Category: Health promotion and public health

Study type: Systematic review

RM declarative title: Automated telephone communication systems have the potential to play a positive role in healthcare

Citation: Posadzki P, Mastellos N, Ryan R, et al. Automated telephone communication systems for preventive healthcare and management of long-term conditions. Cochrane Database Syst Rev. 2016 Dec 14;12:CD009921.

Commentary

Implications for practice and research

- Automated telephone communication systems (ATCS) have the potential to play a positive role in healthcare, but practical matters e.g. confidentiality should be considered before implementation.
- Further evidence is needed to counter the variable and often low quality evidence available to date, which limits the extent to which ATCS can be safely implemented across populations.

Context

Recent years have seen communication technologies promoted as a route to improve access for patients and save resources in healthcare systems under strain.(1) One such development is automated telephone communication systems (ATCS) that are used instead of – or in conjunction with – telephone communication between patients and healthcare professionals. Rather than person-to-person communication, ATCS use computer-to-person communication to deliver voice messages to patients and/or collect health-related information from patients using touch tone keypads or voice recognition software. Unlike the use of the telephone for consultation with patients,(2) use of ATCS is less well established. It offers a different approach to other telephone based modes of communication such as text messaging. (3)

Methods

This systematic review assesses the effects of ATCS on behavioural change, clinical, process, cognitive, patient-centred and adverse outcomes. ATCS are varied in form, those tested in studies included in this review were either for disease prevention (e.g. increasing uptake of screening and immunisations) and long term condition management (e.g. educational information, self-management) and were either one way, interactive or one part of a multifaceted intervention.

This review incorporates the most recently published evidence and also considered the presence and influence of theoretical models that the interventions are based upon. The review included a broad range of study designs including randomised controlled trials (RCTs), cluster RCTs, quasi RCTs, interrupted time series and controlled before and after studies. Where possible, results of the studies were pooled in a meta-analysis. Where studies were too different or reported different outcomes, results were reported narratively.

Findings

Although not strong, there was *some* evidence that ATCS can be effective in *some* contexts. The review demonstrated via meta-analysis that ATCS can increase levels of immunisations (e.g. in children, risk ratio 1.25 [1.18,1.32]), improve self-monitoring of diabetic foot (P<0.01, 0.24 [0.06- 0.42]) and reduce glycated haemoglobin in diabetic patients (P=0.038, -0.26 [-0.50, -0.01]).

It also showed, on the basis of individual studies, that ATCS can increase levels of enrolment on smoking cessation programmes and screening programmes and *slightly improve* levels of physical activity, medicine and test adherence, and reduce cancer-symptom severity. In other areas the evidence was less favourable, with meta-analysis showing no effect on mortality from heart failure (risk ratio 0.60 [0.21, 1.67]) and no effect on weight loss (P=0.09 -0.64 [-1.38, 0.11]), hypertension (P=0.99, 0.02 [-2.62, 2.66]) and smoking cessation (relative risk 1.2 (0.98 to 1.46). Individual studies showed ATCS having unclear effects on alcohol consumption. More complex ATCS may be more effective, but more evidence is needed to confirm this. The certainty of evidence for most outcomes was low, and findings should be interpreted in light of this.

Commentary

This review demonstrates how ATCS is a topic area that is quickly developing with interventions that are varied and cover a broad range of services for preventative healthcare and management of long term conditions. Despite the breadth and variability of the topic, this review systematically organises and presents existing evidence from studies assessing the effects of ATCS.

Constrained by the poor quality of evidence and heterogeneity between studies, the review found that overall the effects of ATCS are unclear. A greater number of studies related to long term condition management were included in the review, but evidence suggests that ATCS are probably more effective in preventative strategies (such as screening and immunisations). The complexity of long term condition management may present a challenge for designers of ATCS in tailoring to users' needs, when the service is (by definition) automated. Based on this, review authors recommend that ATCS are used only for evaluative purposes in such contexts. Elaborating further than this, if we consider the studies that showed some favourable effects (albeit small), they could all be understood as reminders (with the exception of reduction in cancer-symptoms severity). It may be that ATCS are useful as reminders, but anything more complex, or personally tailored falls beyond their remit or capacity.

This review identified several evidence gaps which warrant further investigation. Authors noted potential adverse events such as information overload, preference for person-to-person communication and worsening of health-related outcomes, but as few studies assessed these no conclusions could be made about potential risks of introducing such new technology. The impact on healthcare resource use and cost effectiveness was not considered, despite these being key drivers for implementation of communications technologies within health services.

References

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Competing interests
None