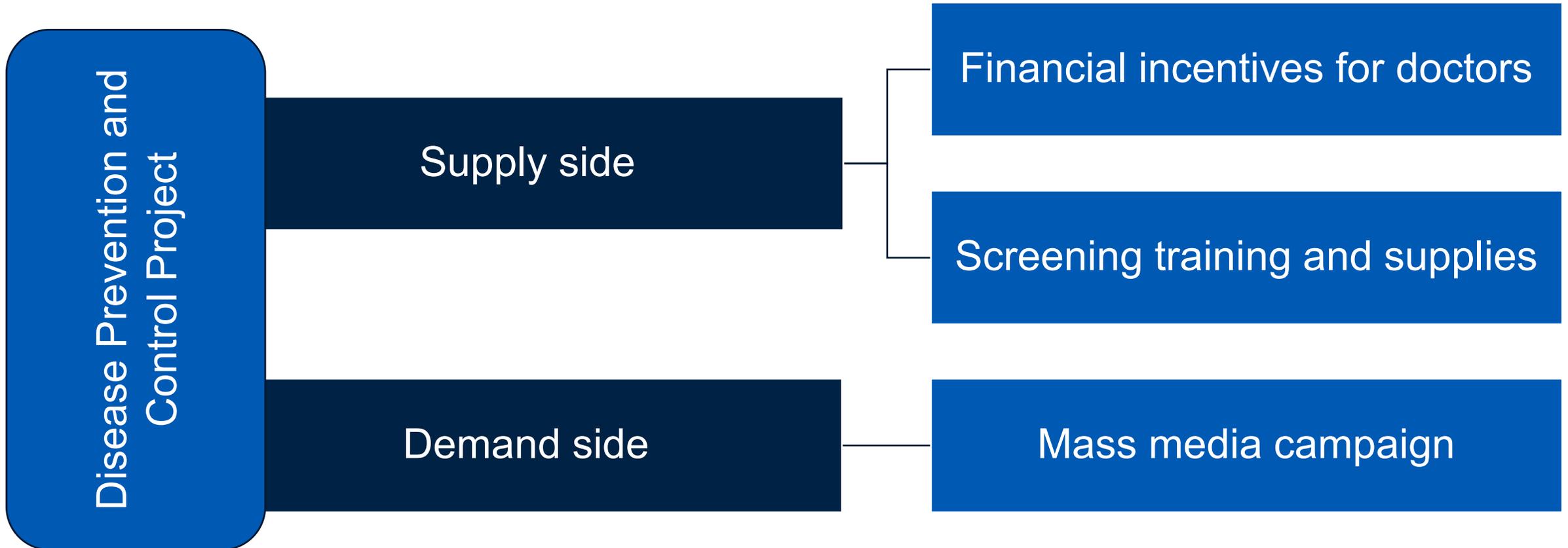
Non-communicable diseases (NCDs) lead to 93% of deaths in Armenia



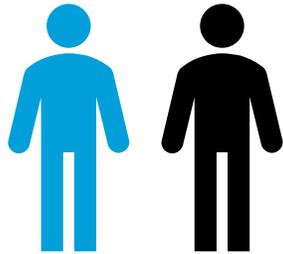
In 2017, the economic cost of NCDs was 6.5% of annual GDP



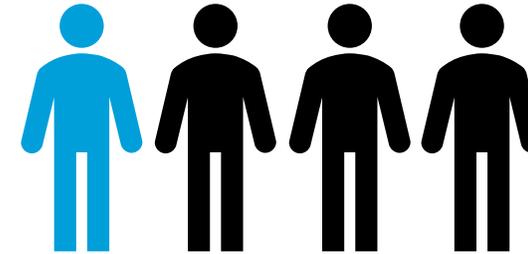
Since 2013, the Disease Prevention and Control Project, a national program aimed at increasing screening rates...



In 2016, gaps in screening uptake persisted...



Less than 50% of people above 15 years were screened for hypertension annually



Less than 25% in the same group were screened for diabetes annually

Focus group discussions with service users in 2018 that had not been screened in the previous year...

Inaccurate perceptions of risk and returns?

- How to schedule appointments?
- Uncertainty over benefits?
- Credibility of information from mass media campaign?



Accurate information via a credible channel

Sensitivity to price and hassle?

- The need for a repeat visit for fasting blood sugar screen for diabetes.
- Need to pay out-of-pocket?



Reduce hassle and price

Present bias and procrastination?

- I plan to visit the health facility. I just haven't gotten it done yet.



Time-limited incentives and deadlines



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Objective:

To examine the impact of *incentives, invitations, and conditions*, on **screening rates for hypertension and diabetes**, among adults aged 35 to 68, who had not been screened in the past year.

Interventions designed with Ministry of Health and its Project Implementation Unit

Intervention group 1

Personal invitation from physician for diabetes and hypertension screening

Intervention group 2

Intervention group 1 plus information on screening among peers

Intervention group 3

Intervention group 1 plus labelled pharmacy voucher incentive (AMD5000 or ~\$10), not conditional on being screened

Intervention group 4

Intervention group 1 plus pharmacy voucher incentive (AMD5000 or ~\$10), conditional on being screened

Control group

No personal invitation for screening or voucher but exposed to national campaign

Dear [Name, Surname],

We cordially invite you to visit [Name of the medical facility] of [Name of the community] at the following address [Address] to be screened for diabetes and hypertension.

According to official records in your personal medical card, in past 12 months you have not been screened for diabetes and hypertension at a medical facility. In terms of prevention and control of diseases, your visit to the medical facility is extremely important to ensure your personal healthcare.

Please, prior to the visit make a call to your doctor for a proper appointment, using the telephone number presented in the bottom of this invitation.

Note: for a credible measurement of diabetes you must visit the doctor fasting since midnight, which means you should not eat or drink anything except water. The screening is free-of-charge, painless and not time-consuming.

We highly recommend that you visit the medical facility soonest possible and to use the free-of-charge medical services of the primary healthcare facility.

Looking forward to seeing you,

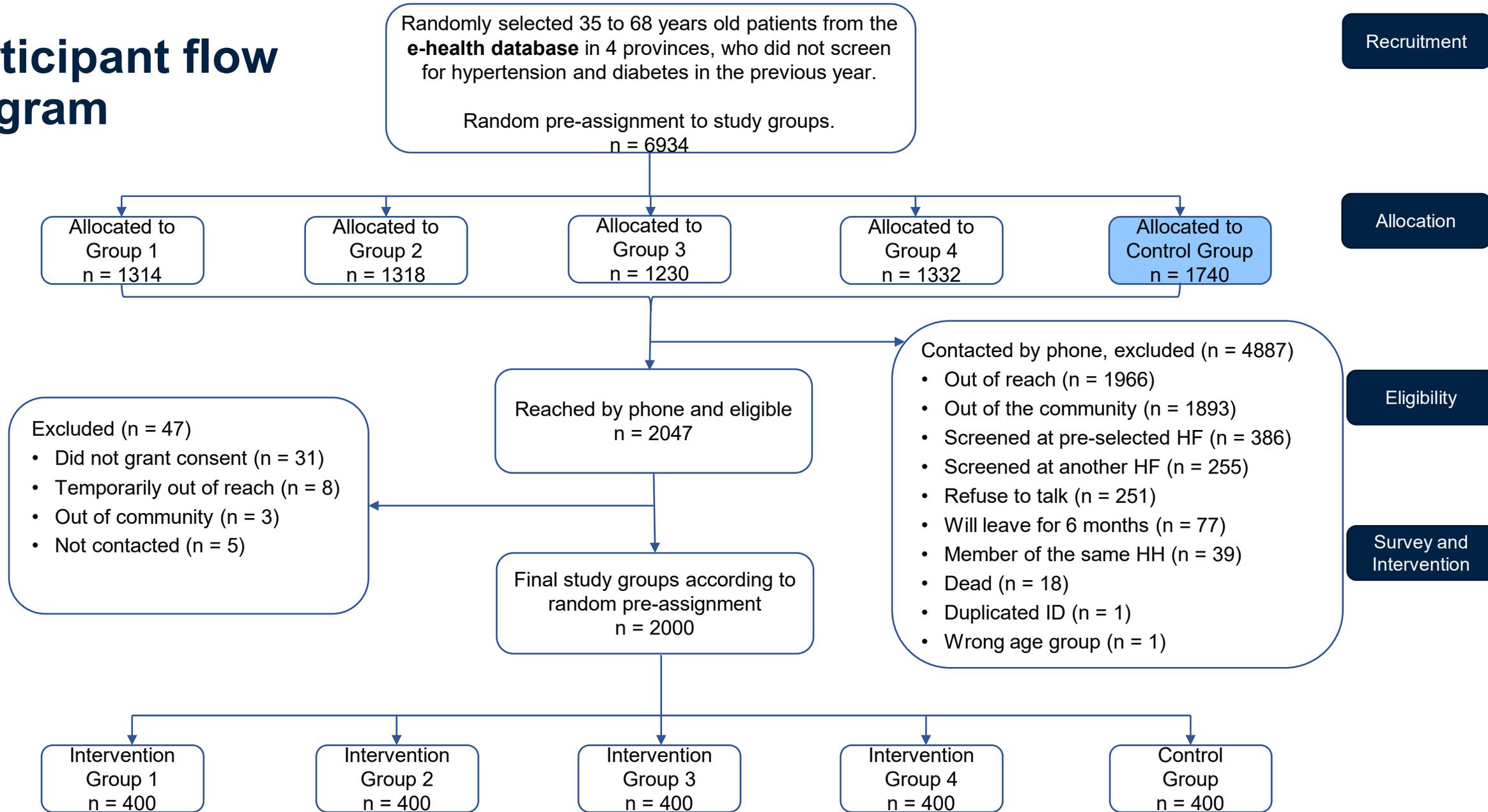
DATE

DOCTOR

SIGNATURE

Intervention group 1: screening is important; signed by doctor; not time-consuming, painless and free; location of clinic; scheduling; pre-screen preparation.

Participant flow diagram



Recruitment

Allocation

Eligibility

Survey and Intervention

Data sources

Health clinic administrative records

- To assess screening attendance

Baseline survey

- To collect socio-demographic data
- Between July and September 2019 for intervention groups, with distribution of invitations and vouchers (for intervention group 3)
- In January 2020 for the control group to avoid contamination with information on screening

Baseline characteristics and balance

Variable	Sample	Group 1	Group 2	Group 3	Group 4	Control
Male	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)
Age	51 (9.6)	51 (9.6)	51 (9.8)	50 (9.5)	51 (9.8)	51 (9.3)
Married	0.86 (0.3)	0.83 (0.4)	0.85 (0.4)	0.86 (0.3)	0.86 (0.3)	0.88 (0.3)
Higher education	0.16 (0.4)	0.13 (0.3)	0.17 (0.4)	0.18 (0.4)	0.15 (0.4)	0.15 (0.4)
Subjective welfare*	0.50 (0.5)	0.43 (0.5)	0.49 (0.5)	0.55 (0.5)	0.48 (0.5)	0.55 (0.5)

Sample means with standard deviations in parentheses

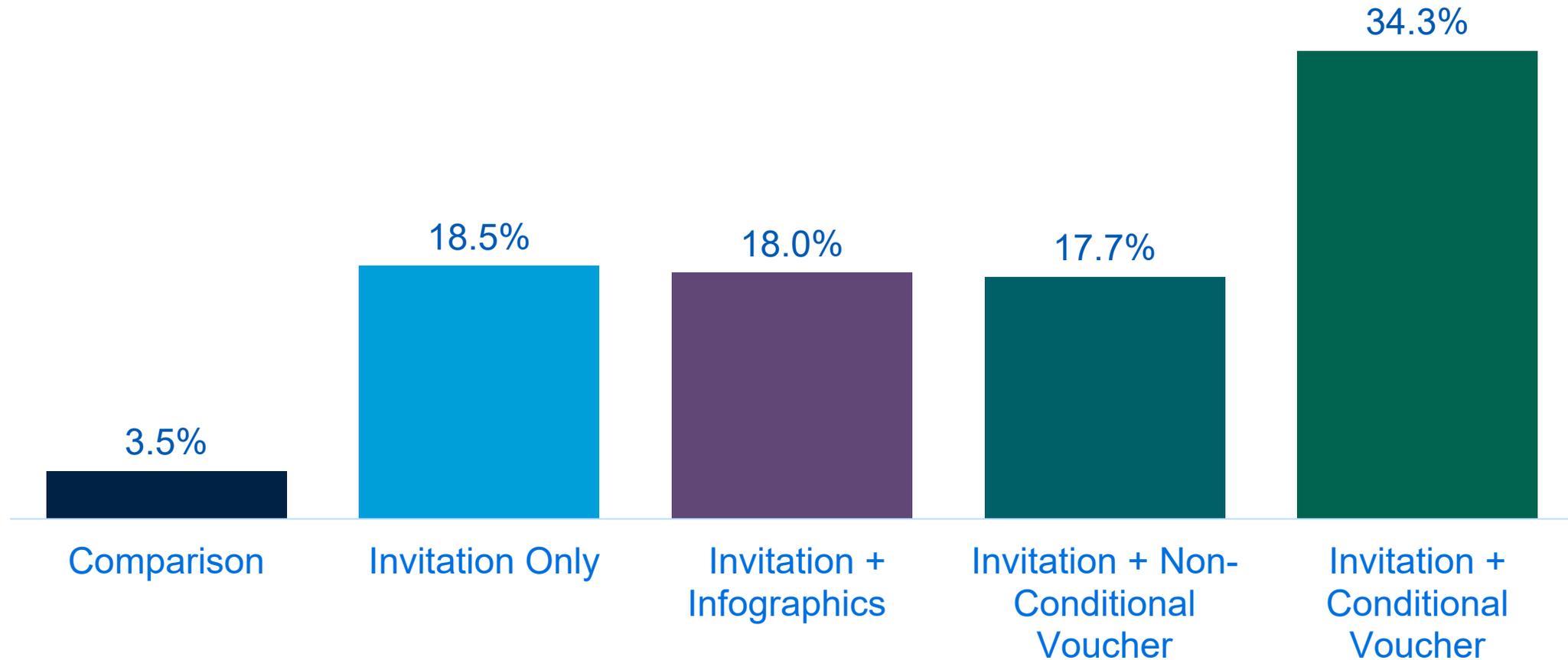
*Our income is sufficient for family basic needs, such as food, clothing, utilities, but not enough for big purchases, such as equipment or a car

Differences between groups in the distribution of widowed, self-employed, and subjective welfare

No statistically significant differences across groups for all other variables at baseline

Impact on screening for hypertension and diabetes

From a baseline of no screening, in 6 months ...



Note: OLS regressions controlling for facility and regional fixed effects, age, gender, and other sociodemographic variables

Average cost per person screened (USD)



Limitations

Control group not surveyed at baseline

- Surveyed at endline
- Information at baseline may have influenced participants
- Stable socio-demographic variables
- Survey + intervention effect

Intervention-control differences

- Differences in post-allocation attrition
- Baseline differences on covariates
- Controlled for in regressions

Policy lessons and next steps

Personalized messages and financial incentives have the potential to increase screening uptake and primary health care use, which has historically been low.

Messages and conditional incentives were equally cost effective, unconditional incentives less so, because Group 3 was twice as costly as Groups 1 and 2, but equally effective.

Simple messages were less expensive than but equally cost-effective as conditional incentives.

Personalized invitations will be sent to encourage screening in the Disease Prevention and Control Project.

Acknowledgments

- Ministry of Health and Project Implementation Unit
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