

Can a two-way automated patient contact intervention improve adherence to medicines? A systematic review

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Background

Around half of medications for long term conditions (LTCs) are not taken by patients as directed¹. Text messaging (TM) is currently used for a variety of health purposes and software can now automate delivery and response to messages, making use of this technology more efficient. Reviews in this area to date have not focused on the potential impact of automation or which behavioural components may be contributing to the effectiveness or otherwise on this type of intervention in relation to adherence to medicines. Our aim was to examine the evidence for using automated two-way patient contact to support patients' medicine-taking behaviour.

Methods

For inclusion in this narrative synthesis systematic review studies had to focus on adults self-caring for LTCs independently, the primary intervention should use automated TM (either via pager or short message service (SMS)) or Interactive Voice Response (IVR) (communication via voice recognition or keypad input) and aim to improve medicines adherence. All study designs except pilot and feasibility studies were included. Outcomes of interest were adherence to medicines, clinical condition control and patient and acceptability. A comprehensive electronic search strategy will be used including databases such as PubMed, Embase, Cochrane Library and Web of Science.

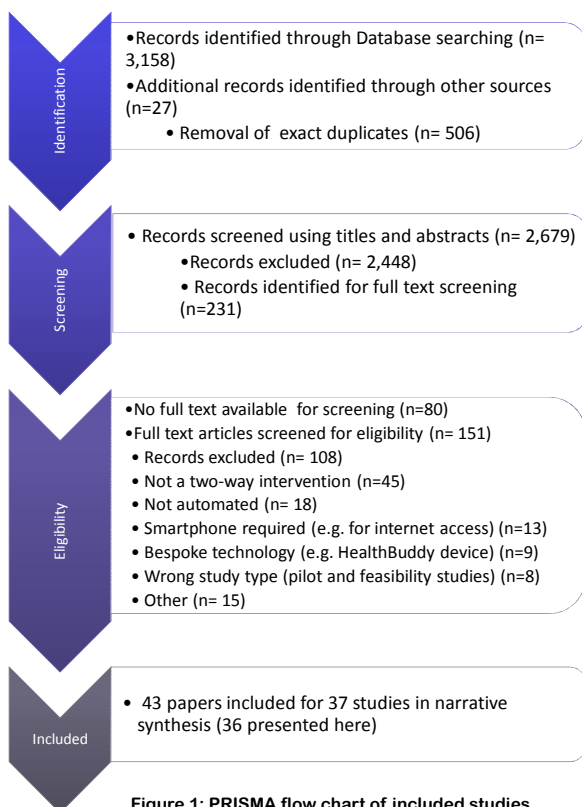
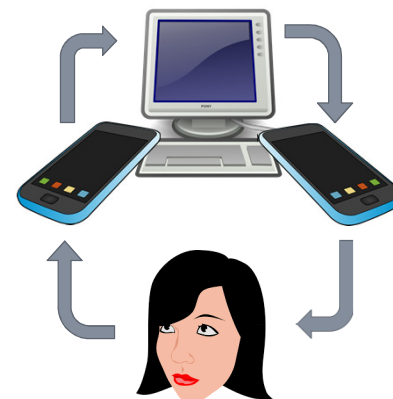


Figure 1: PRISMA flow chart of included studies

Discussion

The recent Cochrane review of interventions to improve medication adherence only considered those which measured both adherence and clinical outcomes², leaving out potentially useful intelligence which has been included in this review. Communication interventions also need good engagement from patients, making patient satisfaction an important indicator of success. Only 7 studies (19%) considered all three of these elements, highlighting the need for more holistic assessment of effectiveness of technological interventions.

Take home messages

For practitioners: use of automated communication has the potential to be a sophisticated tool to support increased adherence in a wide range of long term conditions

For researchers: further research is needed to consider how advances in automated communication technology can best be tailored to individuals' needs in relation to medicines and evaluated to consider effectiveness and patient acceptability

References

- World Health Organisation. Adherence to long-term therapies evidence for action. 2003. Available from: http://www.who.int/chp/knowledge/publications/adherence_full_report.pdf
- Nieuwlaat R, Wilczynski N, Navarro T, Hobson N, Jeffery R, Keepanasseril A, et al. Interventions for enhancing medication adherence. In: The Cochrane Collaboration, editor. Cochrane Database of Systematic Reviews [Internet]. Chichester, UK: John Wiley & Sons, Ltd; 2014 [cited 2015 Nov 22]. Available from: <http://doi.wiley.com/10.1002/14651858.CD000011.pub4>

Results

The PRISMA diagram for the search can be found in Figure 1. Automated patient contact interventions have been tested in a wide range of long term conditions (see Table 1) with mixed results.

Study	Study Details			Study Outcomes		
	Technology used	No. Patients	Long term condition included	Medication Adherence	Clinical Outcomes	Patient satisfaction
A (2014)	IVR	303	Diabetes	↑*	Not studied	Not studied
B (2015)	IVR	221	Depressive disorders	↑	↔	Not studied
C (2013)	IVR	200	Various prescription medication included	Not studied	Not studied	☺
D (2010)	IVR	50	Asthma	↑*	↔	Not studied
E (2012)	SMS	40	Acne	↔	↔	☺
F (2014)	IVR or SMS	70	Glaucoma	↑*	Not studied	☺
G(2013)	IVR or web-based	241	Hypertension	↔	↑	Not studied
H (2015)	IVR	245	Osteoporosis	↑*	Not studied	Not studied
I (2015)	SMS	3381	Various included	Not studied	Not studied	☺
J (1996)	IVR	267	Hypertension	↑*	↑*	☺
K (2015)	SMS	109	HIV/ AIDS	↑*	↔	☺
L (2013)	IVR	312	Glaucoma	↑*	Not studied	☺
M (2009/10)	TM via Pager	224	HIV/ AIDS	↔	↑*	☺
N (2015)	IVR or SMS	98	Diabetes	↑	↔	Not studied
O(2017)	SMS	85	HIV/ AIDS	↑	↑*	Not studied
P (2005)	TM via Pager	50	Diabetes	Not studied	↑*	☺
Q (2011)	IVR	338	Hypertension	↔	↑*	Not studied
R (2017)	IVR and SMS	80	Diabetes	↑*	↑*	Not studied
S (2015)	SMS	58	HIV+ and co-occurring bipolar disorder	Not studied	↔	Not studied
T (2016/17)	SMS and IVR	240	Diabetes	↔	↔	Not studied
U (2014)	SMS	74	Diabetes	Not studied	↑*	☺
V (2014)	SMS	90	Cardiovascular disease	Not studied	↑*	☺
W (2015)	SMS	123	Cardiovascular disease	↑	↑	☺
X(2000)	IVR	280	Diabetes	↑*	↑	Not studied
Y (2014)	IVR	125	Diabetes; Hypertension	↑	↑*	☺
Z (2009)	IVR	331	Cardiovascular disease	↑*	Not studied	☺
AA(2015)	IVR	1347	Cardiovascular disease	↑*	Not studied	☺
AB(2016)	SMS	75	Cancer	↔	Not studied	☺
AC(2009)	IVR	497	Prescription for statins	↑*	Not studied	Not studied
AD(2003)	IVR	647	Depressive disorders	↔	Not studied	☺
AE(2013)	IVR	44	HIV/ AIDS	↔	Not studied	Not studied
AF(2011)	IVR	7918	Asthma	↑*	Not studied	☺
AG(2014)	IVR	21752	Cardiovascular disease	↑*	↔	☺
AH(2014)	SMS	303	Patients on blood pressure or lipid lowering medication	↑*	↔	Not studied
AI(2012)	IVR	9054	Various prescription items	↑*	Not studied	Not studied
AJ (2015)	IVR	372	Heart failure	↔	Unclear	Not studied

Symbol key: (↑) improvement, (↔) no change, (↓) reduction, (*) statistically significant, (☺) >70% patient reported satisfaction with the intervention, (☺) 50-69% patient reported satisfaction with the intervention, (☺) <50% patient reported satisfaction

Table 1: Summary of studies examining automated two-way patient contact interventions

For a copy of this poster and the list of studies included in the review scan here:

