QUALITY IMPROVEMENT

Review: telephone and computer communication improves healthcare process and patient outcomes

Balas EA, Jaffrey F, Kuiperman GJ, et al. *Electronic communication with patients. Evaluation of distance medicine technology.* JAMA 1997 Jul 9;278:152-9.

Objective

To determine the efficacy of distance healthcare technologies for clinical process and patient outcomes.

Data sources

Randomised controlled trials (RCTs) were identified from 1966-96 in the Columbia Registry of Information and Utilization Management Trials and other databases (Medline, HSTAR, PsychLIT, CINAHL, Science Citation Index, and Engineering Index) using the search terms telephone and computer.

Study selection

Studies were included if they evaluated electronic communication (computer or telephone) between people in separate locations, included a control group that did not have a similar intervention, and evaluated process or patient care outcomes.

Efficacy of distance healthcare technologies

Intervention, number of studies, and results	Improvements in process or patient care
Computerised communications 7 studies—all showed improvement in process, patient care, or both	Improved glycohaemoglobin concentrations, dietetic knowledge and habits, and metabolic balance in patients with diabetes; improved decision confidence in caregivers of patients with Alzheimer's disease; reduction in ambulatory visits by college students
Telephone follow up and counselling 20 of 37 studies showed improvement in process, patient care, or both	Increased compliance with follow up instructions; higher patient satisfaction; fewer unkept appointments; reduced inappropriate follow up care in the emergency department; improved smoking cessation rates, low density lipoprotein cholesterol concentrations; functional capacity; reduced emergency room visits; increased knowledge; decreased depression and anxiety; more rapid recovery of normal activity levels among cardiac patients; increased mammography and colposcopic examination rates; improved pain management for osteoarthritis; therapy for panic disorder; antituberculosis chemoprophylaxis treatment; dental screening programme; and tobacco use prevention
Telephone reminder 14 of 23 studies showed improvement in process, patient care, or both	Improved appointment keeping, compliance with influenza vaccinations and medications, childhood immunisation; improved compliance with foot care instructions and behavioural interventions among patients with type II diabetes; decreased physical disability and pain in osteoarthritis
Interactive telephone systems 5 studies of 6 showed improvement in process, patient care, or both	Increased influenza vaccination and medication compliance in elderly; increased knowledge about Alzheimer's disease; improvement in number and timing of childhood immunisation visits; decreased alcohol consumption in patients with drinking problems
After hours telephone access 3 studies of 4 showed improvement in process, patient care, or both	Reduced hospital days, nursing home days, and outpatient visits; higher caregiver satisfaction for chronically or terminally ill patients; increased attendance at health maintenance visits, seeking of clinic care, and telephone contact attempts with clinicians by postpartum mothers
Telephone screening 1 study of 3 showed improvement in process	Reliable collection of clinical and administrative data from broad geographic patient population

Data extraction

Data were extracted on description and quantification of study quality, intervention, intervention site, providers, patients, and care process or patient outcomes.

Main results

See table.

Conclusion

Distance healthcare technologies (electronic communication) can improve clinical process and patient care outcomes.

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Commentary

Balas *et al* have produced a thorough systematic review on process and outcome studies evaluating use of telehealth. Studies were limited to trials examining the use of telephones and computers to facilitate the delivery of health care. Most of the advanced and more recent types of telehealth use (eg, live audio visual consultations) have been evaluated by descriptive methods, rather than analytical designs.¹ Using standardised methods, high quality RCTs were selected from a range of specialties. The results suggest benefits for the specific populations studied, including people with osteoarthritis, cardiac events, or diabetes. 26 trials used nurse initiated contact; however, it was not clear which studies used this approach and whether they were effective.

Several of the studies report cointervention bias (clinic visits were offered in addition to telephone support).

This review provides valuable information on the benefits for patients with access to telehealth delivery. The information is relevant to nurses who provide telephone advice and counselling to clients in the community. For example, as health promotion and disease prevention initiatives expand at the community level, nurses will play a fundamental part in teaching patients and families how to manage conditions and alert them to the need for a physician visit.² Evidence that after hours telephone services for chronically ill patients can reduce hospital use and increase caregiver satisfaction is beneficial for nurses who

provide these types of services and who plan to evaluate their own service. Positive outcomes for the studies of computerised communication will be helpful to nurses who may participate in more advanced telehealth services such as telemonitoring of patients in the home.

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1 Perednia DA, Allen A. JAMA 1995;273:483-8.

2 Rachlis M, Kushner C. *Strong medicine: how to save Canada's health care system.* Toronto: HarperCollins; 1994.