Using Telephone Support to Manage Chronic Disease

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By

John D. Piette, Ph.D.

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About the Author

John D. Piette, Ph.D., is a Department of Veterans Affairs career scientist and an associate professor of internal medicine at the University of Michigan, Ann Arbor.

About the Foundation

The **California HealthCare Foundation**, based in Oakland, is an independent philanthropy committed to improving California's health care delivery and financing systems. Formed in 1996, our goal is to ensure that all Californians have access to affordable, quality health care. For more information, visit us online (**www.chcf.org**)

This report was produced under the direction of CHCF's Chronic Disease Care Program, which seeks to improve the health of Californians by working to assure those with chronic diseases receive care based on the best scientific knowledge. Visit **www.chcf.org/programs/** for more information about CHCF and its programs.

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Overview

TELEPHONE CARE SERVICES CAN ENHANCE THE delivery of care to patients with one or more chronic illness and help them to self-manage their disease. By providing for regular contact with these patients, telephone programs can: monitor patients' status between visits; deliver patient education or other counseling; send appointment reminders; and facilitate peer support and referrals for coping with illness.

However, the benefits of telephone care depend on a number of variables, including the target population, program structure, computer support, specific goals, and other factors. Research findings have begun to build a body of knowledge that can assist health systems and plans in designing and implementing telephone care programs.

The purpose of this report is to inform clinicians and health care managers about the benefits and challenges of telephone care programs, and what is known to date about how to optimize effectiveness in a cost-constrained health care environment. A variety of research findings on the clinical effectiveness as well as the cost-effectiveness of telephone care programs are cited. Although the picture is not yet complete, there is some evidence that telephone-based patient education can improve chronic disease outcomes and help patients become more effective advocates for their own care. In addition, automated telephone reminders increase the likelihood that patients will keep appointments and take their medication; such support of administrative processes has great potential in outpatient settings.

Health systems and health plans are looking to telephone care as a way to fill service gaps caused by funding cuts and reductions in staff resources. However, these services can be labor-intensive and therefore expensive. Research findings on the cost-effectiveness of such programs are less conclusive than those focused more on clinical effectiveness. In fact, short-term cost-effectiveness is often an unrealistic goal, since effective telephone care can lead to greater use of services in the near term.

To help health systems and health plans in their decision-making about telephone care, this report offers a number of observations that have emerged from the published findings and the author's experience in this field. These include the following:

- Telephone counseling should be clearly structured and based on established behavior-change principles.

- Programs should be designed with specific goals in mind, and should not try to accomplish too much at one time.

- Services should target patients who can most benefit from them. Patients with limited health literacy, multiple chronic illnesses, or gaps in their care may be the best candidates for telephone care programs.

- Programs that draw from patient registries, electronic medical records, or claims databases may be most effective in identifying patients most in need of assistance.

- The most effective programs are closely linked with outpatient care and clinician follow-up.

- Regular screening and assessment tools can be useful to help telephone care providers determine whether they should intensify, reduce, or discontinue services.

- Telephone peer-support programs deserve serious consideration by both health care systems and researchers.

- Evaluation should incorporate process measures such as number and type of patient contacts as well as changes in patients' health and resource use; these combined findings can provide an assessment of a program's impact and point to ideas for improvement.

Health systems and plans must decide whether to provide telephone care services in-house or contract with an outside vendor. Challenges with outsourced services include coordinating patient care with additional providers, sharing information across organizational boundaries, and monitoring program success. Advantages may include access to sophisticated technology platforms for providing services. A key to success with the vendor option is contracting based on explicit measurable targets.

Over the coming decade, as clinicians and health care systems establish more effective ways of implementing and evaluating telephone care programs, chronically ill patients may well benefit from greater access to education, treatment, and improved outcomes. At the same time, health systems and health plans may benefit from more cost-effective ways to organize and deliver care to their chronically ill patients.

About This Report

This report is intended to inform clinicians and health care managers about telephone care services and programs for patients with chronic illnesses. Specifically, the report addresses:

- How telephone care services can contribute to improved patient care;

- Characteristics of effective programs;

- Patients most likely to benefit from telephone care;

- Integrating telephone care services into systems of care; and

- How to evaluate programs and identify areas for improvement.

The report is relevant to "traditional" telephone care services (delivered "live" by nurse care managers or other clinician counselors), as well as those that use automated technology to augment such programs. More "high tech" telemedicine formats, such as video consultation with specialists and multimedia communication between patients and primary care providers, are beyond the scope of this report. However, it should be noted that such services could prove valuable, especially for patients in vulnerable socio-economic groups and those living in rural areas or prison populations[1, 2]—and may even be cost-effective.[3, 4] Comprehensive information on telemedicine can be found in reviews by the Cochrane Collaboration[5] and by McBride and Rimer.[6]

The report draws on the author's experience in evaluating telephone care and the use of interactive technology in chronic illness care, as well as a systematic search of Medline to identify randomized trials and reviews focused on the use of telephone care to manage chronic disease or promote health behavior change; and semi-structured interviews with health care systems and vendors specializing in telephone care delivery. The interviewees represent some of the largest and most experienced providers of telephone care services in the United States.

I. Background

CHRONIC DISEASES CAN PRESENT ALMOST overwhelming difficulties for both patients and clinicians. Typically, chronically ill patients must monitor themselves for early signs of acute exacerbations; comply with medication regimens; make difficult changes in their health behaviors (e.g., diet and physical activity levels); and negotiate the often frustrating processes involved in receiving and paying for health care. For those with more than one chronic condition—as many as 21 percent of all Americans and 62 percent of older adults—coordination of services and medicine management is even more complex.

Managing a chronic disease is particularly difficult for patients in vulnerable socio-economic groups, who often receive care from safety-net health care systems with limited resources. Although effective chronic disease management usually requires frequent outpatient visits, these patients face multiple barriers to getting these services. Many have limited health literacy or English proficiency, which complicates communication with clinicians and makes it difficult to complete eligibility applications. Such patients may also have limited transportation and inflexible work schedules that make attendance at frequent visits difficult or impossible. Long waiting times for appointments and extended stays in clinic waiting rooms make face-to-face clinical encounters both more frustrating and less effective.[7] In addition, mental health problems, which are common among people with certain chronic illnesses, may limit patients' ability to meet their day-to-day self-care demands.

Physicians and their staffs face equally difficult challenges in organizing effective and affordable care for their chronically ill patients. Managing multiple chronic diseases for a single patient requires complex scheduling, medicine regimens, and monitoring tasks—in addition to the counseling and patient education that is crucial to effective self-care. Time and cost burdens for managing a whole population of such patients can be a major problem for providers, particularly in a time of financial constraints. Some chronically ill patients may need weekly or even daily support for their self-care, demands that strain even the most effective clinic-based care. In fact, health care providers often are unaware of chronically ill patients' self-management goals[8] or financial pressures.[9, 10]

Telephone care services can assist both chronically ill patients and their caregivers by addressing some of these challenges to effective care management. By allowing clinicians and patients to communicate without a formal office visit, telephone care can address disease management problems in a more timely way and enable communication when patients are in their homes or workplaces.

However in order to be effective, telephone support services must be carefully organized. Otherwise they can easily become costly add-ons that deliver no true benefits.

Prevalence of Telephones in the United States

Telephone care is widely accessible because the overwhelming majority of Americans have a phone. Less than 3 percent of U.S. households are "phoneless" and the phenomenon is even less common among older adults, the population with the highest prevalence of chronic illness. As a group, phoneless people share the same rates of common chronic diseases found in the population as a whole, as well as similar blood pressure and cholesterol levels.

Nevertheless, an important minority are beyond the reach of telephone support. Census data indicate that households below the poverty level are nearly five times as likely to be without a telephone as higher-income households (Table 1). African-Americans and Native Americans are more likely to lack a phone than Caucasians. One study found that 66 percent of Americans without telephones have less than a high school education.[11] People without a telephone are also more likely than other Americans to report fair or poor health status (38 percent versus 16 percent); they are less likely to have had their cholesterol checked in the prior year (21 percent versus 56 percent); less likely to be physically active; and less likely to have their blood pressure checked.[12, 13] It is important for health care systems to create alternatives to meet the needs of these people.

Use of Interactive Technology in Telephone Care

Telephone care services delivered by nurses can be labor-intensive and therefore costly. While clinicians in outpatient settings devote much of their working day to patient care—as opposed to administrative functions—the reverse is often true for telephone care providers. Researchers in two studies found that telephone care nurses averaged less than 15 minutes per patient per month actually counseling patients.[14, 15] Moreover, effective behavior-change efforts may require even more frequent and extended conversations with patients than is typical in outpatient settings. Given the nursing shortages and financial pressures in safety-net health care systems, administrators may consider telephone-based behavioral interventions unaffordable. To be economically feasible, programs must have computer support capable of increasing their efficiency.

Interactive Voice Response (IVR) systems, which use hardware and software available in most voicemail systems, allow patients to respond to queries for clinical information and select appropriate health education messages using touch-tone or voice recognition technologies. As a component of a telephone care program, IVR may allow clinicians to communicate with large numbers of patients at relatively low cost. Unlike systems that require the patient to use a computer (such as text messaging, email, or Web-based communication), IVR requires only that patients have either a standard household telephone or cell phone. Therefore, this report gives special emphasis to the use of IVR as a tool for extending the reach of telephone care providers.

Table 1: Availability of Telephone Service Among U.S. Households

	With Telephone	Without Telephone
Number of households	86,503,689	1,762,641
Percent of all households	98%	2%
Race		
White	98%	2%
Black	95%	5%
Asian	99%	1%
American Indian/Alaskan Native	88%	12%
Native Hawaiian/Pacific Islander	96%	4%
Two or more races	96%	4%
Ethnicity		
White, Non-Hispanic/Latino	98%	2%
Hispanic/Latino	95%	5%
Age Group		
15 to 24	94%	6%
25 to 34	97%	3%
35 to 44	97%	3%
45 to 54	98%	2%
55 to 64	98%	2%
65 to 74	99%	1%
75+	99%	1%
Poverty Level		
Below poverty level	90%	10%
At or above poverty level	98%	2%

Source: Data compiled from 2000 Census data (www.census.gov).

II. Benefits of Telephone Care

HEALTH CARE SYSTEMS TYPICALLY ARE MOTIVATED to provide telephone care for their chronically ill patients because they want to improve treatment effectiveness *and* reduce costs. As discussed below, there is some evidence that telephone care improves clinical outcomes, but little evidence that it decreases the overall cost of health care, particularly in the short term.

Clinical Effectiveness

Although the study findings are not uniformly positive, there is evidence that telephone care programs can enhance both the processes and outcomes of chronic disease care. For example, telephone care can improve diabetes patients' glycemic control and symptom burden,[16, 17] and improve other key outcomes for patients with asthma,[18] heart failure,[19] and chronic pain.[20] Many studies have found that telephone care programs improve self-management behaviors, including the proper use of medication and self-monitoring.

Two recent trials highlight some of the design features that can make telephone care programs especially effective. One of these studies focuses on depression, which is an ideal disease target for telephone care, because: (1) it is a common chronic disease; (2) it has clear guidelines for disease management; and (3) costly recurrences often result from patients' difficulty adhering to clinician follow-up and self-management goals.

In this study, investigators evaluated the impact of telephone counseling on patients who were beginning treatment with antidepressants. They found that cognitive-behavioral therapy (CBT) for depressed patients can be delivered effectively via telephone.[21] Intervention patients received their first telephone contact by care managers soon after initiating antidepressant therapy. This was followed by a structured CBT counseling program. Each telephone contact included a brief assessment of symptoms and medication adherence, as well as carefully scripted counseling on strategies for enhancing compliance. Each patient received a detailed self-management workbook that reinforced messages delivered during the calls. After six months, patients who received the telephone care were substantially more likely to have improvements in their depressive symptoms, and be more satisfied with their treat-

ment, than patients who did not receive the intervention.

Like depressed patients, those with heart failure often experience problems with self-management and preventable exacerbations, and therefore may benefit from telephone care supports. In a recent study,[22] intervention patients received specialized electronic home scales to monitor their weight and report changes to telephone care nurses. These patients completed daily symptom assessments tailored to their unique needs by their cardiologist. Cardiac nurses monitored patients' weight and symptom reports and re-contacted patients by phone within 24 hours if they identified a health or behavioral problem. The nurses consulted with patients' cardiologists by phone as needed to resolve problems. After six months, there were 60 percent fewer deaths among patients receiving the telephone care relative to those receiving usual care (8 percent mortality versus 18 percent). In addition, there were fewer hospitalizations and emergency department visits, although those findings were not statistically significant.

These two rigorous multi-site randomized trials demonstrate that telephone care can improve outcomes, if it is carefully structured and has strong links to patients' usual outpatient care. However, a comparative study by the Cochrane Collaboration concluded that the evidence for the effectiveness of telephone care is mixed, and that the low quality of most telephone care studies makes it difficult to discern consistent findings.[23] Growing interest in telemedicine has increased both the quality and number of these trials. As more is known about what works best, programs are likely to be less varied and their clinical effectiveness easier to measure and compare.

Cost-Effectiveness

Research findings on the cost-effectiveness of telephone care are mixed. Because an important goal of telephone care is to increase access among patients who have difficulty using clinic-based services, programs may increase resource use and cost, at least in the short term. For example, telephone care support for diabetes patients may increase patients' use of recommended services such as retinal exams, cholesterol tests, and home glucose monitoring supplies.

In one influential study, telephone follow-up was substituted for face-to-face outpatient visits among chronically ill patients treated in Veterans Affairs health care systems. The program led to significant decreases in costly acute care use, outpatient visits, and medication use.[24] However, when the intervention was replicated among Medicare patients, there were no cost-savings and "telephone appointments became simply an additional service."[25]

Telephone care for asthma patients can be cost-effective when delivered in conjunction with other services.[26] For patients with heart failure, results of randomized trials have been variable,[27] with some studies showing cost-savings[28] and others showing either no benefit[29] or inconclusive findings.[30,31] A study of arthritis patients found that telephone care had little positive impact on treatment costs, but that, overall, the service was cost-neutral.[32]

General conclusions about the cost implications of telephone care programs are difficult to make, since the research studies evaluated a wide range of interventions and the participating patients had a variety of clinical and socio-demographic characteristics. For example, for patients with diabetes or other long-term illnesses, the impact of telephone care on disease severity may take years to realize, and no long-term trials to identify such effects have been conducted. Given that telephone care services are often poorly reimbursed, health care systems and health plans may have difficulty investing near-term dollars to achieve uncertain long-term gains.

III. Telephone Support in Chronic Illness Care

LIKE ANY CLINICAL SERVICE, TELEPHONE CARE programs are most effective when they are designed with specific goals in mind. For chronically ill patients, telephone care may be effectively used to:

- Assist patients with administrative tasks (e.g., follow-up visit reminders);

- Monitor patients to identify health and behavioral problems;

- Deliver patient education or other disease management counseling; or

- Facilitate informal support (such as peer support) for coping with illness.

Regardless of the specific goal, the most effective telephone care providers keep the process on track by making sure that each contact has specific, explicit, and realistic goals. This focus is especially important when patients have multiple chronic illnesses or a variety of psychosocial challenges. Telephone care providers should help patients understand the focus of each call and the limits to the services that the clinician can provide. Providers need to be familiar with other services available to patients and procedures for making referrals.

Supporting Administrative Processes

Patients managing one or more chronic illnesses, especially if other problems are present such as limited education or English proficiency, often miss their scheduled appointments. No-show rates are often highest among those with the greatest need for clinical care.[33] In one study,[34] more than a third of diabetes patients who lacked health insurance or had Medicaid coverage went without some prescription drugs in the prior year due to cost concerns—even though nearly all of those patients were eligible for first-dollar medication coverage through drug cost assistance programs.

Interactive Voice Response (IVR) systems are ideally suited to place brief, outgoing messages focused on administrative tasks such as reminder calls. In one study,[35] registry-based IVR reminder calls led to increased vaccination rates among low-income patients and were just as effective as "live" follow-up calls. A seminal study conducted in a public health care system

found that reminder calls delivered via IVR to tuberculosis patients increased visit attendance rates.[36] The calls were effective for patients with a variety of primary languages including Mandarin, Vietnamese, Tagalog, and Spanish. Low-tech alternatives such as mailed reminders and "live" telephone reminders may also improve attendance rates, but IVR reminders are cost-effective even in the context of these more labor-intensive alternatives.[37] Other studies have found that automated reminders can assist patients in taking their medications as prescribed.[38]

Patient Assessment

Telephone assessments may be an ideal way to monitor the status of patients in order to identify health or self-care problems before they result in acute crises. Interactive monitoring tools, such as IVR, electronic scales,[39] or electronic blood pressure cuffs can be a useful component of many telephone care programs, improving the information base available to clinicians

between face-to-face visits. Although most patient monitoring occurs during outpatient visits, few health care organizations have the information systems needed to trigger a comprehensive assessment when patients seek care through different entry points (e.g., an emergency department). As a result, clinicians often miss opportunities to prevent health crises, and educational efforts lack the timeliness they need to be effective.

One recent study[40] found that telephone assessments increased the proportion of asthma patients who received appropriate monitoring, compared to face-to-face consultation in outpatient clinics (74 percent versus 48 percent). In addition, telephone consultations were ten minutes shorter on average than clinic-based assessments. Even though there were no differences in patients' asthma-related quality of life associated with the telephone care program, it increased patients' access and resulted in outcomes comparable to face-to-face care.

Figure 1: Prevalence of Psychiatric Diagnoses Identified Using an IVR-Delivered Assessment (IVR PRIME), a Face-to-Face Interview (FF PRIME), and a Standard Clinical Interview (SCID)
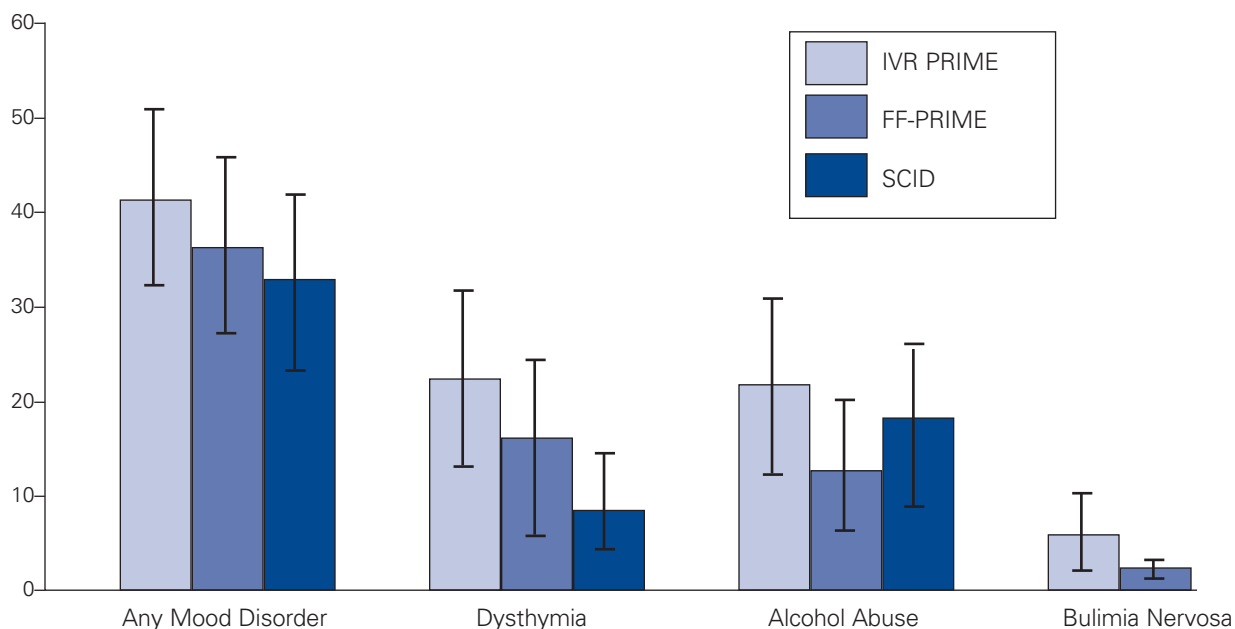
Source: Reprinted with permission from: Kobak KA, Taylor LV, Dottl SL, et al. A computer-administered telephone interview to identify mental disorders. *JAMA* 1997;278:905-910.

Note: PRIME = Primary Care Evaluation of Mental Disorders; IVR = interactive voice response telephone administration; FF = face-to-face; SCID = Structured Clinical Interview for DSM-IV Mental Disorders.

IVR assessments may be an effective way of extending the reach of telephone care managers—allowing them to monitor the status of large numbers of patients and focus their attention on those with the greatest need for "live" counseling or follow-up. Low-income patients are able and willing to complete regular IVR assessments over an extended period of time.[41] In fact, patients often see IVR assessment calls as an integral component of their disease management—especially when IVR-reported problems are soon followed up by clinicians. IVR-based screening for mental health problems can provide comparable data to that obtained during face-to-face clinical encounters (Figure 1),[42] and patients' reports about their physical and mental functioning are similar whether obtained via IVR or "live" telephone interviewers.[43] Importantly, these studies and others have found that more patients with psychiatric symptoms are identified using IVR assessments than when patients have to report this sensitive information directly to another person.

Health care systems must carefully plan for how they will use the information gathered through IVR assessments. Asking general questions about patients' status may obligate providers to schedule in-person follow-ups for vague or self-limiting health problems. Screening and "case-finding" with feedback to providers has little impact on patient outcomes when providers have limited ability to change practice patterns, or treatment changes are not tightly linked with health outcomes.[44,45] Providers often lack the resources required to effectively follow up on serious, but chronic patient needs, such as dysthymia (mild chronic depression) or barriers to self-management. In designing telephone care assessments, it is important to balance the repercussions of seeing patients for erroneously identified "problems" versus missing potential patient needs due to assessment protocols that are not sufficiently sensitive.

Patient Education and Counseling

Patients with chronic illnesses often need large amounts of health education, and those needs may change over the disease course. Unfortunately, safety-net and other providers frequently do not communicate effectively with patients,[46] and many clinicians are unaware of their patients' self-management goals.[47] Patients often remember little of what they are told during outpatient encounters,[48] and health information conveyed during acute illness episodes may be even more difficult for patients to process.[49] Patients with language barriers or low health literacy may lack even basic information about their disease and self-care.[50, 51]

Telephone care can help overcome these barriers by providing patients with important health information at a time and pace that increases comprehension and retention. There is some evidence that telephone-based patient education can improve chronic disease outcomes. In one study,[52] patients discharged from an academic general medicine service received a follow-up call by a pharmacist two days after discharge to review the patient's medications and reinforce educational messages. More patients receiving the follow-up calls were satisfied with their discharge medication instructions compared to patients without telephone follow-up (86 percent versus 61 percent). Pharmacists identified and resolved medication-related problems in 19 percent of counseled patients and referred 15 percent to their inpatient team. Most important, only 10 percent of patients from the phone call group returned to the emergency department within 30 days, compared to 24 percent of patients who were not called.

Telephone care is well-suited for patients attempting difficult behavioral changes related to smoking, diet, or physical activity. Although some studies of telephone-based smoking cessation counseling have shown little benefit,[53,54] one

large study found that telephone counseling sessions to callers of a statewide smokers' helpline increased quit attempts and overall quit rates (Figure 2).[55]

Many telephone care programs focus on self-management regimens (e.g., diet, glucose self-monitoring, and medication adherence). Other programs focus on self-empowerment. This approach helps patients become effective self-advocates in making decisions with their clinicians and receiving services such as laboratory monitoring and appropriate medications. It can be a potent tool to improve the process and outcomes of chronic illness care.[56, 57]

Some research has been done to see whether patient responsiveness to telephone advice is related to the counselor's professional background. In a recent study,[58] investigators found

that parents calling a telephone triage line were equally compliant with instructions about self-care and seeking urgent care regardless of whether telephone counseling was provided by nurses or pediatricians. (However, parents were somewhat less likely to follow instructions to seek non-urgent outpatient care when nurses provided the advice.)

Patient education programs that incorporate structured behavior change strategies are more effective than those that use free-flowing encounters. There are several well-established models for motivating behavior change including cognitive-behavioral therapy,[59] problem-solving therapy,[60] and motivational interviewing.[61] These techniques have been successfully used to support behavior change related to chronic illnesses.

Figure 2: Rates of Abstinence Among California Smokers Who Did or Did Not Call a Telephone Cessation Help Line
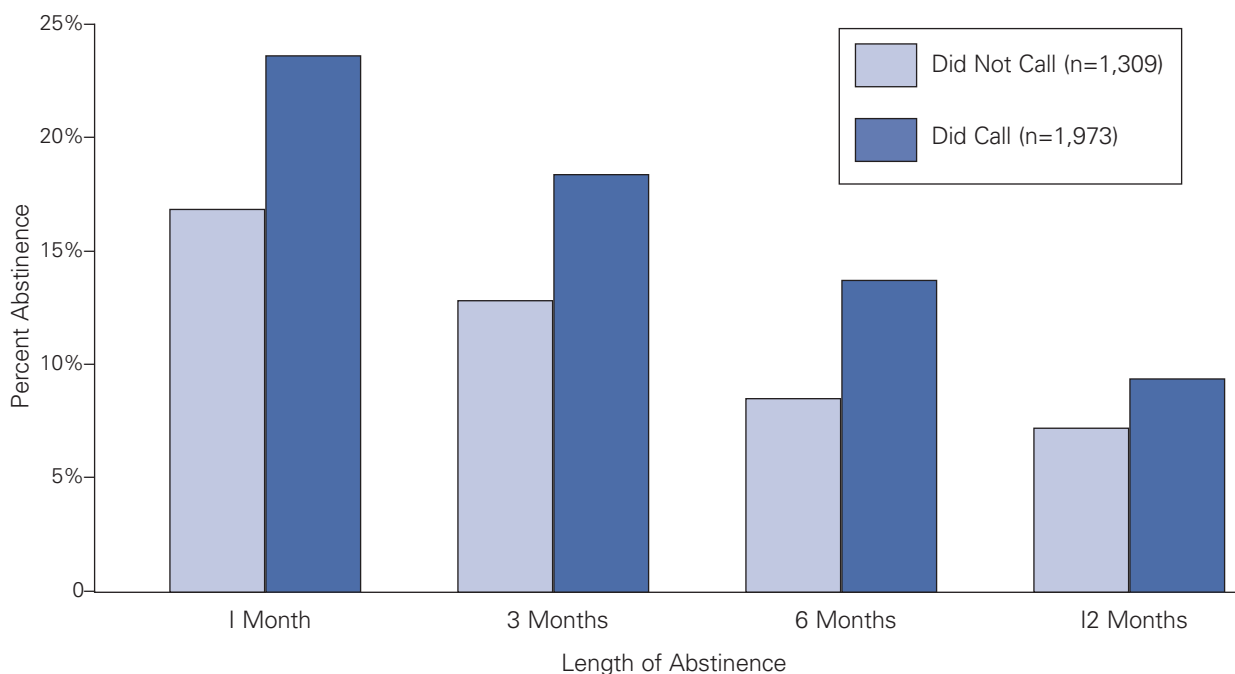
Source: Reprinted with permission from: Zhu SH, Anderson CM, Tedeschi GJ, Rosbrook B, Johnson CE, Byrd M, et al. Evidence of real-world effectiveness of a telephone quitline for smokers. *New England Journal of Medicine* 2002;347(14):1106-9.

One useful technique is to ask patients to restate instructions in their own words, so that the clinician can assess the effectiveness of his or her own explanations. This technique, the "Interactive Communication Loop" (see Figure 3) checks for lapses in recall and understanding. It also can uncover health beliefs, reinforce messages, and activate patients by opening a dialogue about their self-care goals and values.[62, 63] Such enhancements in recall and comprehension improve subsequent adherence.[64] A recent study of face-to-face clinical encounters found that physicians rarely use this communication tool, although it is strongly associated with improved clinical outcomes among diabetes patients.[65]

Facilitating Peer Support

Many chronically ill patients lack effective social support, and therefore are at greater risk for poor self-care and health outcomes.[66] One solution to this problem is telephone-based peer support, which has been shown to help not only those who receive the support, but those who give it.

Individuals who provide social support to others experience less depression,[67] heightened self-esteem and self-efficacy,[68] and improved quality of life.[69] Providing support to others can lead to improved health behaviors on the part of the helper,[70] decreased mortality risk,[71] and improved health outcomes.[72] Peer support between individuals living with the same illness can be especially

Figure 3: The Interactive Communication Loop in Clinician-Patient Counseling
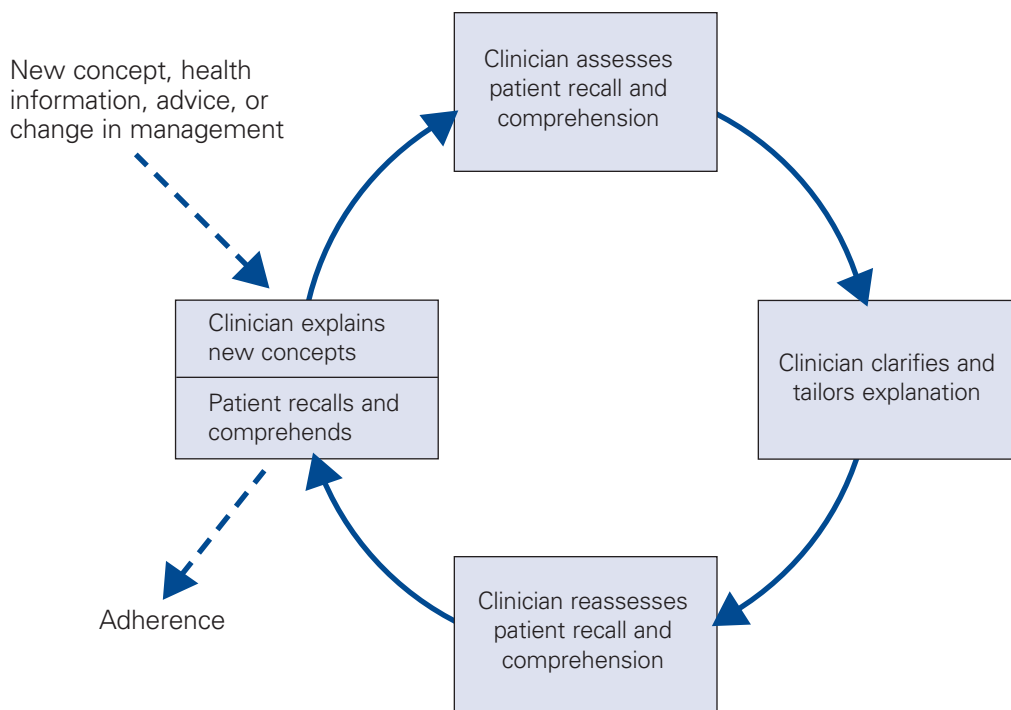
effective in reducing problematic health behaviors[73] and mental health symptoms.[74] However, most chronic disease peer-support models require patients to attend frequent outpatient visits. Given the constraints on safety-net providers and their patients, these services often are not feasible.

Telephone-based peer-helper interventions can be a satisfactory substitute for face-to-face peer interaction,[75] and many people prefer the relative anonymity and increased privacy of talking on the telephone.[76, 77] Some studies suggest that telephone-based peer-support interventions may lead to improvements in chronic disease outcomes.[78, 79] However, patients may be reluctant to share their telephone numbers and pay the cost of telephone calls. Even willing participants sometimes lack the initiative or organization to ensure that contacts are made regularly. From a health system perspective, telephone peer-support initiatives can be difficult to monitor, and few if any have been designed to interface with standard outpatient nursing care.

Researchers at the University of Michigan recently conducted a peer-support pilot program for elderly diabetes patients, facilitated by IVR technology. In this system, patients did not need to share phone numbers, and calls could be blocked during certain hours or at the request of either partner. The IVR system generated automatic reminder calls to participants who had not contacted each other in a given week. More than 80 percent of patients in the pilot study spoke to their partner regularly and found the IVR system easy to use. Nearly all participants said they would be more satisfied with their health care if IVR-facilitated peer-support services were available. Participants also found positive reinforcement for their own behavioral goals by supporting their partners' efforts to manage their self-care.

In the face of growing numbers of chronically ill patients and significant resource constraints, telephone peer-support programs, such as those facilitated by IVR, may be a promising approach for both health care systems and researchers.

IV. Which Patients Can Benefit?

TELEPHONE CARE IS NOT EQUALLY BENEFICIAL for everyone. Many patients, including some in safety-net health care systems, already have the resources they need to manage their illness effectively; they may receive little additional benefit from telephone care. At the other extreme, some patients may not benefit from even the most creative telephone care program; this category includes some patients with serious psychiatric disorders, and those with unstable residences or inconsistent telephone access.

In selecting patient populations for telephone care, providers often target those with the poorest health status (e.g., diabetes patients with the worst glycemic control or heart failure patients with the most acute exacerbations). However, it should be noted that telephone care probably offers the *greatest* benefit to the large number of patients who simply need reminders, monitoring, self-management information, and coaching.

Telephone care must be responsive to patients' changing needs over time. For example, patients may benefit from additional self-management education soon after a new diagnosis, an acute episode, or a significant change in treatment (e.g., after adding insulin to a diabetic's medication regimen). Clinicians and health care systems should develop triage protocols such as screening and assessment tools to determine whether to intensify, reduce, or even discontinue services. Drawing updated information from clinical registries is particularly effective in identifying when patients need additional assistance.

Patients with Limited Health Literacy

Functional health literacy (FHL) consists of skills such as basic reading and numerical tasks that are critical in the health care environment.[80] Poor FHL is common among patients with low educational attainment, those from racial/ethnic minority groups, older patients, and individuals whose primary language is not English. As many as one-third of all Medicare recipients and most patients treated in public health care settings have poor FHL. One study found that Medicaid patients with low FHL had annual health care costs that were more than four times those of other patients.[81] Diabetes patients with low FHL

are more than twice as likely to have retinopathy (a serious diabetes-related complication) compared to patients with adequate FHL; and they are almost three times as likely to have cerebrovascular disease.[82] Patients with low FHL are more likely to report that they do not understand their providers' explanations of their health condition or instructions on how to manage their care.[83]

Telephone care providers targeting Medicaid patients and other socio-economically vulnerable populations report that they face many of the challenges associated with serving low-FHL populations. To meet these patients' needs, providers may link with social services, and provide additional support such as purchasing telephones for patients or using videos rather than written material to reinforce self-management education. Nevertheless, large telephone care providers with Medicaid programs report that such services are feasible and can be managed within budget constraints.

Patients with limited FHL may be ideally suited for telephone care support and should be a high-priority target population when telephone care resources are limited. Simple screening tools are available to help clinicians and health care systems identify low-FHL patients.[84, 85]

Patients with Multiple Chronic Health Problems

As many as 62 percent of Medicare patients have multiple chronic illnesses. These patients can be overwhelmed by their self-care needs, resulting in negative consequences to their health. For example, patients with diabetes and depression often have poorer self-management and glycemic control than those with diabetes alone, and a recent study found that chronic pain was a common risk factor for poor diabetes self-care.[86] Multiple chronic conditions serve as competing demands on patients' time and emotional resources, as well

as on the limited attention that clinicians can devote to self-management education during outpatient encounters.

Telephone care services can be valuable for such patients, although even telephone care providers cannot address all patient problems at the same time. To address complex and multiple needs, telephone care vendors often use algorithms to identify priorities and set patient-specific management goals.

Patients with Gaps in Care

Although outpatient disease management protocols are established for almost all common chronic illnesses, many patients fail to receive recommended standards of care. Telephone care programs that draw from patient registries, electronic medical records, or claims databases can be effective in targeting patients with significant gaps in their treatment. For example, telephone care providers for diabetes patients may be most effective in preventing cardiovascular complications if they ensure that patients receive appropriate blood pressure and lipid monitoring, as well as aggressive medication management when blood pressure or cholesterol levels are unacceptably high.

Telephone counselors who are closely allied with patients' primary care providers are well-suited to flag patients and schedule appropriate follow-up, or even make changes in medication regimens. Counselors who work less directly with physicians may still be effective in coaching patients to seek appropriate care, serve as their own health advocates, and monitor their own treatment quality.

Value of Registries and Service Targeting

To provide effective telephone care services, providers need some mechanism for identifying

the population they hope to serve. Disease registries are one of the hallmarks of effective care management; patient identification on the basis of diagnoses is an important first step. However, some of the populations described above require more detailed data collection (e.g., surveys to identify patients with health literacy deficits). Other populations may require statistical analyses in order to identify the factors that predict poor outcomes, gaps in services, or preventable health care costs. Private telephone care vendors often develop sophisticated analytic techniques in order to identify their population targets and monitor their success in achieving program goals. Health plans and health systems also can develop these tools, but smaller providers may lack the infrastructure required to target telephone care programs effectively.

V. Linking Telephone Care Services with Usual Processes of Care

TELEPHONE CARE SERVICES THAT ARE TIGHTLY linked to clinic-based care are most effective. For example in the depression[87] and heart failure management[88] programs, telephone care providers regularly reported problems to the patients' clinicians and worked closely with them to make changes in patients' disease management plans.

Similarly, in two studies of IVR-supported telephone nursing care for diabetes patients, close linkages were forged between care managers and patients' regular providers.[89, 90, 91] After 12 months, patients showed improvements in glycemic control, symptom burden, self-management behaviors, and use of guideline-recommended diabetes services. Nurse care managers (rather than the IVR support system) served as the primary source of patient counseling and the interface between patients and their primary care team.

Integrating telephone support as part of the role of clinic-based nurses or other allied health staff may be an effective approach, since it minimizes the need to transfer patient records across physical locations, minimizes the number of clinicians involved in patients' care, and increases the likelihood that patients' physicians will seriously consider recommendations of telephone care providers. Although few studies have directly compared similar telephone care protocols delivered by clinicians that varied in their level and type of training, the study by Lee and colleagues[92] indicates that recommendations made by telephone care nurses may be just as effective as those of physicians.

At a baseline, telephone care programs should address the most glaring gaps in patients' knowledge about how to work with their health system in managing their disease. This may include helping patients:

- Understand their health coverage;

- Know how to apply for assistance programs; and

- Know basic administrative information, such as the name of their primary care provider, how to schedule appointments with appropriate clinicians, and how to get health questions answered between outpatient visits.

In-house and Contracted Outside Programs

Health systems and plans must decide whether to provide telephone care services in-house or contract with an outside vendor. Some of the challenges with outsourced telephone care services include coordinating patient care with additional providers, sharing information across organizational boundaries, and monitoring program success. On the other hand, several large vendors offer validated statistical algorithms or "analytics" for targeting telephone care based on a health system's goals (e.g., increasing guideline adherence or decreasing preventable admissions). Many large vendors also use proprietary software to structure interactions with patients and ensure that the program is targeted and efficient.

Regardless of the location of the services, the most effective programs have structured computer supports to ensure that: all necessary assessments are conducted; findings are well documented; and the communication process is monitored over time by trained clinicians.

Stand-alone Services

Telephone care programs with weak linkages to patients' usual care tend to be ineffective. In one recent study, investigators evaluated a call-in IVR counseling program designed to help patients increase their physical activity levels.[93] Although the IVR calls used tailored, recorded messages based on sound health behavior change theory, one in four patients never called the toll-free number to receive behavior-change messages, and less than half were using the system after three months. Not surprisingly, the service had no significant impact on patients' behavior. "Live" telephone care service providers may have better results, although they also may have limited impact if they are not integrated into patients' overall care team. In a recent randomized trial, telephone care managers for high-risk diabetes patients had little impact on patients' health status, largely because they worked separately from patients' usual care providers, and their recommendations were often ignored by those clinicians.[94]

Some telephone care programs are delivered by employer groups or health plans who have less contact with clinicians or patients' clinical records. One way to increase these programs' effectiveness is to coach patients to be better advocates for quality care, rather than attempting to influence outpatient clinicians directly. For such services to be effective, providers need to have access to enough updated and quality health information to credibly counsel patients regarding service gaps and priorities for seeking follow-up care.

VI. Evaluating Telephone Care Programs

EVALUATIONS SHOULD REFLECT A PROGRAM'S *primary* aims. Trying to achieve both health outcome improvements and short-term cost-savings simultaneously may be unrealistic. Some health changes may take years to realize, and most evaluation plans lack the resources to detect these long-term benefits.

Evaluating more direct outcomes of telephone care programs—as well as changes in patients' health and resource use—can provide concrete measures of a program's impact and point to areas for improvement (Table 2). For example, documenting the content of care sessions helps program managers determine whether some patients' urgent needs divert too much attention from other patients or care requirements. The program's relationship with other clinical services should also be monitored. Patients may not benefit from telephone care if they cannot access recommended follow-up services due to limited system capacity or ability to pay.

The impact on staff should be monitored. Programs need to be structured with appropriate caseloads and realistic expectations for the frequency and nature of patient contacts. If programs are not appropriately designed, telephone care providers can become frustrated, burned out, and less aggressive in addressing care management problems.

The traditional "gold standard" for evaluating clinical services, including telephone care, has been randomized controlled trials. However, health care systems often have not implemented services that have proven effective in a research context or have found disappointing results in real-world settings. Consequently, policymakers and clinicians have begun to evaluate telephone care and other programs using alternative frameworks that take a broader range of program characteristics into account, such as RE-AIM (Reach, Efficacy, Adoption, Implementation, and Maintenance). Using the RE-AIM framework, health system managers may find that telephone care programs are worthwhile, even when they have only a modest impact on patient outcomes.[95]

When health care systems outsource telephone care services, explicit outcome-based contracting is essential to ensure that a program is successful. Health plans may structure service agreements so that vendors are at some financial risk for achieving

defined program goals. In designing these contracts, careful attention should be given to the database for monitoring program success, including data quality, timeliness, the form of evaluation reports, and how effectiveness will be determined in the context of other changes such as temporal trends.

Table 2: Questions to Ask When Evaluating a Telephone Care Program

The Patients
- How many patients are enrolled? What is the average caseload for telephone care providers?
- Are the characteristics of enrollees what was intended?
- How many patients refuse to enroll? How are refusers different from enrollees?

Telephone Care Process
- How many days does it take for patients to be contacted by telephone care providers after enrollment? What proportion of patients are not contacted for more than a month?
- What is the proportion of missed telephone care contacts? How does contact success rate vary across patient types and service providers?
- How long are telephone contacts? Is the content of the conversations what was intended or do other pressing patient needs take precedence during the calls?
- How many telephone care contacts lead to communication between telephone care providers and other clinicians? How many lead to a request for in-person follow-up?
- How many patients drop out of the program? What are the reasons for drop-out? How many patients are lost to follow-up?

Patients' Self-Care
- What is the impact of telephone care on patients' self-management behaviors, such as self-monitoring and medication adherence?
- What is the program's impact on lifestyle behaviors such as smoking, diet, and physical activity?

Coordination with Usual Care
- To what extent do telephone care providers draw on patient's medical record as the basis for determining the content of telephone calls?
- How often and what types of information from the calls are available to other service providers in standard outpatient records?

Patients' Health Status, Service Use, and Other Outcomes
- What impact does telephone care have on key disease-specific measures of patients' health? Which patients benefit the most and which do not benefit at all?
- How do telephone care services affect use of: urgent care, general medicine and specialty outpatient care, inpatient care, and guideline-recommended disease management services?
- How satisfied are patients with the telephone care service? How does receiving telephone care affect their satisfaction with health services more generally?

Clinician Satisfaction
- Do providers "burn out" when delivering telephone care? What is the turnover rate?
- How confident are telephone care providers that they can determine patients' health status over the phone? How comfortable are they in deciding who needed in-person follow-up?
- How many hours per week do clinicians feel is a reasonable maximum for telephone care providers? What do they feel is a reasonable caseload?

VII. Conclusion and Recommendations

TELEPHONE CARE REPRESENTS A BROAD PLATFORM for patient communication, and its benefits depend on how a health care system chooses to structure and support its program. Telephone care services can improve chronic disease management and health outcomes—if the program is well-designed, targets the right patient population, focuses on specific goals, and closely links services to its regular outpatient care. Table 3 provides ideas for organizations to consider in designing an effective program.

A number of conclusions and recommendations have emerged from the author's research and experience, including the following:

- Telephone counseling should be clearly structured and based on established behavior-change principles.

- Programs should be designed with specific goals in mind, not aimed at multiple objectives.

- Services should target patients who can most benefit from them. Patients with limited health literacy, multiple chronic illnesses, or gaps in their care may be the best candidates for telephone care programs.

- Programs that draw from patient registries, electronic medical records, or claims databases may be most effective in identifying patients most in need of assistance.

- The most effective programs are closely linked with regular outpatient care and clinician follow-up.

- Regular screening and assessment tools can be useful to help telephone care providers determine whether they should intensify, reduce, or discontinue services.

- Telephone peer-support programs deserve serious consideration by both health care systems and researchers.

- Evaluation should incorporate concrete measures such as number and type of patient contacts as well as changes in patients' health and resource use; these combined findings can provide an assessment of a program's impact and point to ideas for improvement.

As financial pressures on traditional health care services increase, especially within safety-net health care systems, telephone care services have potential to fill service gaps. Carefully

designed telephone care can also provide additional, unique types of disease management support not available through traditional practice models. Over the coming decade, clinicians and health care systems will establish more effective means of implementing and evaluating telephone care programs. Ultimately these efforts should improve chronically ill patients' treatment access and outcomes. At the same time, new research findings will help providers in their efforts to make high-quality chronic illness care more cost-effective.

Table 3: Dimensions of Telephone Care Programs and Considerations for Program Design

Dimension	Comments
Which patients should receive telephone care?	Best target populations include: • Patients with complex self-care regimens; • Patients with a disease associated with high rates of preventable adverse events; • Patients with limited health literacy; • Patients with multiple chronic illnesses; and • Patients with gaps in recommended care. Registries and other data sources that can identify patients experiencing gaps in care are helpful.
How should telephone counselors be trained?	• There is little evidence that more highly trained clinicians (physicians or nurse practitioners) provide more effective telephone care services. • Explicit counseling techniques such as motivational interviewing or cognitive behavioral therapy are helpful.
Where should telephone counselors be located?	• Phone counselors who also have face-to-face contact with patients in clinic may be especially effective. • Clinic-based staff may have greater influence with patients' physicians. • When counselors are employed by a separate organization, they may be most effective if they focus on " empowering" patients to be more active in their own medical management, rather than communicating directly with patients' usual care providers.
When should patients receive telephone care?	• Telephone care may be most valuable in the weeks and months following a change in patient's status (e.g., posthospitalization), self-management regimen, or diagnosis, as well as when patients experience significant gaps in care.
How should telephone care programs be evaluated?	• Evaluation should reflect program goals. Programs designed to increase access to outpatient care may not decrease overall resource use in the short term. • Programs should first be evaluated in terms of the telephone care process, then their effect on other care processes, and then on outcomes. Evaluating the impact on counselors is also important.

Acknowledgments

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