Communicating infection control advice to the Norwegian public: Web-based randomized superiority Message Lab trial

Protocol version 1.3

Authors

Munthe-Kaas HM[1], Bruun T[1], Finess B[1]L, Elstrøm P[1], Fretheim A[1], Rose, C[1].

Affiliations:

[1]Norwegian Institute of Public Health

Funding: N/A

Register: https://www.isrctn.com/

Abstract

Background

Institutes of Public Health often have responsibility for developing and communicating health advice to the public. It is not always evident how well the advice is understood among members of the public.

Objective

In this study we will explore the effect of providing additional explanations of key terms and adding specific advice related to staying at home on intended behaviour.

Methods

We will conduct a web-based, parallel group, individually randomized, pragmatic superiority trial to compare the effects of different ways of communicating health advice related to newly onset symptoms of a respiratory tract infection.

Discussion

The findings from this study will inform the format and wording of health advice communicated by the National Institute of Public Health.

Background

The Norwegian Institute of Public Health (NIPH) is the national authority responsible for developing and disseminating advice to the public about infection control measures. One practically important question that citizens seek advice about is whether to stay home from work or refrain from social events when experiencing symptoms of respiratory infection (e.g. running nose or cough). NIPH no longer has a general recommendation that one should stay home if experiencing respiratory symptoms. The current advice emphasises reducing the risk of infecting persons who are at increased risk of becoming seriously ill (vulnerable groups), and not the need to stay at home in general. However, the message is complex since staying at home for one's own health's sake is warranted if symptoms are severe (e.g. fever). Furthermore, staying at home can both be an intervention to reduce the risk of infecting vulnerable groups, and an intervention to take care of one's own health. Also, there are other interventions to avoid infecting vulnerable groups if you don't stay home, such as keeping distance and/or using a face mask.

Given the complexity of the message that is to be communicated, it is important to test the degree to which different ways of presenting it is perceived as intended.

We are designing a randomized trial to compare four different ways of communicating the same intended message, to compare their relative effectiveness in achieving an intended understanding of it.

Objectives

The objectives of this randomized trial are to estimate the effects of four different modes of communicating advice related to behaviour with newly onset symptoms of respiratory infection. The primary outcome is:

- Intended behaviour based on health advice

We will also evaluate the effect on three secondary outcomes: understanding of the advice, trustworthiness and understandability of the health advice.

Specifically, our research questions are:

1. Does providing additional explanations of key terms used in infection control advice increase the likelihood that members of the public report intended adherence behaviour with symptoms of respiratory infection?
2. Do members of the public understand the main purpose of the advice when experiencing symptoms of a newly onset respiratory tract infection based on public health advice?
3. Does providing additional explanation of key terms used in infection control advice facilitate understanding of those terms?
4. Does explicitly adding a sentence stating that it is usually okay to go to work or participate in activities if you feel up to it even with symptoms of a respiratory tract infection, improve understanding of, and correct intended adherence to, infection control advice?
5. Does explicitly adding a sentence stating that it is usually okay to go to work or participate in activities if you feel up to it even with symptoms of a respiratory tract infection, and/or additional explanations of key terms, affect perceived trustworthiness and/or understandability of infection control advice?
6. Do participants feel that the infection control advice contains enough information for them to make an informed decision?

Methods

Trial design

We will conduct a web-based, parallel group, individually randomized, pragmatic superiority trial to compare the effects of different ways of communicating health advice related to newly onset symptoms of a respiratory tract infection. The trial will be registered in the ISRCTN (International Standard Randomised Controlled Trial Number) registry and the protocol published on Zenodo, and we will following the Standard Protocol Items: Recommendations for Interventional Trials guidelines (1).

We will employ four trial arms to evaluate the effect of different modes of presenting infection control advice (Figures 1 and 2). The arms will differ according to whether or not key terms or explicitly explained and the presence of a sentence regarding when it is okay to go to work or attend social events/activities with symptoms of a respiratory tract infection.

The treatment groups (format and wording of text) may be subject to change before recruiting trial participants following user testing (see description of user testing under Intervention).

Setting

The study will be conducted using a web-based platform (*Nettskjema*) that is developed and hosted by the University of Oslo. All study materials will be provided in Norwegian.

Participant recruitment and selection

We will recruit 2000 participants via email from the NIPH-panel (*FHI-panel)*. *FHI-panel* was established by the Norwegian Institute of Public Health in 2024 and includes 22.000 Norwegians who have consented to be contacted regarding participation in NIPH-led studies.

Inclusion criteria

To be eligible for this trial, participants must be between 20 to 66 years old (working age), have Norwegian as native language, and currently reside in Norway. We have included participants with Norwegian as their native language because we will not investigate during this study subgroups of participants with other native languages which may impact understanding (to be potentially explored in a later study

When using any online participant pool, there is a potential risk of bias related to convenience sampling, such as self-selection bias, a demographic skew, professionalization of frequent survey-responders and inherent exclusion bias related to internet access. We will account for this possible bias in the analysis and discuss in relation to the results of the study.

Randomization

Eligible participants will be randomized in a 1:1:1:1 ratio to one of the 4 comparison groups (described below). The participants will be randomized to an arm by the research institution using an independent web-based survey tool (*Nettskjema*) which uses a computer-generated pseudorandom sequence where each participant will have a 25% chance of being assigned to any study arm, and over which the research team will have no influence.(2). After randomization, the participant will receive a link to the version corresponding to their randomized arm. Participants will not be blinded to treatment, but will have no knowledge of the content of the other surveys.

The researchers and study statistician will be blinded to intervention allocation until all main analyses are completed. The research team will agree on and publish a plan for how to interpret results in an online repository after analysis, but before unblinding.

Interventions

Depending on the arm to which participants were randomized, they will be presented, via *Nettskjema*, one of four versions of health advice (see Table 1) regarding respiratory tract infection from the Norwegian Institute of Public Health(3):

- Version 1: Health advice related to behaviour with symptoms of a respiratory tract infection with explicit descriptions of key terms (infants, vulnerable populations).
- Version 2: Health advice related to behaviour with symptoms of a respiratory tract infection with explicit descriptions of key terms (infants, vulnerable populations) AND a sentence about what one can do with symptoms of a respiratory tract infection.
- Version 3: Current health advice on NIPH website related to behaviour with symptoms of a respiratory tract infection AND a sentence about what one can do with symptoms of a respiratory tract infection.
- Version 4 (control): Current health advice on NIPH website related to staying at home with symptoms of a respiratory tract infection

Note that the health messages may be modified or refined following user testing.

Table 1: treatment interventions

Component	**Health advice text (Norwegian)**	**Health advice text (English)**
Current formulation (V1)	Ved luftveissymptomer bør du unngå unødvendig nærkontakt med personer som har høyere risiko for å bli alvorlig syke av luftveisinfeksjoner, som	If you have respiratory symptoms, you should avoid unnecessary close contact with people who are at higher risk of becoming seriously ill from respiratory

	spedbarn, personer med kroniske sykdommer og eldre. Forsøk også å unngå å hoste eller nyse direkte på andre, og hold hendene rene.	infections, such as infants, people with chronic conditions, and older adults. Try to avoid coughing or sneezing directly on others, and keep your hands clean.
Added sentence about when it is okay to participate in activities or go to work. (V2)	Ved luftveissymptomer bør du unngå unødvendig nærkontakt med personer med høyere risiko å bli alvorlig syke av luftveisinfeksjoner, som spedbarn, personer med kroniske sykdommer og eldre. **Ellers kan du stort sett gå på jobb eller delta på andre aktiviteter når du er i form til det.** Men husk å forsøke også å unngå å hoste eller nyse direkte på andre, og hold hendene rene.	If you have respiratory symptoms, you should avoid unnecessary close contact with people who are at higher risk of becoming seriously ill from respiratory infections, such as infants, people with chronic conditions, and older adults. **Otherwise you can usually go to work or participate in other activities if you feel up to it.** Try to avoid coughing or sneezing directly on others, and keep your hands clean.
Added definitions of key terms (V3)	Ved luftveissymptomer bør du unngå unødvendig nærkontakt med personer med høyere risiko å bli veldig syke hvis de blir smittet, som for eksempel • spedbarn (barn under ett år) • personer med kroniske sykdommer (som for eksempel hjertesykdom, kreft og astma) • eldre (personer over 65 år) Forsøk også å unngå å hoste eller nyse direkte på andre, og hold hendene rene.	If you have respiratory symptoms, you should avoid unnecessary close contact with people who are at higher risk of becoming seriously ill from respiratory infections, such as • infants (children under 1 year) • people with chronic conditions (such as heart disease, cancer or asthma) • older adults (people over 65 years) Try to avoid coughing or sneezing directly on others, and keep your hands clean.
Added sentence about when it is okay to participate in activities or go to work + Added definitions of key terms (V4)	Ved luftveissymptomer bør du unngå unødvendig nærkontakt med personer med høyere risiko å bli veldig syke hvis de blir smittet, som for eksempel: • spebarn (barn under ett år) • eldre (personer over 65 år) • personer med kroniske sykdommer (som for eksempel hjertesykdom, kreft og astma) **Ellers kan du stort sett gå på jobb eller delta på andre aktiviteter når du er i form til det.** Men husk å forsøke også å unngå å hoste eller nyse direkte på andre, og hold hendene rene.	If you have respiratory symptoms, you should avoid unnecessary close contact with people who are at higher risk of becoming seriously ill from respiratory infections, such as • infants (children under 1 year) • people with chronic conditions (such as heart disease, cancer or asthma) • older adults (people over 65 years **Otherwise you can usually go to work or participate in other activities if you feel up to it.** Try to avoid coughing or sneezing directly on others, and keep your hands clean.

User testing of the text

We will conduct three rounds of user tests: first, an unmoderated test with a small group of infection control researchers (N=3) and experts to identify any incorrect or misleading text, second, a moderated user test with people (N=2) who meet the participant selection criteria of the study but are not part of the FHI panel, and third, an unmoderated test with a small group of FHI-panel members (N=50) to identify any distracting or confusing information or formatting (e.g., punctuation) associated with the study invitation, the link, the study questions, etc..

Outcome and measurement

We define the primary binomial outcome to measure participants' correct intended behaviour based on the health advice.

We will measure the primary outcome related to intended behaviour by comparing participants' responses to questions about hypothetical scenarios to the expected (correct) response option(s) (see Table 3). Participants will be presented with 5 hypothetical scenarios. For each scenario, participants will be presented with three possible behavioural responses and asked to indicate how likely they would be to engage in said response. The likelihoods will be measured using a Likert scale (1-5), and specific points on the scale will be defined to correspond to the expected (correct) response. The primary outcome is defined as the number (count) of correct responses (i.e., between 0/15 and 15/15).

We will also include the following binary secondary outcomes (See Table 4):

- Correct understanding of the advice (comparing participants' responses to a multiple-choice question about understanding the advice to correct responses)
- Meeting or exceeding threshold understanding for intended behaviours (responding correctly for ≥12 = 80% of the 15 questions for the 5 hypothetical scenarios)
- Intended behaviour for each of 5 scenarios
    - A participant must respond correctly to each of the three possible behavioural responses for the intended behaviour for each scenario to be considered correct
- Understanding of the term "infant"
- Understanding of the term "people with higher risk of becoming seriously ill from respiratory tract infections"
- Confidence in understanding main goal of advice
- Trustworthiness of information
- Perceived usefulness (4)
- Likelihood to recommend (4)

We will include one secondary outcome using binomial outcomes to estimate decisional conflict for each scenario measured by a single item decisional conflict question for each scenario using binomial outcome (number of scenarios per participant where conflict is present, i.e., participant indicates "no" to question of whether they had enough information to make their decisions).

Procedures

After opening the invitation email, participants will be provided with details related to the objectives of the study, how long the study will take, that their participation is voluntary and can be discontinued at any time, how their data will be stored and other relevant information. They will be asked to confirm their consent before clicking on a link to the scenario (same for all participants) and one of four versions to which they will have been randomized. They will answer questions related to demographic measures (including age, municipality, gender, highest level of education obtained) and baseline behaviours (what they did last time they were sick). Health literacy will be measured using a

single item literacy screening question adapted from the Digital Health Literacy Instrument (5). The participants will then complete an attention check (e.g., "To ensure human responses are being collected, please select other and type FHI in the box").(6) before they proceed to answer questions related to the primary and secondary outcomes (See tables below). Participants who fail the attention check will be removed from analysis. All participants will complete the survey by submitting their responses electronically using the "submit" button. They will then be directed to a new online form (*Nettskjema*) where they can submit their email address to be eligible for a prize for participating (e.g., 5 available gift cards for 2000 Norwegian kroner).

Data Collection

We will collect data using an online form developed by the University of Oslo (*Nettskjema*). Participation in this study will be anonymous. People who open the email link will be led to a NIPH webpage that introduces the purpose of the study, participant inclusion criteria, expectations of participation, information about data storage and confidentiality, instructions for proceeding and contact information in case of questions. Data will be stored on the NIPH server. We will not collect any personal data.

Before reading the infection control advice and responding to the corresponding questions, participants will be asked to answer a series of baseline questions related to their gender, age, the geographic region in which they currently live, and the highest level of education they have obtained. They will also be asked about their employment status and questions about what they did the last time they had symptoms of a respiratory tract infection (see Table 2).). We will build an attention and comprehension(1)check into the questionnaire.

Table 2. Baseline characteristics and behaviours

Characteristic/behaviour	**Question**	**Alternatives**
Age	Age: Alder:	16-24/25-34/35-44/45-54/55-64/65+
Gender	Gender: Kjønn:	Male/Female/Other
Geographic region	Region Region:	Akershus/ Buskerud/ Finnmark/ Innlandet/ Møre og Romsdal/ Nordland/ Oslo/ Rogaland/ Telemark/ Troms/ Trøndelag/ Vestfold/ Vestland/ Østfold/ Agder
Highest level of education obtained	Highest level of education completed Høyeste nivå utdanning:	Elementary or lower/ Highschool/ Vocational school / University or college (≤ 4 år)/ Unviversity orcollege (> 4 år) Grunnskole eller lavere/ Videregående/ Fagskole/ Universitet eller høyskole (≤ 4 år)/ Universitet eller høyskole lang (> 4 år)
Employment status	Are you currently in employment? If no, please skip the next 4 questions. Er du i arbeid for tiden?	Yes No Ja/nei
Type of employment (contact with people at high risk of becoming seriously ill if infected,	If yes, In your job, do you often have close contact with patients or others who you know to be at	Yes /No Ja/nei

and opportunity to work from home)	higher risk of becoming seriously ill from a respiratory tract infection? Do you have the opportunity to work (partially or completely) from home? *Hvis ja:* *Har du i jobben din ofte nærkontakt med pasienter eller andre du vet har økt risiko for å bli alvorlig syke av luftveisinfeksjoner?* *Har du mulighet til å jobbe helt eller delvis hjemmefra?*		
Baseline behavior (before exposure to comparison text)	What did you do the last time you had respiratory symptoms? Think back over the past 12 months. Choose one option. *Hva gjorde du sist gang du hadde luftveissymptomer?* *Tenk tilbake på de siste 12 månedene. Velg ett alternativ.*	• Not relevant • I went to work • I worked from home • I got a note from the doctor • I used a sick day • I didn't work at that time • *Ikke aktuelt / ikke hatt luftveissymptomer siste 12 måneder* • *Jeg møtte opp fysisk på jobb* • *Jeg jobbet hjemmefra (hjemmekontor)* • *Jeg fikk sykmelding fra lege* • *Jeg brukte egenmelding (egenmeldt fravær fra jobb)* • *Jeg jobbet ikke på det tidspunktet*	
Baseline behavior (before exposure to comparison text)	If you answered "I worked from home (home office)" to the question above, "What did you do the last time you had respiratory symptoms?" To what extent were the following reasons important for you working from home the last time you had respiratory symptoms? *Hvis du svarte «Jeg jobbet hjemmefra (hjemmekontor)» i spørsmålet ovenfor «Hva gjorde du sist gang du hadde luftveissymptomer?»* I hvilken grad var følgende grunner viktige for at du **jobbet hjemmefra** sist gang du hadde luftveissymptomer?	• I don't remember (yes/no) • I felt too sick to physically go to work • I was worried about infecting others • I was worried that my colleagues would react or think negatively about me going to work with respiratory symptoms • I was going to work from home anyway • *Jeg husker ikke (ja/nei)*	• Not at all • To a small extent • To some extent • To a large extent • To a very large extent • *Ikke i det hele tatt* • *I liten grad* • *I noen grad* • *I stor grad* • *I svært stor grad*

		• *Jeg følte meg for syk til å dra fysisk på jobb* • *Jeg var bekymret for å smitte andre* • *Jeg var bekymret for at mine kolleger ville reagere eller tenke negativt om at jeg dro på jobb med luftveissymptomer* • *Jeg skulle uansett jobbe hjemmefra*	
Baseline behavior (before exposure to comparison text)	*Hvis du svarte «Jeg brukte egenmelding» i spørsmålet ovenfor «Hva gjorde du sist gang du hadde luftveissymptomer?* I hvilken grad var følgende grunner viktige for at du **brukte egenmelding** sist gang du hadde luftveissymptomer?	• I don't remember (yes/no) • I felt too sick to physically go to work • I was worried about infecting others • I was worried that my colleagues would react or think negatively about me going to work with respiratory symptoms • I was going to work from home anyway • *Jeg husker ikke (ja/nei)* • *Jeg følte meg for syk til å dra fysisk på jobb* • *Jeg var bekymret for å smitte andre* • *Jeg var bekymret for at mine kolleger ville reagere eller tenke negativt om at jeg dro på jobb med luftveissymptomer*	• Not at all • To a small extent • To some extent • To a large extent • To a very large extent • *Ikke i det hele tatt* • *I liten grad* • *I noen grad* • *I stor grad* • *I svært stor grad*
Health literacy screening question(7)	How easy or difficult is it for you to assess whether the health advice you read in the news or in social media is reliable?	• Very easy (1) → Very difficult (5)	• Difficult (4) is the threshold response

	Hvor lett eller vanskelig er det for deg å vurdere om helseinformasjon jeg leser, for eksempel i sosiale medier eller avisen, er til å stole på?	• Svært lett (1) → Svært vanskelig (5)	

After completing questions related to baseline characteristics and behaviours (see Table 2), participants will be randomized to read one of the four versions of the infection control advice and told to "imagine that you have cold symptoms but otherwise feel fine enough to participate in daily activities". They will then be presented with 5 scenarios and three possible behavioural responses for each scenario. They will be asked to indicate how likely/unlikely (Likert scale 1-5) they would be to engage in each behavioural response based on the infection control advice they have read (see Table 3).

Participants will then be directed to a new page where they will be asked to indicate the main goal of the infection control advice, and which groups they think are covered under the terms "infant" and "people with higher risk of becoming seriously ill with respiratory tract infection" (see Table 4) based on the infection control advice they read. Finally, participants will be asked to indicate the trustworthiness and acceptability of the infection control advice they read (See Table 5).

Table 3. Primary outcome: Intended behaviour

Below you will be presented with five scenarios. The infection control advice is the same for all scenarios and your symptoms are the same for all scenarios. You must choose how you would behave in each scenario based on the health advice you have received. *Nedenfor finner du fem ulike scenarioer. Smittevernrådet er likt for alle scenarioer og dine symptomer er like for alle scenarioer. Du må velge hvordan du ville handlet i hvert scenario utfra smittevernrådet du har fått.*			
Imagine you have cold symptoms but otherwise feel fine enough to participate in daily activities. *Tenk at du har luftveissymptomer, men ellers føler deg i god form og fint orker å være i aktivitet.*			
Outcome	**Behaviour**	**Likert scale (1-5)**	**Correct response**
Scenario 1: You have been invited to your aunt Ida's house. She is 79 years old and has serious cancer. She lives alone and would very much like to have you visit. *Du er invitert til din tante Ida. Hun er 79 år og har en alvorlig kreftsykdom. Hun bor alene, og vil veldig gjerne ha besøk av deg.*			
Intended behaviour 1	Based on the advice you have been presented with, how likely is it that you will postpone the visit until you no longer have cold symptoms? *Basert på rådet du har fått presentert hvor sannsynlig er det at du utsetter besøket til du ikke har luftveissymptomer lengre?*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	4 or 5
	Based on the advice you have been presented with, how likely is it that you will go to her, but do what you	Very unlikely (1) → Very likely (5)	4 or 5

	can to not infect her (have extra good hand hygiene, keep your distance, possibly wear a mask)? *Basert på rådet du har fått presentert hvor sannsynlig er det at du drar til henne, men gjør det du kan for å ikke smitte henne (har ekstra god håndhygiene, holder avstand, eventuelt tar på munnbind)?*	Veldig usannsynlig (1) → Veldig sannsynlig (5)	
	Based on the advice you have been presented with, how likely is it that you will go to her, behave as you normally do? *Basert på rådet du har fått presentert hvor sannsynlig er det at du drar til henne, oppfører deg som du gjør til vanlig?*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Do you feel that the advice you received gave you enough information to make the choices above? *Føler du at rådet du fikk ga deg nok informasjon til å ta valgene ovenfor?*	Ja Nei	N/A
Scenario 2: You are going to visit your niece for the first time in 2 weeks. Du skal besøke din niese på 2 uker for første gang.			
Intended behaviour 2	Based on the advice you have been presented with, how likely is it that you will postpone the visit until you no longer have cold symptoms? *Basert på rådet du har fått presentert, hvor sannsynlig er det at du utsetter besøket til du ikke har luftveissymptomer lengre?*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	4 or 5

	Based on the advice you have been presented with, how likely is it that you will go to visit, but do what you can to avoid infecting her (have extra good hand hygiene, keep your distance, possibly wear a mask). *Basert på rådet du har fått presentert, hvor sannsynlig er det at du drar på besøk, men gjør det du kan for å ikke smitte henne (har ekstra god håndhygiene, holder avstand, eventuelt tar på munnbind).*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	4 or 5
	Based on the advice you have been presented with, how likely is it that you will go to visit, behaving as you normally do. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du drar på besøk, oppfører deg som du gjør til vanlig.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Do you feel that the advice you received gave you enough information to make the choices above? *Føler du at rådet du fikk ga deg nok informasjon til å ta valgene ovenfor?*	Ja Nei	N/A
Scenario 3: You work in a workplace where you share an office with four young and healthy people. You do not have the option of working from home. *Du jobber på en arbeidsplass der du deler kontor med fire unge og friske personer. Du har ikke mulighet for hjemmekontor*.			
Intended behaviour 3	Based on the advice you have been presented with, how likely is it that you will stay home to avoid infecting others until you no longer have cold symptoms. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du holder deg hjemme for å ikke smitte de andre til du ikke har luftveissymptomer lengre.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Based on the advice you have been presented with, how likely is it that you will go to work but show consideration (such as, for example, extra good hand hygiene and coughing into the crook of your elbow). *Basert på rådet du har fått presentert, hvor sannsynlig er det at du drar på jobb, men viser hensyn (som, f.eks. ekstra god håndhygiene og hoster i albuekroken).*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	4 or 5
	Based on the advice you have been presented with, how likely is it that you will go to work but behave as you normally do. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du drar på jobb, men oppfører deg som du gjør til vanlig.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Do you feel that the advice you received gave you enough information to make the choices above?	Ja Nei	N/A

	Føler du deg at du hadde rådet du fikk var tilstrekkelig for å ta de valgene ovenfor?		
Scenario 4: You have arranged to have a visit from a 50-year-old friend who is constantly suffering from migraines but is otherwise healthy. *Du har avtalt å få besøk av en venn på 50 år som stadig er plaget med migrene, men ellers er frisk*.			
Intended behaviour 4	Based on the advice you have been presented with, how likely is it that you would postpone the visit because you think he is at increased risk of becoming seriously ill with respiratory symptoms. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du utsetter besøket fordi du tenker at han er ekstra utsatt for å bli alvorlig syk av luftveissymptomer.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Based on the advice you have been presented with, how likely is it that you would accept the visit but show consideration (such as, for example, extra good hand hygiene and coughing into the crook of your elbow). *Basert på rådet du har fått presentert, hvor sannsynlig er det at du tar imot besøk, men viser hensyn (som, f.eks. ekstra god håndhygiene og hoste i albuekroken).*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	4 or 5
	Based on the advice you have been presented with, how likely is it that you would accept the visit and behave as you normally would. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du tar imot besøk, og oppfører deg som du gjør til vanlig.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Do you feel that the advice you received gave you enough information to make the choices above? *Føler du deg at du hadde rådet du fikk var tilstrekkelig for å ta de valgene ovenfor?*	Ja Nei	N/A
Scenario 5: You have children and you are invited to a Christmas tree party with people of all ages, from a few months to 90 years old. The children would love to go. *Du har barn og dere er invitert på juletrefest sammen med folk i alle aldersgrupper, fra noen måneder til 90 år. Barna vil veldig gjerne dra*.			
Intended behaviour 5	Based on the advice you have been presented with, how likely is it that you will stay home. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du holder deg hjemme.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Based on the advice you have been presented with, how likely is it that you will go to the party, but show consideration by, for example, having extra good hand hygiene, coughing into the crook of your elbow and keeping a little distance from others when possible.	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	4 or 5

	Basert på rådet du har fått presentert, hvor sannsynlig er det at du drar på festen, men viser hensyn ved å f.eks ha ekstra god håndhygiene, hoste i albuekroken og holde litt avstand til andre når det er mulig.		
	Based on the advice you have been presented with, how likely is it that you will go to the party, but behave as you normally do. *Basert på rådet du har fått presentert, hvor sannsynlig er det at du drar på festen, men oppfører deg som du gjør til vanlig.*	Very unlikely (1) → Very likely (5) Veldig usannsynlig (1) → Veldig sannsynlig (5)	1 or 2
	Do you feel that the advice you received gave you enough information to make the choices above? *Føler du deg at du hadde rådet du fikk var tilstrekkelig for å ta de valgene ovenfor?*	Ja Nei	N/A

Table 4. Secondary outcomes: Response to scenarios, understanding overall goal of advice and terms, trustworthiness and acceptability

Outcome	**Question**	**Response alternatives**	**Correct response**
xxx Meeting or exceeding threshold understanding for intended behaviours	See Table 3	Very unlikely (1) → Very likely (5)	• responding correctly for ≥12 = 80% of the 15 questions for the 5 hypothetical scenarios)
Intended behaviour 1 (correct if all three behaviour responses are correct)	See Table 3	Very unlikely (1) → Very likely (5)	4 or 5 AND 4 or 5 AND 1 or 2
Intended behaviour 2 (correct if all three behaviour responses are correct)	See Table 3	Very unlikely (1) → Very likely (5)	4 or 5 AND 4 or 5 AND 1 or 2
Intended behaviour 3 (correct if all three behaviour responses are correct)	See Table 3	Very unlikely (1) → Very likely (5)	1 or 2 AND 4 or 5 AND 1 or 2
Intended behaviour 4 (correct if all three behaviour responses are correct)	See Table 3	Very unlikely (1) → Very likely (5)	1 or 2 AND 4 or 5 AND 1 or 2
Intended behaviour 5 (correct if all three behaviour responses are correct)	See Table 3	Very unlikely (1) → Very likely (5)	1 or 2 AND 4 or 5 AND 1 or 2

Understanding of the advice	3.1 What is the aim of following the health advice? *Hva er hovedformålet med smittevernrådet fra FHI som du har lest?* *Kryss av for ett alternativ.*	• Protect yourself • Protect others • Protect others that have a higher risk of becoming seriously ill • Prevent spread of infection in the community • *Beskytte deg selv* • *Beskytte personer som har høyere risiko for å bli alvorlig syk* • *Beskytte andre rundt meg* • *I størst mulig grad forhindre spredning av luftveisinfeksjoner* i samfunnet	Protect others that have a higher risk of becoming seriously ill Beskytte andre som har høyere risiko for å bli alvorlig syk
Understanding advice	How sure are you that you have understood the infection control advice from FHI correctly? Hvor trygg er du på at du har forstått rådet fra FHI riktig?	Very unsure (1) → Very sure (4) *Svært utrygg (1) → Svært trygg (4)*	N/A
Understanding relevant terms	Which of the following is included under the term "infant" (check all relevant responses) Hvilke av de følgende er inkludert i begrepet ***spedbarn***?	1. A healthy 3 week old baby 2. A healthy 11 month old baby 3. A healthy 20-month-old baby 4. A 3 month old baby in intensive care 5. None of the above are included under the term "infant" *1. Et friskt 3 uker gammelt barn* *2. Et friskt 11 måneder gammelt barn* *3. Et friskt 20 måneder gammelt barn* *4. Et 3 måneder gammelt barn på intensivavdeling* 5. *Ingen av de ovennevnte omfattes av begrepet «spedbarn»*	1, 2 and 4 are correct.
Understanding relevant terms	Which of the following is included under the term "people at higher risk of	1. A 68 year old women under treatment for breast cancer	1, 2, 4, 5

	becoming seriously ill" (check all relevant responses) Hvilke av følgende er inkludert under begrepet ***personer med høyere risiko for å bli alvorlig syk***?	2. A 25 year old man with asthma 3. A 50 year old woman with persistent migraines. 4. A healthy 80 year old man 5. A 11 month old baby 6. None of the above are included under the term "vulnerable group" 1. En 68 år gammel kvinne under behandling for brystkreft 2. En 25 år gammel mann med astma 3. En 50 år gammel kvinne med vedvarende migrene 4. En frisk 80 år gammel mann 5. En 11 måner gammelt barn 6. Ingen av de overnevnte omfattes av begrepet "personer med kroniske sykdommer"	
Trustworthiness (8)	How trustworthy do you find the advice? I hvilken grad opplever du FHI-rådet du har lest som pålitelig?	Not at all trustworthy (1) to very trustworthy (10) I svært liten grad (1) → I svært stor grad (10)	N/A
Perceived usefulness (8)	If I was looking for information about what to do when I had new symptoms of respiratory illness, I would have found this advice useful Hvis jeg søkte etter informasjon om hva jeg burde gjøre når jeg får symptomer på forkjølelse eller influensa, ville jeg ha funnet FHI-rådet jeg leste nyttig.	Strongly disagree (1) to Strongly agree (5) Svært enig (1) → Svært uenig (5)	N/A
Intention to share (8)	I would share this advice to a friend if they wanted to know what to do in the case of new symptoms of respiratory illness.	Strongly disagree (1) to Strongly agree (5)	N/A

	Jeg ville dele dette FHI-rådet med en venn dersom de lurte på hva de skulle gjøre hvis de ble forkjøla eller fikk influensalignende plager.	Svært enig (1) → Svært uenig (5)	

Statistical analysis and reporting

We will present a CONSORT flow chart (Figure 1) and table of baseline participant characteristics (Table 1).(9) We will present results for each of the three comparisons in its own table, following the format of Table 2.

Because treatment effects are unlikely to be homogeneous (e.g., individuals with higher education may be more likely to correctly understand health advice), and participants are not randomly sampled from the target population, we will estimate population average treatment effects (PATEs) using post-stratification weighting. We will apply post-stratification weighting based on age, gender, and highest level of education, using marginal population distributions from the most recent Statistics Norway (SSB) estimates. We will compute weights separately within each trial arm to avoid introducing or exacerbating imbalance between arms (2). Estimates of sample average treatment effects (SATEs) will be reported in the supplementary materials.

The primary outcome comprises 15 items (3 per scenario) designed to be of similar difficulty. For each participant, we will count the number of correctly answered items (out of 15) and estimate risk ratios comparing each intervention to the control arm using binomial regression. The secondary outcome on decisional conflict will be analysed similarly, by modelling the number of affirmative responses (i.e., reporting sufficient information to make decisions across the five scenarios) as a binomial outcome and estimating risk ratios. The remaining secondary outcomes are binary; these will also be analysed using binomial regression, falling back on Poisson regression with robust standard errors in the event on non-convergence (3).

We will also estimate PATEs for the primary outcome within prespecified subgroups by including treatment–subgroup interaction terms. Two-sided tests of interaction will be used to assess evidence of heterogeneity in treatment effects across subgroup levels. We will assess the credibility of subgroup differences (potential effect modification) using the Instrument to assess the Credibility of Effect Modification Analyses (ICEMAN).27

All analyses will follow the intention-to-treat principle: all randomized participants will be analysed in the groups to which they were assigned. Results will be reported in accordance with CONSORT 2025 guidelines (4). To account for multiplicity arising from the four-arm design (see Power calculation), we will report Bonferroni-adjusted 95% confidence intervals and two-sided *p*-values, using a 5% significance level throughout. Analyses will be conducted in Stata version 19 or later (StataCorp LLC, College Station, TX, USA). Anonymized individual-level data and analysis code will be made publicly available.

Power calculation

We have a limited understanding of what may constitute an important effect, so we powered the trial using estimates from a previous trial on textual (rather than visual) presentations of uncertainty that used a closely related outcome. In that trial, 42.5% of control participants correctly understood overall uncertainty compared to 48.0% who were shown GRADE language and a margin of error (odds ratio ≈ 1.25). For the present trial, the primary outcome is the number of questions answered

correctly out of 15 (five scenarios with three questions each), modelled as a binomial outcome (range 0–15), with per-question probabilities informed by these estimates.

The sample size calculation assumes three pairwise comparisons (comparing each of three interventions to a shared control), 1:1:1:1 allocation, a two-sided likelihood-ratio test, and strong (Bonferroni) control of the familywise type I error rate ($\alpha = 0.05$; per-comparison $\alpha = 0.0167$). To achieve 90% power to reject all three null hypotheses when all interventions have the effect size observed in the previous trial (i.e., strong control of the familywise type II error rate at $\beta = 0.10$), we set the per-comparison type II error rate to $\beta \approx 0.034$.

Under these assumptions, the trial would require at least 195 participants per arm (780 participants in total). To allow for potential deviations from these assumptions and to ensure adequate precision of effect estimates, we will recruit 400 participants per arm (1600 participants in total). Given the use of web-based data collection, we anticipate no or very little attrition and have not further inflated the sample size to account for loss to follow-up.

Adverse effects

There are no expected adverse effects of participating in this study.

Fig. 1 CONSORT flow diagram

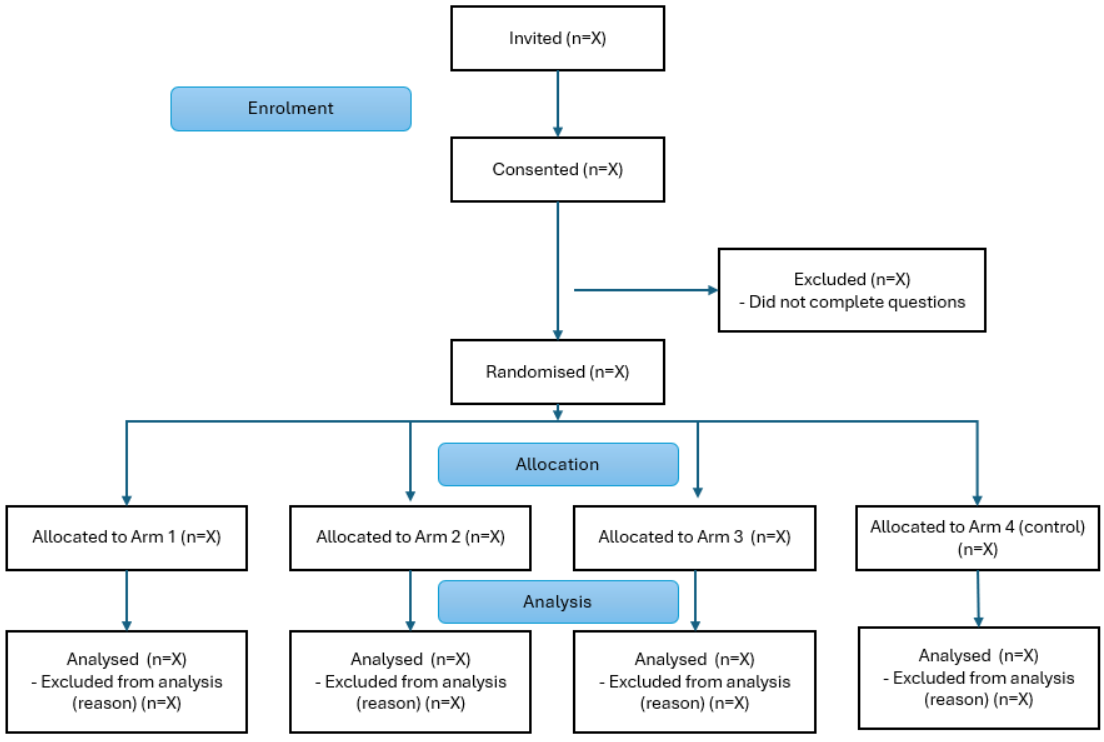

Table 1. Baseline participant characteristics

	Arm 1		**Arm 2**		**Arm 3**		**Arm 4**	
	Unweighted	**Weighted**	**Unweighted**	**Weighted**	**Unweighted**	**Weighted**	**Unweighted**	**Weighted**

All participants	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
Age group								
<20 years	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
20–35 years	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
46–50 years	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
51–70 years	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
>70 years	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
Gender								
Women	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
Men	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
Other or prefer not to say	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
Education level								
Low (no complete education, primary education, prefer not to answer)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
Middle (Upper secondary)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)
High (Vocational college or University or university college)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)	XXX (%)

Table 2. Shell table trial analysis: Effect of providing a explanatory text and adding specific advice on when to stay home on intended behaviour

	Control Participants (No explanatory text)		**Intervention Participants (Explanations only)**		**Intervention Participants (Extra sentence only)**		**Intervention Participants (Explanations plus extra sentence)**		**Risk difference**[3]	**Risk ratio**[4]
	Uncalibrated[1]	**Calibrated**[2]	**Uncalibrated**[1]	**Calibrated**[2]	**Uncalibrated**[1]	**Calibrated**[2]	**Uncalibrated**[1]	**Calibrated**[2]		
Primary outcome										
Intended behaviour	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]

	Control Participants (No explanatory text)		Intervention Participants (Explanations only)		Intervention Participants (Extra sentence only)		Intervention Participants (Explanations plus extra sentence)		Risk difference[3]	Risk ratio[4]
	Uncalibrated[1]	Calibrated[2]	Uncalibrated [1]	Calibrated [2]	Uncalibrated [1]	Calibrated [2]	Uncalibrated [1]	Calibrated [2]		
Secondary outcomes										
Decisional conflict (binomial outcome)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Understanding of term "infant"	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Understanding of term "people with higher risk of becoming seriously ill"	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Understanding of goal of infection control advice	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Confidence in understanding goal of advice	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Intended behaviour 1	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Intended behaviour 2	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Intended behaviour 3	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Intended behaviour 5	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Trustworthiness	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Perceived usefulness	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Intention to recommend	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]

	Control Participants (No explanatory text)		Intervention Participants (Explanations only)		Intervention Participants (Extra sentence only)		Intervention Participants (Explanations plus extra sentence)		Risk difference[3]	Risk ratio[4]
	Uncalibrated[1]	Calibrated[2]	Uncalibrated [1]	Calibrated [2]	Uncalibrated [1]	Calibrated [2]	Uncalibrated [1]	Calibrated [2]		
Understandability (5 on scale for each question)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Subgroup analyses for primary outcome										
Age group										
<20 years	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
20–35 years	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
46–50 years	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
51–70 years	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
>70 years	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Gender										
Women	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Men	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX [XX.X to XX.X]	XXX [XX.X to XX.X]
Do not know	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	-
Education level										
Low	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)
Middle	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)
High	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)	XXX (XXX%)

[1] Uncalibrated counts and percentages of participants in each arm reflect the sample as recruited and are not adjusted to match the population of people residing in Norway.

[2] Calibrated percentages, using post-stratification weights to match the sample with the population of people residing in Norway.

[3] The risk ratios are re-expressed as adjusted differences, accounting for uncertainty in the risks in the control arm as well as the risk ratios.

[4] Calibrated population average treatment effects (PATEs) estimated using weighted, unadjusted generalized linear models (binomial family, log link).

[5] Two-sided tests of the null hypothesis of no treatment effect.

	Control Participants (No explanatory text)		Intervention Participants (Explanations only)		Intervention Participants (Extra sentence only)		Intervention Participants (Explanations plus extra sentence)		Risk difference[3]	Risk ratio[4]
	Uncalibrated[1]	Calibrated[2]	Uncalibrated [1]	Calibrated [2]	Uncalibrated [1]	Calibrated [2]	Uncalibrated [1]	Calibrated [2]		

[6] Two-sided tests of interaction terms in weighted generalized linear models, testing the null hypothesis of equality of treatment effects across subgroup levels. All estimates are
95% confidence intervals

			% Understanding		
	Sample size	Effective sample size	Unweighted	Estimate	95% CI
Primary outcome: Intended behaviour (binomial outcome)					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary analysis: Decisional conflict (binomial outcome)					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary analysis: Understanding of term "infant"					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary analysis: Understanding of term "people with higher risk of becoming seriously ill"					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Understanding of goal of infection control advice					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Confidence in understanding goal of advice					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Intended behaviour 1					
Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Intended behaviour 2					

	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Intended behaviour 3						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Intended behaviour 4						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Intended behaviour 5						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Trustworthiness						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Perceived usefulness						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Secondary outcome: Intention to recommend						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Composite secondary outcome: Understandability (5 on scale for each question)						
	Overall population	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Subgroup analysis: Understanding of health advice						
	Age group					
	<20 years	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
	20–35 years	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
	46–50 years	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
	51–70 years	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
	>70 years	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
	Gender					
	Women	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
	Men	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X

Other or prefer not to say	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Education level			XX.X	XX.X	
Low (no complete education, primary education, prefer not to answer)	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
Middle (Upper secondary)	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X
High (Vocational college or University or university college)	XXXX	XXXX	XX.X	XX.X	XX.X to XX.X

Patient and public participation

We will seek feedback on the summary texts and the questionnaire and email invitation from members of the target group (see User testing description above).

Ethical considerations

This study does not require ethical approval since it falls outside the Regional Ethical Committees mandate under the Health Research Act.

Participants must be 18 years-old or older. Everyone invited to participate will be given information about who is doing the research, the goal, what they will be asked to do, their rights, and the risks and benefits of participating (see Appendix XX). Before being randomized, they will need to provide written consent electronically. Participation is voluntary, participants can discontinue participation at any time, and they can contact the investigators if they have any questions or concerns.'

Changes to the protocol will be reported in the final report.

Dissemination

The results of this study will be published in a scientific journal article and shared via relevant channels. The findings will also potentially inform the format of health advice about infection control measures on NIPH website. The trial findings will also be published on the study webpage for participants who are interested in the reading them.

Data management

We will not collect personal data from the participants, all collected data will be anonymous, and we will not be able to trace any data back to the participants. Data will be stored on the NIPH server for 3 years from the date it is collected. It will not be possible to link email addresses collected via the second nettskjema to survey responses.

Equity, diversity and inclusion considerations

In this study we will strive to uphold the principles of equity, diversity and inclusion. We will ensure the fair treatment of all participants and equal access to participation. We will aim for diverse inclusion in order to gain insight into a wide range of perspectives.

Reflexivity

The research team is made up of public health researchers who work at the Norwegian Institute of Public Health. The researchers will not be engaging directly with participants in the trial. The researchers responsible for developing the text will be involved in the user testing phase of the

study. They will attempt to mitigate their potential personal biases by following a structured question guide to ensure a systematic approach to data collection during this phase.

Contributions of authors

HMK, TB, BLF, PE, CR and AF drafted the protocol. Rebecka Norman from NIPH provided guidance on question formulation.

Declarations of interest

The authors have no potential or actual conflicts of interest, financial or otherwise.

Funding

This project is supported by the authors' institution.

REFERENCES

1. Oppenheimer D, Meyvis T, Davidenko N. Detecting Satisficing to Increase Statistical Power. J Exp Soc Psychol. 2009;45(4):867–72.
2. Oslo. Uo. Nettskjema: Nettskjema.no; [
3. Solberg RB, Fretheim A, Elgersma IH, Fagernes M, Iversen BG, Hemkens LG, et al. Personal protective effect of wearing surgical face masks in public spaces on self-reported respiratory symptoms in adults: pragmatic randomised superiority trial. bmj. 2024;386.
4. Mac O, Ayre J, McCaffery K, Boroumand F, Bell K, Muscat DM. The Readability Study: A Randomised Trial of Health Information Written at Different Grade Reading Levels: Mac et al. Journal of General Internal Medicine. 2025;40(8):1820–8.
5. Van Der Vaart R, Drossaert C. Development of the digital health literacy instrument: measuring a broad spectrum of health 1.0 and health 2.0 skills. Journal of medical Internet research. 2017;19(1):e27.
6. Silber H, Roßmann J, Gummer T. The issue of noncompliance in attention check questions: False positives in instructed response items. Field Methods. 2022;34(4):346–60.
7. Morris NS, MacLean CD, Chew LD, Littenberg B. The Single Item Literacy Screener: evaluation of a brief instrument to identify limited reading ability. BMC family practice. 2006;7(1):21.
8. Mac O, Ayre J, McCaffery K, Boroumand F, Bell K, Muscat DM. The readability study: A randomised trial of health information written at different grade reading levels. Journal of General Internal Medicine. 2024;40(8):1820.
9. Moher D, Schulz K. Altman D; CONSORT Group (Consolidated Standards of Reporting Trials) 2001 The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. JAMA.285:1987–91.
10. Jakobsen JC, Gluud C, Wetterslev J, Winkel P. When and how should multiple imputation be used for handling missing data in randomised clinical trials–a practical guide with flowcharts. BMC medical research methodology. 2017;17(1):162.

11. Van Buuren S, Boshuizen HC, Knook DL. Multiple imputation of missing blood pressure covariates in survival analysis. Statistics in medicine. 1999;18(6):681–94.
12. Rubin DB. Multiple imputation for nonresponse in surveys: . New York Wiley; 1987.
13. Hopewell S, Chan A-W, Collins GS, Hróbjartsson A, Moher D, Schulz KF, et al. CONSORT 2025 statement: updated guideline for reporting randomised trials. The Lancet. 2025;405(10489):1633–40.
14. Holst C, Woloshin S, Oxman AD, Rose C, Munthe-Kaas HM. Evaluating understanding of overall and statistical uncertainty: parallel web-based randomized trials in Norway and U.S. JMIR Public Health and Surveillance. 2025.

Appendix 1.

User testing of the intervention

We will conduct two to five user tests of the summaries in both languages before starting the trial to explore the users' perspectives and understanding of the summaries. The goal of user testing is to ensure that the texts presented to trial participants are easily understood, do not contain incorrect or distracting information, are formatted correctly and are written such that we know that the trial examines the effect of understanding uncertainty as compared to, for example, language comprehension. During user testing, we will ask user test participants to give feedback on the certainty statements, the full summary of the research and any materials that will be used during the trial (from the invitation to participate to the concluding text thanking participants for their time).

Specifically, our objectives with user testing are to explore whether:

- The instructions contain understandable and comprehensive information so that user test participants will understand the task
- The summary contains the necessary information for user test participants to understand and be able to answer the trial questions
- The text is formatted so that the user test participants can find the most important information to answer the trial questions
- More information can easily be accessed or found if needed (e.g., explanations or examples)
- The text is perceived as reliable
- The text is perceived as easy to understand
- The text facilitates the user test participants' perception that they are the intended target audience for the text

We will recruit participants for user testing via convenience sampling. User tests will be moderated by one to two researchers, and conducted using Microsoft Teams, or in person when possible. The user tests will begin with a short introduction to the purpose of the user test and the trial described in this protocol. We will first ask for spontaneous reactions to the format and content of the trial invitation and associated text to obtain informed consent, and then the content of the scenario and the summaries being tested in the trial and the questions at the end used to measure primary and secondary outcomes. We will then use a think-aloud strategy whereby participants will be asked to carefully read all information (invitation, consent, scenario and summary text/illustrations and questions) and provide continuous feedback. User tests will last 20 to 30 minutes.

1. Chan A-W, Boutron I, Hopewell S, Moher D, Schulz KF, Collins GS, et al. SPIRIT 2025 statement: updated guideline for protocols of randomised trials. The Lancet. 2025;405(10491):e19-e27.
2. Franco A, Malhotra N, Simonovits G, Zigerell L. Developing standards for post-hoc weighting in population-based survey experiments. Journal of Experimental Political Science. 2017;4(2):161-72.
3. Zou G. A modified poisson regression approach to prospective studies with binary data. American journal of epidemiology. 2004;159(7):702-6.
4. Hopewell S, Chan A-W, Collins GS, Hróbjartsson A, Moher D, Schulz KF, et al. CONSORT 2025 statement: updated guideline for reporting randomised trials. The Lancet. 2025;405(10489):1633-40.