



November 2016 – SUPPORT Summary of a systematic review

Does the use of mobile phone messaging reminders increase attendance at healthcare appointments?

Failure to attend healthcare appointments impacts on patient health and health system costs. Sending patients appointment reminders using mobile phone text messages (Short Message Service (SMS) and Multimedia Message Service (MMS)) could improve attendance compared to no reminders, or other types of reminders, such as postal or phone call reminders.

The broad penetration of mobile phones in several low-income countries makes this intervention particularly promising.

Key messages

- **Mobile phone text message reminders compared with no reminders probably lead to an increase in attendance at healthcare appointments**
- **Mobile phone text message reminders probably lead to little or no difference in attendance at healthcare appointments compared to phone call reminders. However, the cost per text message per attendance may be lower compared to the cost of mobile phone call reminders**
- **Mobile phone text message reminders plus postal reminders may lead to improved attendance at healthcare appointments compared to postal reminders alone**



Who is this summary for?

People making decisions about the implementation of interventions aimed at improving attendance at healthcare appointments.

! 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:

Guroł-Urganci I, de Jongh T, Vodopivec-Jamsek V, Atun R, Car J. Mobile phone messaging reminders for attendance at healthcare appointments. *Cochrane Database of Systematic Reviews* 2013, Issue 12. Art. No.: CD007458. DOI: 10.1002/14651858.CD007458.pub3

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

Different communication methods can be used to remind patients about healthcare appointments, including face-to-face reminders, postal messages, calls to landlines, calls to mobile phones, messages via web-based electronic health records, emails and mobile phone text messages (SMS/MMS).

Mobile phones have penetrated rapidly in many low-income countries, and this growth is expected to continue. The use of mobile phone reminders to increase healthcare appointment attendance rates and for a range of other healthcare purposes, is therefore of particular interest.

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 effects of mobile phone messaging reminders on attendance rates at healthcare appointments

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Randomised trials evaluating the use of reminders for healthcare appointments sent from a healthcare provider to a patient using SMS or MMS compared with no intervention, or other modes of communication.	Eight randomised trials involving a total of 6,615 people evaluated a text messaging intervention compared to usual practice (in 7 studies, the usual practice was no reminders). The messages were sent 24 to 72 hours before the appointment, and included the participant's name and appointment details. Two studies included instructions (i.e. to call a specified number if the patient was unable to attend), and two emphasised the importance of attending the appointment. Three studies used a web-based platform to send the messages, one used a modem linked to electronic medical records, and three did not describe the platform used. In one study, messages were sent either manually or through an automated delivery system
Participants	Any type of participants regardless of age, gender and ethnicity; patients with any type and stage of disease.	Patients that required an appointment in the clinic or practice (3 studies), middle- and high- income employees or owners of local companies (1 study).
Settings	Any setting	Australia (1), China (2), Kenya (1), Malaysia (2) and the United Kingdom (UK) (2). The settings were: one hospital health promotion centre; one inner-city general practice; six ENT clinics (in one hospital); nine primary care clinics; and 12 governmental health clinics.
Outcomes	The primary outcome was the rate of attendance at healthcare appointments. Secondary outcomes included health outcomes (e.g. blood pressure, clinical assessments), user evaluation of the intervention, user perceptions of safety, costs, and potential harms.	All studies reported attendance rates at healthcare appointments. The costs of the interventions were reported in two studies. None of the included studies reported health outcomes, user perceptions of safety, or potential harms of the intervention. Only one study measured some form of user evaluation (proportion of participants contacted who had a mobile phone and who were willing to be contacted by SMS).

Date of most recent search: August 2012

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

Gurol-Urganci I, de Jongh T, Vodopivec-Jamsek V, Atun R, Car J. Mobile phone messaging reminders for attendance at healthcare appointments. *Cochrane Database of Systematic Reviews* 2013, Issue 12. Art. No.: CD007458. DOI: 10.1002/14651858.CD007458.pub3

Summary of findings

Eight studies evaluated mobile phone text messaging compared to no reminder, or other types of reminders. The messages were either sent manually, through an automated delivery system, a web-based platform, or via a modem linked to electronic patient medical records, 24 to 72 hours before an appointment. The studies were conducted in four upper-middle or high-income countries (Australia, China, Malaysia and the United Kingdom (UK)), and 1 low-income country (Kenya), and in different settings (primary, hospital, community, and outpatient). All studies reported attendance rates, but no studies reported health outcomes.

1) Mobile phone text message reminders compared to no reminders for patients with healthcare appointments

- **The use of mobile phone text message reminders compared with no reminders probably leads to an increase in attendance at healthcare appointments. The certainty of this evidence is moderate.**
- **No studies were found that evaluated the impact of mobile phone text message reminders compared with no reminders on health outcomes, costs, user evaluation of the intervention, user perception of safety, potential harms ,or adverse events of the intervention.**

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.

Mobile phone message reminders compared to no reminders				
People	Patients with healthcare appointments			
Settings	All settings (primary, hospital, community, outpatient)			
Intervention	Mobile phone text message reminders			
Comparison	No reminders			
Outcomes	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Without reminder	With mobile phone reminder		
Attendance at healthcare appointments	678 per 1,000	773 per 1,000 (698 to 854)	RR 1.14 (1.03 to 1.26)	⊕⊕⊕○ Moderate
	Difference: 95 more patients attending per 1,000 (Margin of error: 20 to 176 more patients)			
Other outcomes	None of the included studies reported on health outcomes, user evaluation of the intervention, user perceptions of safety, costs, potential harms or adverse events of the intervention.		-	-
<p>Margin of error = Confidence Interval (95% CI) RR: Risk Ratio GRADE: GRADE Working Group grades of evidence (see above and last page)</p> <p>* The risk WITHOUT the intervention is based on the risk of attendance in the control group of the studies identified in the review. The corresponding risk WITH the intervention (and the 95% confidence interval for the difference) is based on the overall relative effect (and its 95% confidence interval).</p>				

2) Mobile phone message reminders compared to phone call reminders for patients with healthcare appointments

- The use of mobile phone text message reminders probably leads to little or no difference in attendance at healthcare appointments compared to phone call reminders. The certainty of this evidence is moderate.
- No studies were found that evaluated the impact of mobile phone text message reminders compared with phone calls on health outcomes, user evaluation of the intervention, user perception of safety, or potential harms of the intervention.
- Costs per text message per attendance may be lower than mobile phone reminders compared to phone call reminders.

Mobile phone message reminders compared to phone call reminders				
People	Patients with healthcare appointments			
Settings	All settings (primary, hospital, community, outpatient)			
Intervention	Mobile phone message reminders			
Comparison	Phone call reminders			
Outcomes	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
	With phone call reminder	With mobile phone reminder		
Attendance at healthcare appointments	803 per 1,000	795 per 1,000 (763 to 819)	RR 0.99 (0.95 to 1.02)	⊕⊕⊕○ Moderate
	Difference: 8 less patients attending per 1,000 (Margin of error: 40 fewer to 16 more patients)			
Other outcomes	None of the included studies reported on health outcomes, user evaluation of the intervention, user perceptions of safety, costs, potential harms or adverse events of the intervention.		-	-
Margin of error = Confidence Interval (95% CI) RR: Risk Ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				
* The risk WITHOUT the intervention is based on the risk of attendance in the control group of the studies identified in the review. The corresponding risk WITH the intervention (and the 95% confidence interval for the difference) is based on the overall relative effect (and its 95% confidence interval).				

3) Mobile phone message reminders plus postal reminders compared to postal reminders alone for patients with healthcare appointments

- The use of mobile phone text message reminders plus postal reminders may lead to improved attendance at healthcare appointments compared to postal reminders alone. The certainty of this evidence is low.
- No studies were found that evaluated the impact of mobile phone message plus postal reminders compared with postal reminders alone on health outcomes, user evaluation of the intervention, user perception of safety, costs, or potential harms of the intervention.

Mobile phone message plus postal reminders compared with postal reminders alone				
People	Patients with healthcare appointments			
Settings	All settings (primary, hospital, community, outpatient)			
Intervention	Mobile phone message plus postal reminders			
Comparison	Postal reminders			
Outcomes	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
	With postal reminder	With mobile plus postal reminder		
Attendance at healthcare appointments	858 Per 1,000	944 per 1,000 (875 to 1,000)	RR 1.1 (1.02 to 1.19)	⊕⊕⊖⊖ Low
	Difference: 86 more patients attending per 1,000 (Margin of error: 17 to 163 more)			
Other outcomes	The included study did not report on health outcomes, user evaluation of the intervention, user perceptions of safety, costs, potential harms or adverse events of the intervention.		-	-
Margin of error = Confidence Interval (95% CI) RR: Risk Ratio GRADE: GRADE Working Group grades of evidence (see above and last page)				
* The risk WITHOUT the intervention is based on the risk of attendance in the control group of the studies identified in the review. The corresponding risk WITH the intervention (and the 95% confidence interval for the difference) is based on the overall relative effect (and its 95% confidence interval).				

Relevance of the review for low-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
<p>→ The review identified 8 studies with a total of 6,615 participants that evaluated the use of mobile phone text messages reminders to increase healthcare appointments attendance.</p> <p>→ Seven studies were conducted in upper middle- or high-income countries, and 1 in a low-income country</p> <p>→ All of the reminders were simple. They did not indicate whether the user had read it, the message did not facilitate the cancellation of the appointment, or any other form of user-sender interaction.</p>	<p>▷ There was moderate uncertainty about the effects of all of the mobile phone reminders tested in these studies.</p> <p>▷ Simple reminders are designed to address a single factor (i.e. patients forgetting an appointment) that explains non-attendance. However, the reasons for non-attendance may vary in different settings.</p> <p>▷ Other factors besides the scale of mobile phone penetration must be considered when evaluating the applicability of these findings to specific low- income countries. These include phone number portability and which devices are available.</p> <p>▷ In low-income countries, mobile phone penetration is increasing rapidly. As more sophisticated devices become available, there is greater opportunity for more meaningful interaction with users.</p>
EQUITY	
<p>→ The included studies did not directly address equity issues.</p>	<p>▷ This intervention may increase health inequities, by not supporting people without cell phones, those who live in remote areas that do not have signal coverage, those with low literacy levels, or people reluctant to use these forms of technology</p> <p>▷ However, where mobile phone reminders are more available or acceptable than other forms of reminders, using them could help to decrease health inequities.</p>
ECONOMIC CONSIDERATIONS	
<p>→ Two studies reported that the costs per text message per attendance were lower than the costs per phone call reminder.</p>	<p>▷ Considering there is uncertainty for most of the critical outcomes for decision-making, the cost-benefit of this intervention is difficult to anticipate.</p> <p>▷ Mobile phone reminders may decrease the costs of a reminder service compared to other methods.</p>
MONITORING AND EVALUATION	
<p>→ The intervention is potentially ineffective</p>	<p>▷ Additional randomised trials are needed to evaluate if more intensive reminders, or messages that allow different types of interactions are effective in specific groups.</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 please see: www.supportsummaries.org/methods

Additional information

Related literature

Guy R, Hocking J, Wand H, Stott S, Ali H, Kaldor J. How effective are short message service reminders at increasing clinic attendance? A meta-analysis and systematic review. *Health Serv Res.* 2012 Apr;47(2):614-32. doi: [10.1111/j.1475-6773.2011.01342.x](https://doi.org/10.1111/j.1475-6773.2011.01342.x)

James J. Penetration and Growth Rates of Mobile Phones in Developing Countries: An Analytical Classification. *Soc Indic Res.* 2010 Oct;99(1):135-145. doi: [10.1007/s11205-009-9572-0](https://doi.org/10.1007/s11205-009-9572-0)

van Velthoven MH, Brusamento S, Majeed A, Car J. Scope and effectiveness of mobile phone messaging for HIV/AIDS care: a systematic review. *Psychol Health Med.* 2013;18(2):182-202. doi: [10.1080/13548506.2012.701310](https://doi.org/10.1080/13548506.2012.701310). Epub 2012 Jul 12.

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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

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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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