



November 2016 – SUPPORT Summary of a systematic review

What is the effectiveness of interventions targeted at women to improve the uptake of cervical cancer screening?

World-wide, cervical cancer is the second most common cancer in women and more than 85% of women dying from cervical cancer live in the developing world. Increasing the uptake of screening, alongside increasing informed choice, is key to controlling this disease through prevention and early detection. Methods of encouraging women to undergo cervical screening include invitations to screening; reminders to attend screening; education to increase knowledge of screening programmes or of cervical cancer; message framing (positive or negative messages about screening); counselling regarding barriers to screening; risk factor assessment of individuals; procedures, such as making the screening process easier; and economic interventions, such as incentives to attend screening.

Key messages

- Education, counselling, access to health promotion nurse, invitations to attend cervical screening programmes, and intensive recruitment probably increase the uptake of cervical screening.
- Enhanced risk factor assessment may lead to little or no difference in the uptake of screening.
- Photo-comic book and message framing probably lead to little or no difference on the uptake of screening.
- Most of the included studies were conducted in high-income countries.



Who is this summary for?

People deciding whether to implement interventions to improve the uptake of cervical screening

! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Everett T, Bryant A, Griffin MF, Martin-Hirsch PP, Forbes CA, Jepson RG. Interventions targeted at women to encourage the uptake of cervical screening. The Cochrane database of systematic reviews. 2011(5):CD002834.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies

SUPPORT was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

Glossary of terms used in this report:
www.supportsummaries.org/glossary-of-terms

Background references on this topic:
See back page

Background

A woman's risk of developing cervical cancer by the age of 65 ranges from 0.8% in developed countries to 1.5% in developing countries. The Papanicolaou, or Pap smear, screening test is the most widely used and is primarily aimed at detecting pre-cancerous changes within the cervix (i.e. abnormalities in the cells of the cervix known as dysplasia) before they have an opportunity to progress to more advanced disease. Pap smear uptake and coverage not only varies between countries, but differences also exist within countries between different socio-demographic groups, according to ethnic origin, age, education and socio-economic status. Women from ethnic minorities and deprived sub-groups in the population have shown consistently lower uptake over decades of screening in countries worldwide.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: www.supportsummaries.org/how-support-summaries-are-prepared/

Knowing what's not known is important

A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

About the systematic review underlying this summary

Review objective: To assess the effectiveness of interventions aimed at women, to increase the uptake of cervical cancer screening.

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Randomised trials assessing universal, selective or opportunistic cervical cancer screening.	38 randomised trials, including 6 cluster randomised trials assessed invitations (17 studies), education (6), message framing (1), counselling (2), risk factor assessment (2), procedures (1), use of a photo comic book (1) and intensive recruitment (1).
Participants	Women eligible to participate in cervical cancer screening.	Women receiving care in community clinics, primary care practices and Health Maintenance Organisations, mostly located in urban areas.
Settings	Community, workplace, health centre and hospital settings.	USA (16 studies), Australia (9), UK (7), Canada (2), Sweden (2), South Africa (1) and Italy (1).
Outcomes	Primary outcomes: Uptake of cervical screening as recorded by health service records and via self-report. Secondary outcomes: booking of appointments; reported intentions to attend screening; satisfaction with screening service, attitudes and knowledge about screening; costs of the interventions.	All primary outcomes, booking of appointments (1 study), acceptability of the intervention (1) and costs of the interventions (5).

Date of most recent search: March 2009

Limitations: This is well-conducted systematic review with only minor limitations.

Everett T, Bryant A, Griffin MF, Martin-Hirsch PP, Forbes CA, Jepson RG. Interventions targeted at women to encourage the uptake of cervical screening. The Cochrane database of systematic reviews. 2011(5):CD002834.

Summary of findings

The 38 included studies assessed varied interventions (invitations, education, counselling, risk factor assessment, message framing, procedures, photo comic book and intensive re-recruitment). Secondary outcomes, including cost data, were incompletely documented.

1) Invitations to attend cervical screening

Seventeen studies compared the effects of invitations to women to attend cervical screening programmes to usual care or no invitation. Diverse types (face-to-face, letter, telephone, celebrity letter, letter with fixed appointment, letter with open invitation to make an appointment) and sources of invitations (general practitioners, health clinics, programme coordinators) were examined. Effects were found to vary by types and sources of the invitations.

→ **Invitations to attend cervical screening programmes probably increase the uptake of cervical screening. The certainty of this evidence is moderate.**

About the certainty of the evidence (GRADE) *

⊕⊕⊕⊕

High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

Effect of invitations compared to usual care on uptake of cervical screening				
People	Women eligible to participate in cervical cancer screening			
Settings	Community clinics, primary care practices			
Intervention	Invitations			
Comparison	Usual care or no invitation			
Outcomes	Usual care or no invitation	Invitations	Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Absolute effect (95% CI)			
Uptake of screening	55 per 1000	91 per 1000 (79 to 105)	RR 1.65 (1.44 to 1.90)	⊕⊕⊕○ Moderate
Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				

2) Education

Six studies compared the effects of education interventions to usual care or no education. Educational interventions were also compared with other interventions, such as invitation letters and risk assessment, to increase the uptake of cervical screening (these studies showed that educational interventions probably lead to little or no difference in cervical screening uptake, compared to other interventions).

→ Educational interventions for women probably increase the uptake of cervical screening. The certainty of this evidence is moderate.

Effect of education compared to usual care on uptake of cervical screening				
People	Women eligible to participate in cervical cancer screening			
Settings	Community clinics, primary care practices			
Intervention	Educational interventions for women			
Comparison	Usual care or no invitation			
Outcomes (for specific educational interventions)	Control	Education	Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Absolute effect (95% CI)			
Uptake of screening with printed material	301 per 1000	334 per 1000 (265 to 424)	RR 1.11 (0.88 to 1.41)	⊕⊕⊕○ Moderate
Uptake of screening with educational exercises or materials	187 per 1000	359 per 1000 (232 to 555)	RR 1.92 (1.24 to 2.97)	⊕⊕⊕○ Moderate
Uptake of screening with face-to-face home visits	215 per 1000	502 per 1000 (224 to 1000)	RR 2.33 (1.04 to 5.23)	⊕⊕⊕○ Moderate
Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				

3) Counselling

Two studies compared the effects of telephone or face-to-face counselling to usual care or no counselling. Telephone counselling to increase awareness of cervical screening programme probably leads to little or no difference compared to provider prompts.

→ **Counselling probably increases the uptake of cervical screening. The certainty of this evidence is moderate.**

Effect of counselling compared to usual care on uptake of cervical screening				
People	Women eligible to participate in cervical cancer screening			
Settings	Community clinics, primary care practices			
Intervention	Counselling			
Comparison	Usual care or no counselling			
Outcomes	Usual care or no invitation	Counselling	Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Absolute effect (95% CI)			
Uptake of screening	533 per 1000	656 per 1000 (554 to 773)	RR 1.23 (1.04 to 1.45)	⊕⊕⊕○ Moderate
Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				

4) Risk Factor Assessment

Two studies compared the effects of providing enhanced risk factor assessment (a personally tailored assessment followed by a discussion with the healthcare provider about the woman's personal risk factors for developing cervical cancer) to usual care or no risk factor assessment.

→ **It is uncertain whether enhanced risk factor assessment affects the uptake of cervical screening, because the certainty of this evidence is very low.**

Effect of enhanced risk factor assessment compared to usual care on uptake of cervical screening				
People	Women eligible to participate in cervical cancer screening			
Settings	Community clinics, primary care practices			
Intervention	Risk factor assessment			
Comparison	Usual care or no risk factor assessment			
Outcomes	Usual care or no invitation	Risk factor assessment	Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Absolute effect (95% CI)			
Uptake of screening	431 per 1000	654 per 1000 (250 to 1000)	RR 1.52 (0.58 to 3.95)	⊕○○○ Very low
Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				

5) Other interventions aimed to increase the uptake of cervical screening

The review identified a number of other interventions to increase the uptake of cervical screening. Each of these was assessed by one study only. The findings were as follows:

- Access to a health promotion nurse probably increases the uptake of cervical screening. The certainty of this evidence is moderate.
- Photo-comic book may lead to little or no difference on the uptake of screening. The certainty of this evidence is low.
- Intensive recruitment probably increases the uptake of cervical screening. The certainty of this evidence is moderate.
- It is uncertain whether message framing (verbal or written messages about screening that are framed either positively or negatively) affects uptake of screening, because the certainty of this evidence is very low.

Effect of ‘other’ interventions compared to usual care on uptake of cervical screening				
People	Women eligible to participate in cervical cancer screening			
Settings	Community clinics, primary care practices			
Intervention	Risk factor assessment			
Comparison	Usual care or no risk factor assessment			
Outcomes (for specific inter-ventions)	Usual care or no inter-vention	interventions to increase the uptake of cervical screening	Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Absolute effect (95% CI)			
Uptake of screening through access to a health promotion nurse	431 per 1000	509 per 1000 (474 to 543)	RR 1.18 (1.10 to 1.26)	⊕⊕⊕○ Moderate
Uptake of screening with photo-comic book	69 per 1000	66 per 1000 (37 to 119)	RR 0.96 (0.53 to 1.73)	⊕⊕○○ Low
Uptake of screening with in-tensive recruitment	185 per 1000	294 per 1000 (229 to 381)	RR 1.59 (1.24 to 2.06)	⊕⊕⊕○ Moderate
Uptake of screening with message framing	514 per 1000	406 per 1000 (247 to 668)	RR 0.79 (0.48 to 1.30)	⊕○○○ Very low
Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				

Relevance of the review for low-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
<p>→ All except one of the included studies were conducted in high-income countries. One study was conducted in a middle-income country.</p>	<p>▷ When assessing the transferability of these findings to low-income countries, the following factors should be considered:</p> <ul style="list-style-type: none"> – Literacy levels (e.g. for printed materials) – Population migration, and access to remote areas – Availability of resources for the intervention or devices, such as mobile phones, to disseminate messages – Acceptability and costs of the interventions
EQUITY	
<p>→ There was little information in the included studies regarding the differential effects of the interventions on resource-disadvantaged populations.</p> <p>→ Amongst ethnic minority groups, lay members of the community could be useful in presenting culturally-tailored information, particularly when performed "face-to-face".</p>	<p>▷ In many settings, women from ethnic minorities and deprived sub-groups in the population have lower uptake of cervical screening.</p> <p>▷ Resources needed for interventions may be less available in disadvantaged populations.</p> <p>▷ The interventions may increase inequity if they are not applied or adapted to these populations.</p>
ECONOMIC CONSIDERATIONS	
<p>→ No trials assessing cost-effectiveness were identified. Five trials presented cost data, but all were conducted in high-income countries.</p>	<p>▷ Scaling up of these interventions will require resources, and this should be considered when making decisions regarding implementation.</p> <p>▷ Local costings studies are desirable before scaling up these interventions.</p>
MONITORING & EVALUATION	
<p>→ Sending invitations to women to attend cervical screening programmes is the intervention that has received most evaluation.</p> <p>→ It is uncertain which type of interventions, for each categories of interventions are most effective.</p>	<p>▷ Larger and more rigorous studies are required to determine the effects and the cost-effectiveness of interventions, particularly in resource-poor settings.</p> <p>▷ For each category of intervention, studies should identify which types are the most effective.</p> <p>▷ Future trials should also consider combination of interventions and ongoing changes in screening technology.</p>

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low-income countries. For additional details about how these judgements were made see:

www.supportsummaries.org/methods

Additional information

Related literature

Glick SB, Clarke AR, Blanchard A, Whitaker AK. Cervical cancer screening, diagnosis and treatment interventions for racial and ethnic minorities: a systematic review. *Journal of general internal medicine*. 2012;27(8):1016–1032.

Camilloni L, Ferroni E, Cendales BJ, et al. Methods to increase participation in organised screening programs: a systematic review. *BMC public health*. 2013; 13:464.

Sabatino SA, Lawrence B, Elder R, et al. Effectiveness of interventions to increase screening for breast, cervical, and colorectal cancers: nine updated systematic reviews for the guide to community preventive services. *American journal of preventive medicine*. 2012;43(1):97–118.

Brouwers MC, De Vito C, Bahirathan L, et al. What implementation interventions increase cancer screening rates? A systematic review. *Implementation science: IS*. 2011;6:111.

Baron RC, Rimer BK, Breslow RA, et al. Client-directed interventions to increase community demand for breast, cervical, and colorectal cancer screening a systematic review. *American journal of preventive medicine*. 2008;35(1 Suppl):S34–55.

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Conflict of interest

None declared. For details, see: www.supportsummaries.org/coi

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The summary should be cited as

Ciapponi A. What is the effectiveness of interventions targeted at women to improve the uptake of cervical cancer screening? November 2016. www.supportsummaries.org

About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE:

www.supportsummaries.org/grade

SUPPORT collaborators:

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the [Cochrane Collaboration](http://www.cochrane.org). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPNet) is an initiative to promote the use of health research in policymaking in low- and middle-income countries. www.evipnet.org

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. www.who.int/alliance-hpsr

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. www.norad.no

The Effective Health Care Research Consortium is an international partnership that prepares Cochrane reviews relevant to low-income countries. www.evidence4health.org

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