

Health Information Technology: Comprehensive Telehealth Interventions to Improve Diet Among Patients with Chronic Diseases

Community Preventive Services Task Force
Finding and Rationale Statement
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CPSTF Finding and Rationale Statement

Intervention Definition

Telehealth employs distance-based, electronic, or digital interactions to facilitate communication between healthcare providers and patients. Channels of communication may include phones, videos, mobile applications (apps), web-based programs, or email. Telehealth may be combined with in-person interactions, though in comprehensive telehealth interventions, most of the interactions between healthcare providers and patients are distance-based.

Comprehensive telehealth interventions can be used with adults who have chronic diseases that are affected by dietary behaviors. This review considered only interventions that addressed two or more distinct dietary components such as sodium, fat and fruit/vegetable intake.

Community Preventive Services Task Force Finding (August 2017)

The Community Preventive Services Task Force (CPSTF) recommends comprehensive telehealth interventions to supplement the care of adults who have chronic diseases that are affected by diet, such as cardiovascular disease and diabetes. This finding is based on strong evidence of effectiveness in improving dietary outcomes such as diet quality, fruit and vegetable intake, and dietary sodium intake.

Rationale

Basis of Finding

The Community Preventive Services Task Force (CPSTF) uses recently published systematic reviews to conduct accelerated assessments of interventions that could provide program planners and decision-makers with additional, effective options. The following published review was selected and evaluated by a team of specialists in systematic review methods, and in research, practice, and policy related to nutrition.

Kelly JT, Reidlinger DP, Hoffmann TC, Campbell KL. Telehealth methods to deliver dietary interventions in adults with chronic disease: a systematic review and meta-analysis. *American Journal of Clinical Nutrition* 2016;104(6):1693-702.

The CPSTF finding is based on results from the published review and expert input from team members and the CPSTF.

The published systematic review and meta-analysis included 25 randomized controlled trials (search period through 2015). Included trials examined the impact of comprehensive telehealth interventions on dietary behaviors and clinical measures among adults with chronic disease.

Participants in the evaluated interventions reported a range of chronic health conditions, including cardiovascular disease (15 studies), diabetes (5 studies), end-stage renal disease (2 studies), and obesity (1 study). Over half of the studies reported a study duration of less than 6 months (15 studies). The median number of participants reported in studies was 131 (interquartile interval: 99 to 345). The telephone was the most common telehealth delivery method (13 studies). Intervention providers included nurses, dietitians, and other trained professionals such as psychologists, social workers, research assistants, and physicians.

The finding of strong evidence was based on the magnitude of effect estimates, number of studies, and consistency of effects shown in Table 1 below.

Table 1: Dietary Change Outcomes

Outcomes Considered in the systematic review	Standardized Mean Difference (95% Confidence Interval)
Diet Quality (standardized mean difference)	0.22 (95% CI 0.09 to 0.34) 3 studies
Fruit and Vegetable Intake (servings/day; servings/week)	1.04 servings/day (95% CI 0.46 to 1.62) 4 studies 2.94 servings/week (95% CI 0.91 to 4.97) 2 studies Three additional studies that did not report a common measurement also found an increase in fruit and vegetable intake
Dietary Sodium (standardized mean difference)	-0.39 (95% CI -0.58 to -0.20) 5 studies

CI: confidence interval

One study that examined the relationship between frequency of telehealth interactions and intake of fruit and vegetables reported that interventions were more effective when delivered weekly rather than monthly.

Four studies that measured intervention effects on diet quality and sodium intake reported statistically significant improvements after 12 and 24 months.

Included studies evaluated a number of additional clinical outcomes including blood pressure, weight, body mass index, waist circumference, total cholesterol, and triglycerides. Benefits of telehealth methods were found for blood pressure, weight loss, and waist circumference. However, conclusions on these outcomes were limited by the small number of studies and inconsistent results. Two included studies evaluated differences in morbidity and reported mixed results.

Applicability and Generalizability Issues

Telehealth methods were found effective for a variety of dietary outcomes and for several chronic conditions. They were effective when delivered by a diverse range of healthcare providers (including, nurses, social workers, health educators and physicians), using several electronic media/modalities. Therefore, the CPSTF finding should be applicable to U.S. adults with diet-affected chronic conditions.

Data Quality Issues

The published systematic review included only randomized controlled trials. Study quality was evaluated using the Cochrane risk of bias assessment tool (Higgins et al. 2011). The risk of bias was low-to-moderate across the body of evidence.

Other Benefits and Harms

The review by Kelly et al. noted telehealth interventions to improve diet quality could reduce risks for multiple health conditions. Use of these interventions might also improve access and coverage in low-income and rural populations. Neither the review nor the CPSTF postulated harms associated with these interventions.

Considerations for Implementation

The review by Kelly et al. did not summarize information on intervention implementation. However, the CPSTF notes that implementers should understand state policies regarding application of the [Health Insurance Portability and Accountability Act of 1996 \(HIPAA\)](http://www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html) [www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html] to electronic communications involving patients.

The reach of this intervention depends on patient access to communication channels (e.g., telephones, internet). It is estimated that 3.2% of the population has neither landlines, nor cell phones (Blumberg et al., 2017). These individuals are more likely to have lower incomes and be older, both of which put them at greater risk for chronic conditions (National Center for Health Statistics, 2016).

Over time, comprehensive telehealth interventions may reduce the number of in-person visits and subsequently decrease opportunities for patients to receive other preventive services such as blood pressure monitoring and periodic cancer screening.

This CPSTF recommendation should not be considered an endorsement of any specific technology.

Evidence Gaps

Additional research and evaluation are needed to answer the following questions:

- Are interventions effective in changing dietary behaviors using communication channels other than the telephone (e.g., web-paged programs, videoconferencing)?
- Do these interventions improve clinical outcomes, and reduce morbidity and mortality?
- How does intervention effectiveness vary when implemented for the following groups?
 - Patients who vary by race, ethnicity, or SES
 - Patients with chronic conditions other than those included in this review

References

- Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, July–December 2016. National Center for Health Statistics. May 2017.
- Higgins JP, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0. Updated March 2011: The Cochrane Collaboration, 2011. Available from URL: <http://handbook-5-1.cochrane.org/>.
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Disclaimer

The findings and conclusions on this page are those of the Community Preventive Services Task Force and do not necessarily represent those of CDC. CPSTF evidence-based recommendations are not mandates for compliance or spending. Instead, they provide information and options for decision makers and stakeholders to consider when determining which programs, services, and policies best meet the needs, preferences, available resources, and constraints of their constituents.

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