Self-sampling:
overview, challenges, limitations and management

Matejka Rebolj
Cancer Prevention Group, King's College London, London, UK

HPV Prevention and Control Board
Long-term follow-up and impact studies for HPV vaccines/
Effective Communication for cervical cancer prevention and control/Self-sampling as a screening and monitoring tool
1-2 June 2023, Antwerp, Belgium

Focus

- High-income countries with well-screened populations and quality-assured/controlled programmes

Extrapolating between target groups

- Main reason for implementation: underscreened, high-risk women
  - Encouraging findings from several research studies

- Women like it (+)
- If only to underscreened, then switching among the well-screened?
  - And unauthorised longer screening intervals

- Increasingly an offer to all women (substitution of CS with SS)

- How to combine an invitation to compliant and non-compliant women?
  - Not studied through research as thoroughly → extrapolation

Experience from early adopters and pilots

- Australia: initially only underscreened women
  - Disappointing results
  - Unified messaging and support from the whole system is required?
- Italy: underscreened ± well-screened women (by region)
  - Hard to increase coverage
  - Some regions implemented as response to the COVID-19 pandemic?
- Netherlands: all women
  - No increase in overall coverage, some extra screening among under-screened
  - New approach: opt-out
  - Uniform invitation letter?
- Opt-in vs. opt-out is **just one of the problems** to be resolved
- Complex, need to share experience

Worthwhile, as “screening relying on self-sampling can be cost-effective”

CANCER THERAPY AND PREVENTION

IJC INTERNATIONAL JOURNAL of CANCER

Switching clinic-based cervical cancer screening programs to human papillomavirus self-sampling: A cost-effectiveness analysis of vaccinated and unvaccinated Norwegian women

Kine Pedersen[1] | Allison Portnoy[2] | Stephen Sy[2] | Bo T. Hansen[3] | Ameli Tropé[3] | Jane J. Kim[2] | Emily A. Burger[1,2]

“Impact: Consideration could be given to offering self-collection more widely, potentially as an equal choice for women.”

Key assumption:

High sensitivity for the detection of CIN2+

CANCER EPIDEMIOLOGY, BIOMARKERS & PREVENTION | RESEARCH ARTICLE

Could HPV Testing on Self-collected Samples Be Routinely Used in an Organized Cervical Screening Program? A Modeled Analysis

Megan A. Smith[1,2], Michaela T. Hall[1,3], Marion Saville[4,5], Julia M.L. Brotherton[6,7], Kate T. Simms[1,2], Jie-Bin Lew[1,2], Deborah Bateson[8,9], S. Rachel Skinner[10,11], Margaret Kelaher[7], and Karen Canfell[1,2,12]

The assumption of ~equal sensitivity

- Available evidence summarised in:

Detecting cervical precancer and reaching underscreened women by using HPV testing on self samples: updated meta-analyses

Marc Arbyn,[1] Sara B Smith,[2] Sarah Temin,[3] Farhana Sultana,[4,5] Philip Castle,[2,6] on behalf of the Collaboration on Self-Sampling and HPV Testing

- Question: were studies representative for well-screened populations screened with HPV testing?

Predominant design: referral population studies

- Mostly women referred for abnormal cytology

- → No CIN2+ from women with negative cytology
  - Reason for switching from cytology to HPV-based screening
  - Spectrum effect: signal strength distribution vs. abnormal cytology → more difficult to achieve consistently high levels of detection and “validate” a self-sampling test

- Use as a rule-out rather than a rule-in condition for SS test validation

Few studies were from primary screening settings

- Often with tests that will likely not be used for population-based screening (in HIC)

- Paired testing: mostly from unscreened populations
- Unpaired testing (e.g. randomised): unbalanced recruitment by arm

- Spectrum effect: more long-term persistent infections
  - → Similar considerations apply as for referral population studies (also next slide)

Newer primary screening studies from well-screened populations

- Scotland, paired study: **Stanczuk** et al. IJC 2022
- Netherlands, unpaired study: **Inturrisi** et al. Lancet Reg Health Eur 2021 (adjusting for differences in SES backgrounds: **Aitken** et al. Cancer Epidemiol Biomarkers Prev 2023)

- Estimates: ~10-25% lower detection of CIN2+ (uncertainty)
- NL Inturrisi study:
  - ~10 % point diff when under-screened women excluded

- On top of this: <100% adherence to triage testing → ↓detection

Are these differences “marginal”?

Research Article

Cancer Epidemiology, Biomarkers & Prevention

Offering Self-Sampling to Non-Attendees of Organized Primary HPV Screening: When Do Harms Outweigh the Benefits?

Kirsten Rozemeijer[1], Inge M.C.M de Kok[1], Steffie K. Naber[1], Folkert J. van Kemenade[2], Corine Penning[1], Joost van Rosmalen[1,3], and Marjolein van Ballegooijen[1]

Research Article

Cancer Epidemiology, Biomarkers & Prevention

The Cost-Effectiveness of Cervical Self-Sampling to Improve Routine Cervical Cancer Screening: The Importance of Respondent Screening History and Compliance

Emily A. Burger[1,2], Stephen Sy[1], Mari Nygård[3], and Jane J. Kim[1]

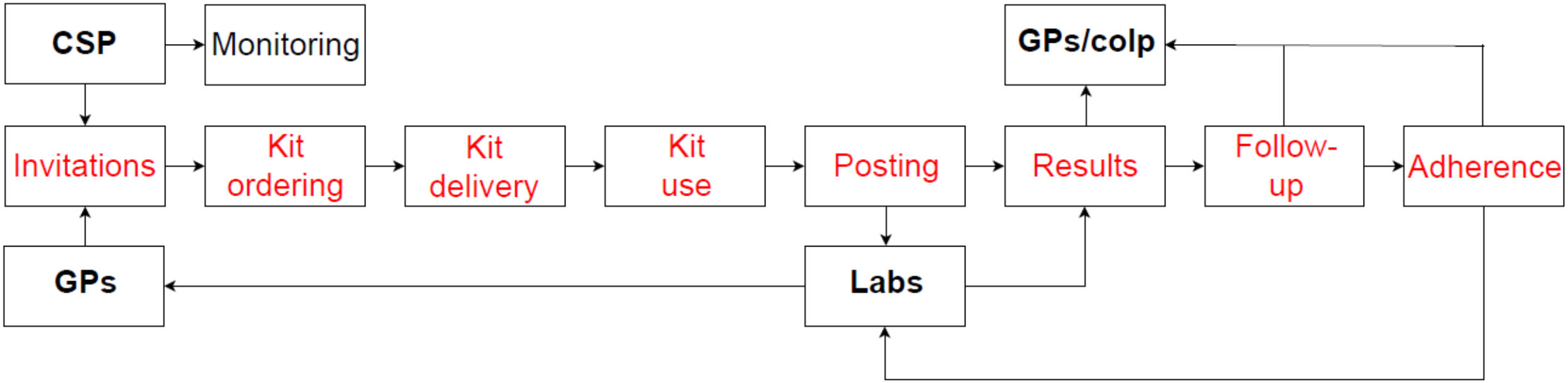
Example

Better no SS if:

- **10% lower sens**
- **≤3% ↑coverage (esp not high-risk)**
- **≥20% switching**

- **→ Not a marginal difference**

Self-sampling is a complex intervention: optimise each part of the process



Imperfect(?) test, imperfect conditions. We need:

- A more nuanced interpretation of the available evidence
  - → comms with women ("a cost-cutting exercise" + excess cancers?)
  - → challenging but better now than when cancers arise, need PPI
- A whole-system approach rather than focusing on individual parts
  - → e.g., if A is imperfect how can we mitigate in B (it is not all-or-nothing)
- A more complete list of questions that require answering
  - → e.g., not just opt-in/opt-out but the whole package (similar: lab parameters when studying accuracy)
- A critical appraisal of study designs required to answer those questions
  - → e.g., stop funding over-production of referral population studies

Received: 30 June 2022 | Revised: 20 October 2022 | Accepted: 8 November 2022

DOI: 10.1002/ijc.34358

IJC INTERNATIONAL JOURNAL of CANCER

REVIEW

Widening the offer of human papillomavirus self-sampling to all women eligible for cervical screening: Make haste slowly

Matejka Rebolj[1] | Alexandra Sargent[2] | Sisse Helle Njor[3,4] | Kate Cuschieri[5]

Thank you

Contact details/for more information
matejka.rebolj@kcl.ac.uk