Name: Bo Terning Hansen

Country: Norway

Affiliation: Norwegian Institute of Public Health

Function: Senior Researcher

Main expertise: Research on how behaviour, social factors and interventions are associated with use of preventive health services and health outcomes, with focus on vaccination, social inequity and migration health.

Effectiveness of text message nudging to increase coverage of influenza vaccination among older adults in Norway

(InfluSMS study)

NIPH
Norwegian Institute of Public Health

Disclosures, funding and study team

- I have no conflict of interest to declare

- Funded by Foundation DAM (grant SDAM_FOR-558766)

- InfluSMS team:
  - **Bo Terning Hansen; Angela S Labberton; Kjersti M Rydland; Liz E Ødeskaug; Hinta Meijerink** [Norwegian Institute of Public Health]
  - **Lauri Sääksvuori** [Finnish Institute for Health and Welfare/University of Turku]
  - **Ole Klungsøyr** [Oslo University Hospital]
  - **Torbjørn Wisløff** [Akershus University Hospital/University of Oslo]

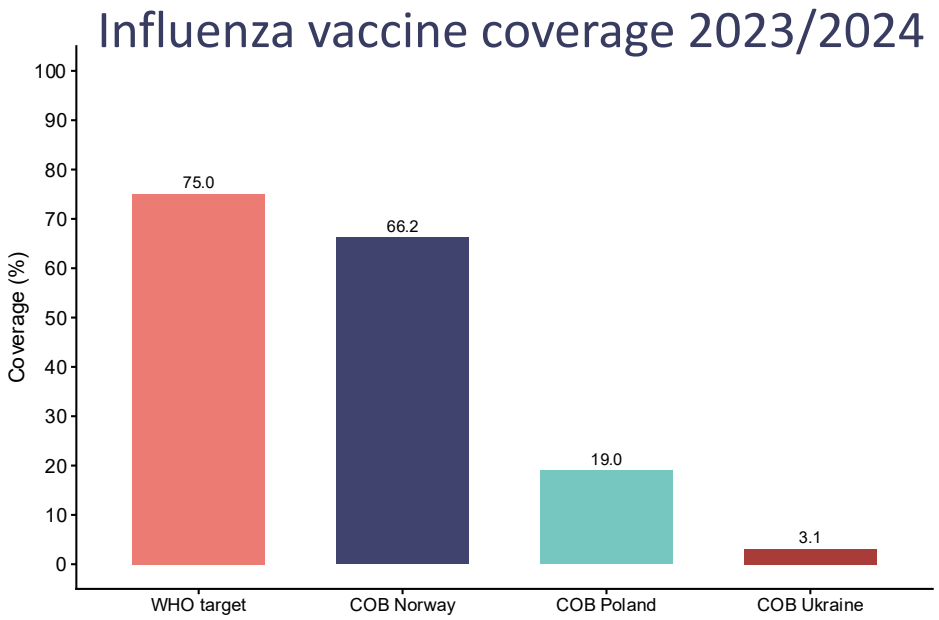
NIPH

The adult vaccination programme in Norway

Launched 2025/2026 season: Increased campaigns and coordination

- Organization:
  - Norwegian Institute of Public Health: policy advice, public recommendations, distribution, surveillance, guidelines, national campaigns
  - Norwegian Medical Products Agency: procurement
  - Municipalities: local implementation and delivery, reporting
- Recommended vaccines:
  - Influenza (age 65+); pneumococcal (age 65 (born 1960+, no catch-up)); COVID-19 (age 75+)
- Target groups:
  - Older adults, medical risk groups
- Vaccine cost structure:
  - COVID-19 (subsidized), pneumococcal (subsidized for 65 y.o.), influenza (not subsidized)
- Vaccination sites:
  - GP's, municipal health services, [outside programme: pharmacies, workplace]

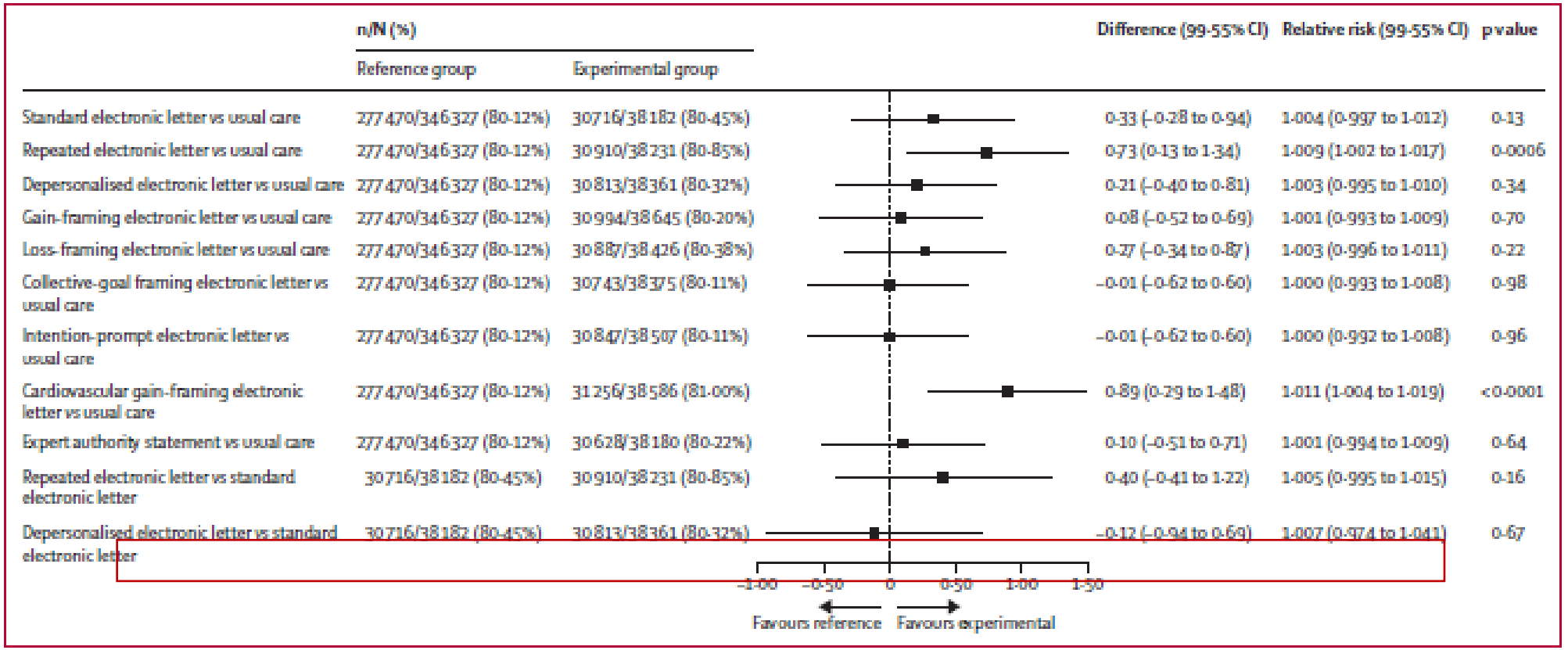
NIPH



Insufficient coverage among older adults

Especially among some immigrant groups

How can we improve?



	n/N (%)		Difference (99·55% CI)	Relative risk (99·55% CI)	p value
	Reference group	Experimental group			
Standard electronic letter vs usual care	277 470/346 327 (80·12%)	30 716/38 182 (80·45%)	0·33 (−0·28 to 0·94)	1·004 (0·997 to 1·012)	0·13
Repeated electronic letter vs usual care	277 470/346 327 (80·12%)	30 910/38 231 (80·85%)	0·73 (0·13 to 1·34)	1·009 (1·002 to 1·017)	0·0006
Depersonalised electronic letter vs usual care	277 470/346 327 (80·12%)	30 813/38 361 (80·32%)	0·21 (−0·40 to 0·81)	1·003 (0·995 to 1·010)	0·34
Gain-framing electronic letter vs usual care	277 470/346 327 (80·12%)	30 994/38 645 (80·20%)	0·08 (−0·52 to 0·69)	1·001 (0·993 to 1·009)	0·70
Loss-framing electronic letter vs usual care	277 470/346 327 (80·12%)	30 887/38 426 (80·38%)	0·27 (−0·34 to 0·87)	1·003 (0·996 to 1·011)	0·22
Collective-goal framing electronic letter vs usual care	277 470/346 327 (80·12%)	30 743/38 375 (80·11%)	−0·01 (−0·62 to 0·60)	1·000 (0·993 to 1·008)	0·98
Intention-prompt electronic letter vs usual care	277 470/346 327 (80·12%)	30 847/38 507 (80·11%)	−0·01 (−0·62 to 0·60)	1·000 (0·992 to 1·008)	0·96
Cardiovascular gain-framing electronic letter vs usual care	277 470/346 327 (80·12%)	31 256/38 586 (81·00%)	0·89 (0·29 to 1·48)	1·011 (1·004 to 1·019)	<0·0001
Expert authority statement vs usual care	277 470/346 327 (80·12%)	30 628/38 180 (80·22%)	0·10 (−0·51 to 0·71)	1·001 (0·994 to 1·009)	0·64
Repeated electronic letter vs standard electronic letter	30 716/38 182 (80·45%)	30 910/38 231 (80·85%)	0·40 (−0·41 to 1·22)	1·005 (0·995 to 1·015)	0·16
Depersonalised electronic letter vs standard electronic letter	30 716/38 182 (80·45%)	30 813/38 361 (80·32%)	−0·12 (−0·94 to 0·69)	1·007 (0·974 to 1·041)	0·67

−1·00 −0·50 0 0·50 1·00 1·50

Favours reference Favours experimental

Johansen et al. 2023, Lancet - Electronic letters Denmark

d in

Norway

- Bridge gap between intention and action
- Mixed evidence: Varies by context
- SMS: Understudied among older adults
- We need evidence-based interventions

Outcome or Subgroup	No of Studies	No of Participants	Pooled RR [95%CI]	I^2 Statistic (%)
All Studies	25	64,536	1.09 [1.06, 1.13]	76%
Intervention Characteristics				
Text Message PLUS Additional [b]	13	17,394	1.10 [1.06, 1.16]	83%
Text Message ONLY	12	47,142	1.10 [1.04, 1.15]	71%
Country Setting				
Urban	19	57,929	1.09 [1.05, 1.13]	73%
Other [c]	6	6607	1.10 [0.97, 1.24]	89%
Country Economic Status				
LMIC	9	7350	1.07 [1.03, 1.11]	65%
HIC	16	57,186	1.12 [1.06, 1.18]	79%
Vaccination Type				
Early Childhood Vaccinations	16	10,480	1.07 [1.03, 1.11]	63%
HPV	5	36,418	1.17 [1.05, 1.30]	86%
Other [d]	4	17,638	1.14 [1.01, 1.28]	88%
Studies without Attrition Bias	18	55,988	1.11 [1.07, 1.15]	79%

Louw et al. 2024, Vaccines
- Review of text messaging

Personal nudges to increase adult vaccination not investigated in Norway

- Bridge gap between intention and action
- Mixed evidence: Varies by context
- SMS: Understudied among older adults
- We need evidence-based interventions

Our general research questions

Among older adults (age 65+):

- Does SMS nudging for influenza vaccination work in the Norwegian context?
- Can the language of the adopted country be a barrier for uptake among immigrant groups?

NIPH

SMS development

- User groups with representatives from each population
- Discussions about SMS content
- Same content in all languages
- Final texts QA’d by users and translators

The influenza season is approaching.
Vaccination is your best protection against severe influenza and hospitalization.
We recommend the influenza vaccine for people aged 65 years and older. Please contact your GP’s office or your municipality for information on where you can receive the vaccine.
Kind regards,
The Norwegian Institute of Public Health

Influensasesongen er snart her. Vaksinen er din beste beskyttelse mot alvorlig influensa og sykehusinnleggelse.
Vi anbefaler influensa-vaksinen til deg som er 65 år eller eldre. Ta kontakt med fastlege-kontoret eller kommunen om hvor du kan ta vaksine.
Hilsen
Folkehelseinstituttet

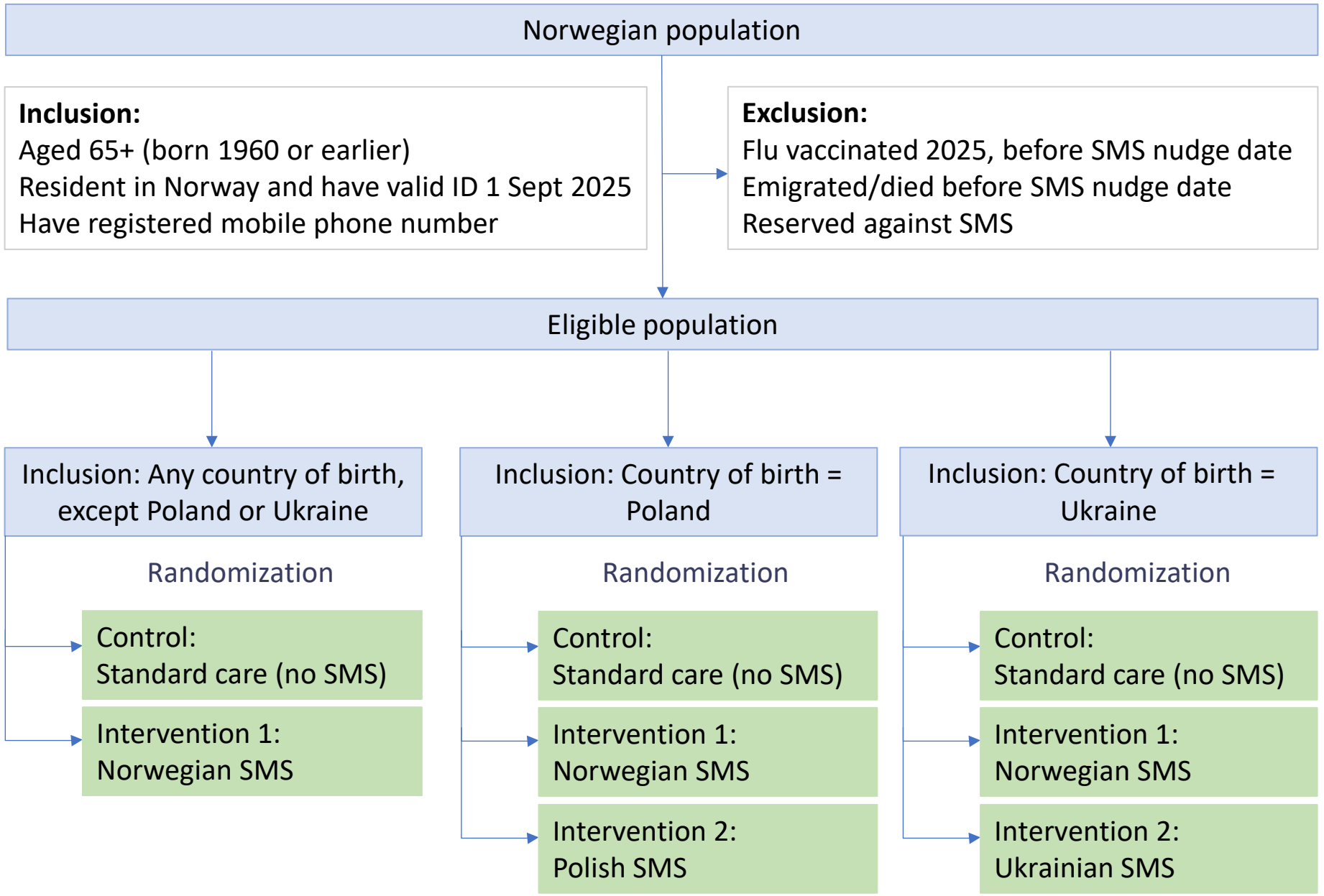
Незабаром настане сезон грипу. Найкращий захист від тяжкого перебігу грипу та госпіталізації — це вакцинація.
Ми рекомендуємо вакцинаціio проти грипу особам віком від 65 років. Зверніться до сімейного лікаря або в місцевий муніципалітет, щоб дізнатись, де можна зробити щеплення.

Норвезький інститут охорони здоров’я

Sezon grypowy wkrótce się zacznie. Szczepionka jest najlepszą ochroną przed ciężkim przebiegiem grypy i hospitalizacją.
Szczepionkę przeciw grypie polecamy osobom w wieku 65 lat lub starszym.
Nalezy skontaktować się ze swoim lekarzem rodzinnym lub gminą w sprawie miejsca, w którym można przyjąć szczepionkę.
Z pozdrowieniami,
Norweski Instytut Zdrowia Publicznego

NIPH

Study design



NIPH

Primary objectives

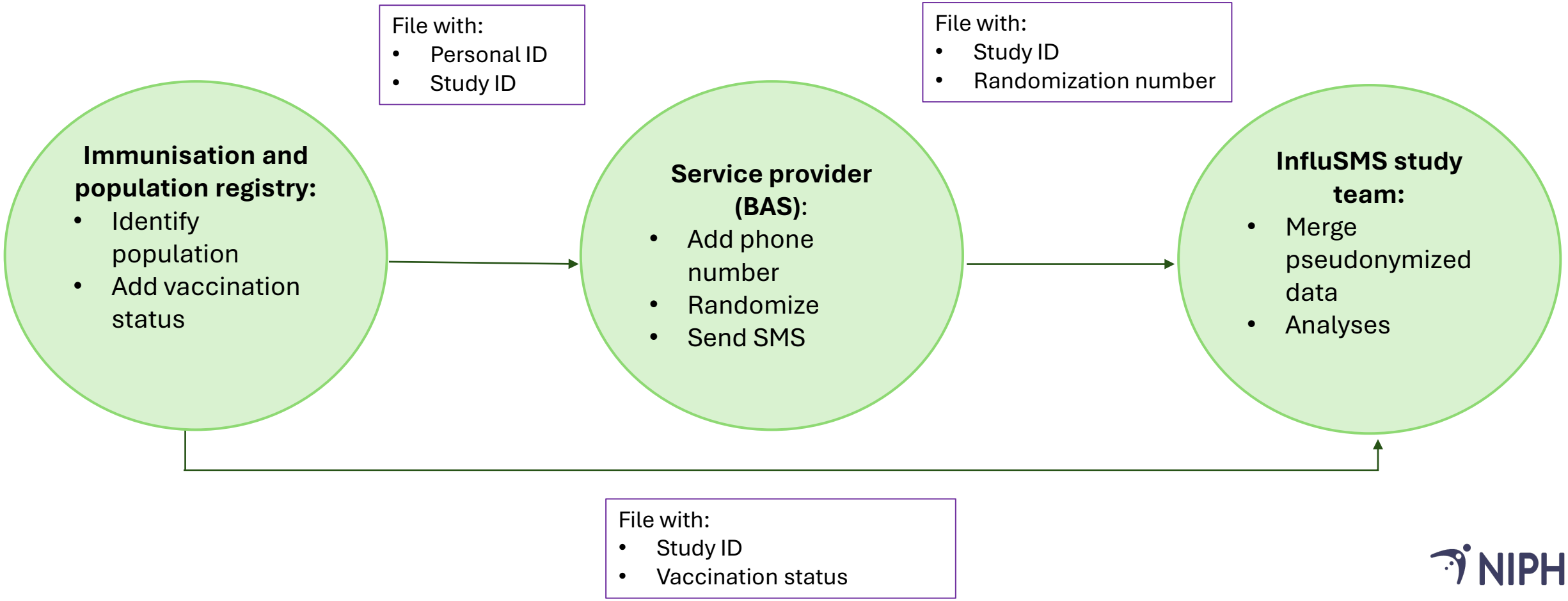
Among older adults (age 65+) in Norway, to investigate whether:

1. Nudging SMS in Norwegian increases influenza vaccine coverage compared to standard care in the Norwegian population
2. Nudging SMS in Norwegian increases influenza vaccine coverage compared to standard care among immigrants of Polish or Ukrainian background
3. Nudging SMS in Polish or Ukrainian increases influenza vaccine coverage compared to standard care among immigrants of Polish or Ukrainian background

NIPH

Data sources and flow

All Norwegian residents have a unique personal identifier, used in health and administrative national registries, that can be merged across registries



NIPH

Permits

Accessing personal data in the registries

- This study does not fall under the jurisdiction of the Health Research Act
  - No ethical permit required
- Exemption from duty of confidentiality granted by the Directorate of Health
- Norwegian Health Data Service and data owners (the registries) grant access to data based on permits and full project information

- [Time-consuming for a study, but not for a vaccination programme]

NIPH

Analyses

- SMS send date: 14 October 2025
  - The «start» of the 2025/2026 influenza season
  - Before high influenza incidence
  - The earliest date when the season's vaccine is available throughout the country
- Primary end of follow-up for vaccination: + 4 weeks (11 November 2025)
  - Note: Independent of InfluSMS, the Ministry of Health decided to [electronically] remind all who were un-vaccinated by mid-November 2025
  - Secondary analyses: at 12 weeks
- Exposure: Treatment arm
- Primary outcome: Influenza vaccination status at end of follow-up
  - Secondary outcome: COVID-19 vaccination status
- Absolute and relative differences
  - From Gaussian (identity) and Binomial (log) generalized linear models
- Analyses populations: Intention to treat (primary) and modified intention to treat

NIPH

Protocol

Effectiveness of Text Messaging Nudging to Increase Coverage of Influenza Vaccination Among Older Adults in Norway (InfluSMS Study): Protocol for a Randomized Controlled Trial

Bo T Hansen[1], PhD; Ole Klungsøyr[2], PhD; Angela S Labberton[3], PhD; Lauri Sääksvuori[4,5], PhD; Kjersti M Rydland[1], Cand Pharm; Liz E Ødeskaug[6], MSc; Torbjørn Wisløff[7,8], PhD; Hinta Meijerink[1], PhD

[1]Department of Infection Control and Vaccines, Norwegian Institute of Public Health, Oslo, Norway
[2]Department of Research and Innovation, Oslo Centre for Biostatistics and Epidemiology, Oslo University Hospital, Oslo, Norway
[3]Division of Health Services, Norwegian Institute of Public Health, Oslo, Norway
[4]Centre for Health and Social Economics, Finnish Institute for Health and Welfare, Helsinki, Finland
[5]INVEST Research Flagship Center, University of Turku, Turku, Finland
[6]Department of Infection Control and Preparedness, Norwegian Institute of Public Health, Oslo, Norway
[7]Health Services and Research Unit, Akershus University Hospital, Oslo, Norway
[8]Institute of Clinical Medicine, University of Oslo, Oslo, Norway

Pre-registration

Trial Registration: ClinicalTrials.gov NCT06486766; https://clinicaltrials.gov/study/NCT06486766

International Registered Report Identifier (IRRID): PRR1-10.2196/63938

Protocol: JMIR Res Protoc 2025;14:e63938; doi: 10.2196/63938; PMID: 39998878; PMCID: 11897661

Results

- The analyses are ongoing
- Preliminary results were presented during the AiB meeting
- Manuscript will be submitted for peer-review by July 2025

NIPH

Main conclusions (unpublished data)

on SMS nudging at the start of the influenza season among older adults (age 65+) in Norway

- SMS nudging in Norwegian increases influenza vaccination coverage significantly by approximately 2 percentage points
- SMS nudging in Norwegian has a smaller and non-significant absolute effect on influenza vaccination coverage among immigrants from Poland and Ukraine (approximately 1 percentage point increase)
- SMS nudging in Polish/Ukrainian among immigrants from Poland/Ukraine has no significant effect on influenza vaccination coverage

NIPH