Using Innovative Video Doctor Technology in Primary Care to Deliver Brief Smoking and Alcohol Intervention

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Given physicians' increased responsibilities and time constraints, it is increasingly difficult for primary care physicians to assume a major role in delivering smoking and alcohol assessment and intervention. The authors developed an innovative use of computer technology in the form of a "video doctor" to support physicians with this. In this article, two brief interventions, delivered by an interactive, multimedia video doctor, that reduce primary care patients' smoking and alcohol use are detailed: (a) a patient-centered advice message and (b) a brief motivational intervention. The authors are testing the use of the video doctor to deliver these interventions in a randomized, controlled study, Project Choice. A pilot study testing the feasibility and acceptability of the video doctor suggests it was well received and accepted by patients (n = 52) and potentially provides an innovative, cost-effective, and practical way to support providers' efforts to reduce smoking and alcohol use in primary care populations.

Keywords: *video doctor; brief interventions; motivation; computer technology; alcohol; smoking*

Despite the continuing calls for physicians to play a more active role in alcohol and smoking risk-reduction efforts—and the proven success of brief behavioral change interventions—many physicians do not consistently assess and intervene with these risks (Ockene, Wheeler, Adam, Hurley, & Hebert, 1997; Thorndike, Rigott, Stafford, & Singer, 1998; Vinson, Elder, Werner, Vorel, & Nutting, 2000). Although

training can improve physicians' effectiveness and confidence, studies indicate that physicians do not consistently use proven counseling techniques after training (Lindsay et al., 1994; N. Russell & Roter, 1993; Secker-Walker, Solomon, Flynn, & Dana, 1994) and that physicians' newly adopted behaviors typically fade after research personnel depart (Hollis, Lichtenstein, Vogt, Stevens, & Biglan, 1993). According to Senft, Polen, Freeborn, Hollis (1997),

> It is even less likely that today's primary care clinicians, faced with increased responsibilities as "gate keepers," will assume a major role in drinking intervention. Time and cost will simply not allow it. Any effective outreach for problem drinkers in large, busy outpatient populations will require simple and quick identification procedures; brief, low-cost interventions; minimal clinician time; and a team approach. (pp. 464-465)

Although there has been much focus on encouraging physicians to be more involved in helping their patients reduce health risks (Ockene et al., 1997), little attention has been given to developing and examining ways to deliver brief interventions that relieve physicians of further time-consuming activities yet support their risk-reduction efforts. Previously, we studied the use of

interactive multimedia technology using a "video doctor" to simulate a real life physician-patient risk history–taking session (Gerbert, Johnston, Bleecker, & Allerton, 1996; Gerbert et al., 1997). We successfully implemented this technology in a primary care setting. Patients reported a high level of acceptance of the technology and were willing to disclose their health-risk behaviors to our video doctor. Other studies show that computer-delivered risk assessments in health care settings can elicit as much or more patient disclosure of sensitive topics such as sexual risk behaviors and drug or alcohol use than can a health care provider (Daniels, Somers, Orford, & Kirby, 1992; Duffy & Waterton, 1984; Gerbert et al., 1999; Gribble et al., 2000; Kissinger et al., 1999); they also can generate interest, attract individuals to participate, and provide privacy (Gerbert et al., 1999). The vast majority of patients find computer assessments easy to use, prefer them to paper-and-pencil surveys, and feel that they protect patients' privacy (Navaline et al., 1994; Williams, Boles, & Johnson, 1995). Interactive computer-delivered interventions have been shown to promote healthful attitudes and increase motivation to change regarding a multitude of patient risk behaviors, including smoking, dietary fat intake, weight loss, and diabetic blood glucose levels (Block et al., 2000; Krishna, Balas, Spencer, Griffin, & Boren, 1997; Kumar, Bostow, Schapira, & Kritch, 1993; Tate, Wing, & Winett, 2001). Additional benefits of using computers to assess and intervene in primary care settings include consistency in the wording and sequencing of questions, ability to use branching logic to individualize questions for patients (Erdman, Klein, & Greist, 1985), low cost for ongoing use and updating once developed, and time saving for physicians (Glasgow, McKay, Boles, & Vogt, 1999).

Based on this research and our own success in using the video doctor for assessing health risks, we surmised that video doctor technology might also hold promise as an innovative and effective vehicle for delivering behavior-change interventions.

In this article, we describe in detail the following two brief behavior-change interventions delivered by an interactive, multimedia video doctor to reduce primary care patients' smoking and alcohol use: (a) a patient-centered advice message consisting of a patient-centered advice message only and (b) a brief motivational intervention consisting of several brief motivation-enhancing strategies. Both the patient-centered advice message and the brief motivational intervention are being tested in a randomized, controlled study called Project Choice, the goal being to determine whether either or both interventions can successfully reduce patients' smoking and alcohol use and thus support health care provider's prevention activities. We expect that the brief motivational intervention will be more effective in reducing health risks than will the patient-centered advice message. Accompanying the intervention descriptions is a review of the literature on brief behavioral change interventions, an overview of the Project Choice study design, and a summary of the results from the Project Choice pilot study that examined participants' acceptance of the video doctor technology. We are currently evaluating the clinical effectiveness of the patient-centered advice message versus the brief motivational intervention and will report these results when they become available.

As brief behavior-change interventions have grown in popularity and success, a wide variety of intervention approaches have generically been defined as "brief interventions" (Fiore et al., 2000; Heather, 1995). A number of published studies, as noted in several reports, have provided only summary descriptions of brief intervention methods, making it difficult to distinguish between interventions and to accurately replicate and test these interventions. In response to this concern, some researchers have called for detailed descriptions of brief intervention methods, acknowledging that such descriptions will help "prevent post hoc selectivity and rationalizations clouding its [the intervention's] description" (Rollnick, Butler, & Stott, 1997, p. 194). For this reason, the authors of this article have set out to give a full description of the patient-centered advice message and the brief motivational intervention.

▶ REVIEW OF THE LITERATURE ON BRIEF INTERVENTIONS

As far back as the late 1970s, physician-delivered brief interventions in primary care settings have significantly improved quit rates among smoking patients (Fiore et al., 2000; Hollis et al., 1993; Kottke, Battista, DeGriese, & Brekke, 1988; M. Russell, Wilson, Taylor, & Baker, 1979; Sippel, Osborne, Bjornson, Goldberg, & Buist, 1999). Brief interventions in general also have been identified as an increasingly important part of the continuum of care regarding alcohol use (U.S. Department of Health and Human Services, 1999), especially for patients who are not alcohol dependent and when the intervention goal may be to support the patient in moderate drinking (Fleming, Barry, Manwell, Johnson, & London, 1997) rather than abstinence (Bien, Miller, & Tonigan, 1993; Graham & Fleming, 1998; O'Connor & Schottenfeld, 1998). Studies demonstrate that brief interventions delivered by physicians and other health care professionals in primary care settings lead to reductions in drinking and higher rates of participation in alcohol treatment among nondependent problem drinkers (Fleming et al., 1997; Kristenson, Ohlin, Hulten-Nosslin, Trell, & Hodd, 1983; Senft et al., 1997; Wallace, Cutler, & Haines, 1988; Wilk, Jensen, & Havighurst, 1997; World Health Organization, 1996). These studies show that shorter, less intensive interventions are not only more effective than no intervention (Bien et al., 1993) but also can benefit patients as much as more intensive interventions (Bien et al., 1993; Institute of Medicine, 1990; Project MATCH, 1997).

Because much of the research to date has focused on brief interventions in general without delineating between the different approaches and strategies, we cannot give a clear picture of the difference between brief interventions that rely on advice messages and those that incorporate motivation-enhancing strategies. A recent study of smoking interventions delivered by general practice physicians, however, suggests that brief motivational interventions produce better outcomes than do advice messages alone, especially among those patients not ready to quit smoking (Butler et al., 1999).

Brief motivational interventions typically integrate several different motivation-enhancing behavior change strategies (Rollnick, Mason, & Butler, 1999). These strategies can vary widely in content and approach but in general are embedded in a patient-centered framework (Stewart, Brown, & Weston, 1995) and are influenced by the stages-of-change model (Prochaska & DiClemente, 1986), motivational interviewing (Miller & Rollnick, 1991), and brief negotiation, a simplified form of motivational interviewing developed for general health care settings (Rollnick, Heather, & Bell, 1992; Rollnick et al., 1999). Motivation-enhancing strategies tend to be short in duration, structured, teachable to nonspecialists, and designed to enhance patients' internal motivation to change specific health behaviors (Rollnick et al., 1999). Strategies commonly integrated into brief motivational interventions include assessment of readiness to change using a "readiness ruler" (Butler et al., 1999; Rollnick et al., 1997) and subsequent scaling questions (de Shazer et al., 1986; Rollnick et al., 1997), patient-centered advice giving (Botelho & Skinner, 1995; Rollnick et al., 1999; Stewart et al., 1995), tailored messages (Kreuter, Oswald, Bull, & Clark, 2000; Prochaska, DiClemente, Velicer, & Rossi, 1993), agenda setting (Berg-Smith et al., 1999; Stott, Rees, Rollnick, Pill, & Hackett, 1996; Stott, Rollnick, Rees, & Pill, 1995), ambivalence exploring (Miller & Rollnick, 1991), and personalized feedback (Miller & Sovereign, 1989).

Although brief motivational interventions are known primarily for being effective with cigarette smokers and problem drinkers, more recently, these interventions have been used successfully with a variety of patient populations and health behavior change goals (e.g., dietary change and weight management) (Berg-Smith et al., 1999; Bernstein, Bernstein, & Levenson, 1997; Rollnick et al., 1999). Because they are brief, cost-effective (Handmaker, Miller, & Manicke, 1998), and sufficient to mobilize individuals' use of their own resources to bring about behavior change (Sobel et al., 1996), brief motivational interventions are increasingly being applied in primary care settings. They have been identified as particularly effective for primary care patients who are not seeking help for addictive behaviors (Handmaker et al., 1998) and who tend to be in the earlier stages of change (Butler et al., 1999; Heather, Rollnick, Bell, & Richmond, 1996; Rollnick et al., 1992).

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▶ OVERVIEW OF PROJECT CHOICE

Recruitment and Assessment

Project Choice is a randomized, controlled study testing the effectiveness of a patient-centered advice message versus a brief motivational intervention delivered by an interactive multimedia video doctor for assessing patients' health risks and intervening with current smokers and/or problem drinkers. Patients in the age range of 18 to 65 are being recruited from three primary care clinics in the San Francisco Bay Area, including a county hospital clinic that primarily serves low-income individuals on Medi-Cal. A research assistant approaches patients in clinic waiting rooms and asks whether they are interested in participating in a health care project in which a video doctor will ask them questions about their health history and possibly provide health information and recommendations. Consenting participants are provided headphones, escorted to a laptop computer sitting on a portable cart in a private corner of the clinic waiting room, and shown how to initiate the video doctor computer program. Participants use the computer program unassisted, with a research assistant nearby in case of questions or problems.

The computer program begins with an actor-portrayed video researcher appearing on the screen. The video researcher greets the participant; provides instructions for answering questions on a simplified, easy-to-use,

color-coded keyboard; asks demographic questions (gender, age, and so forth); and introduces the video doctor.

Following the video researcher's introduction, an actor-portrayed video doctor appears on the screen, introduces herself, and begins to ask the participant an initial set of general health-risk questions about smoking, alcohol use, HIV risks, exercise habits, and weight, as follows.

> Hello. My name is Dr. Ann Summers and I'd like to begin by asking you some questions about your health history. All of your answers will be kept confidential and not placed in your medical record.

If a participant indicates that he or she has smoked a cigarette and/or has had a drink of alcohol, the video doctor proceeds to ask a range of risk-specific questions to assess current smoking and/or drinking levels, stage of change, self-efficacy, and prior attempts at reducing risky behaviors.

As the video doctor asks each question, the text of each question and response options appear on the screen adjacent to the video doctor. In some cases, graphics are used to support specific questions (e.g., examples of one standard drink of alcohol). Based on the computer program's branching logic, the video doctor skips questions that do not pertain to a given participant.

After meeting with participants in each of the three groups, the video doctor offers risk-specific information and referral pamphlets and makes a generic closing statement. For participants not wanting the pamphlets, the video doctor respectfully acknowledges their decision. Immediately following the video doctor's closing, the video researcher appears and makes a final statement.

Risk Definitions and Eligibility Criteria

To receive an intervention, participants must be current smokers and/or "problem" or "possible dependent" drinkers. Current smokers are defined as people who smoked a cigarette, even a puff, in the past 30 days. Problem drinkers are defined as (a) men who drink more than 14 drinks a week, drank more than five drinks on one occasion in the past 3 months, or gave two or more positive answers to the four CAGE questions (Ewing, 1984) and (b) women who drink more than seven drinks a week, drank more than four drinks on one occasion in the past 3 months, or gave two or more positive answers to the four CAGE questions. Possible dependent drinkers are defined as people who drink more than the limits defined previously and gave three or more positive responses to the four CAGE questions.

Participants are excluded from participation in the study if they are younger than 18 or older than 65, if they drink more than 50 or more drinks per week, if they reported having been treated at a clinic or a treatment center or admitted to a hospital for problems related to alcohol use in their lifetime.

Ineligible participants who report heavy drinking levels (50 or more standard drinks per week) are advised by the video doctor to abstain from alcohol, encouraged to speak with their doctor about this recommendation, and provided information and referral resources. Participants who meet with the video doctor—both randomized and ineligible—are offered a choice of a $20 gift certificate from one of three retail stores (grocery, household, and sporting goods).

Randomization

Participants identified as current smokers and/or problem drinkers are automatically randomized by the computer program into one of the following three groups: (a) a control group that is offered pamphlets related to identified risks from the video doctor ($n = 400$); (b) an intervention group that receives a 90-second to 3-minute patient-centered advice message ($n = 400$); and (c) an intervention group that receives a 3- to 5-minute brief motivational intervention ($n = 400$).

Video Doctor Development

The same video researcher and video doctor are used in all encounters and appear as talking heads against an exam room backdrop. Both the video researcher and the video doctor were selected for their roles based on a preliminary study testing patients' preferences. A total of 400 participants were asked which one of six video doctors (one male and one female African American, Latino, and Caucasian) they would pick to be their physician after viewing each deliver a 45-second health prevention message. Among our diverse sample, the three women were the most preferred and highest rated video doctors. The actor we ultimately selected for the role of the video doctor, a female Caucasian, was the most preferred and the highest rated. The actor we selected for our video researcher, a female African American, was rated highly by participants on questions regarding interpersonal style and professionalism.

The scripting for the video doctor's dialogue was modeled after examples presented in *Motivational Interviewing* (Miller & Rollnick, 1991) and *Health Behavior Change: A Guide for Practitioners* (Rollnick et al., 1999) and reviewed by a panel of international experts on brief motivational interventions. The footage for the video doctor program was professionally produced, and an elaborate computer program was developed to account for the myriad number of branching pathways a participant encounter might take depending on eligibility, randomization, gender, current smoking and/or drinking level, readiness to change, and desire to receive pamphlets. The computer program consists of a library of digital video clips containing the various health risk questions and intervention pieces.

Branching logic allows the video doctor to tailor her response to participant input, simulating an interview with a live person. Visual graphics are also integrated into the digital video clips to support the video doctor's questions and messages. The computer program is delivered on lime green Apple iBook laptop computers. Participant data are passively stored into a database file within each computer and at the end of each day, copied onto a zipdisk. The program was developed using Hypercard, Applescript, and Quicktime software.

▶ DESCRIPTION OF THE VIDEO DOCTOR INTERVENTIONS

Interpersonal Style

The actor-portrayed video doctor—in both the patient-centered advice message and the brief motivational intervention—employs an interpersonal style and a conversational tone that is warm, friendly, empathic, nonjudgmental, respectful, and collaborative. Prior studies suggest that an interpersonal style based on these patient-centered characteristics is associated with low levels of resistance and with positive behavior change (Miller, Benefield, & Tonigan, 1993; Miller & Rollnick, 1991; Miller & Sovereign, 1989; Stewart et al., 1995). We previously found that a video doctor portraying a warm communication style elicited more patient disclosure of sensitive information, specifically in the areas of drugs, alcohol, and HIV, than did a video doctor portraying a neutral communication style (Gerbert et al., 1997).

The video doctor specifically demonstrates a patient-centered interpersonal style by (a) using collaborative language (e.g., "It's obviously your decision—but to play it safe—I would highly recommend that you consider quitting smoking") versus restrictive language (e.g., "you should," "you must," "you need to," or "you have to"), (b) affirming participants' autonomy and freedom of choice to change behavior, and (c) acknowledging that behavior change is not an easy undertaking while at the same time voicing confidence in participants' ability to change if they make a committed decision to do so. In addition, the video doctor always asks permission before offering participants information about smoking and/or alcohol. If participants answer no, the video doctor respectfully honors their wishes and immediately closes the encounter by thanking the participants and asking if they would like to receive risk-specific pamphlets.

We believe that the act of asking permission will enhance participants' perception of personal control and freedom, leave them more receptive to hearing the video doctor's advice and recommendations, and mobilize their intrinsic motivation to consider behavior change. It has been suggested that intrinsic motivation is enhanced by the perception that one has freely chosen a course of action without significant external influence or coercion (Deci, 1980; Deci & Ryan, 1975; Parker, Winstead, & Willi, 1979).

Pamphlets

In both intervention groups, the video doctor offers all patient participants an informational and referral pamphlet at the conclusion of each encounter. The smoking and alcohol pamphlets were produced by our research team and written to reflect the same patient-centered style used by the video doctor. The smoking pamphlet includes a tool for assessing readiness to quit; ideas and options for preparing to quit, developing a quit plan, dealing with urges, and preventing relapse; commonly asked questions about smoking and smoking cessation; and a listing of resources for quitting. The alcohol pamphlet includes a tool for assessing drinking risk ("Is your drinking a problem?"), information on drinking guidelines and recommendations (U.S. Department of Health and Human Services, 1995), health risks associated with drinking, commonly asked questions about alcohol, and a listing of treatment and support resources.

Brief Intervention 1: Patient-Centered Advice Message

Participants randomized to this group receive a 90-second to 3-minute patient-centered advice message. Smokers receive a 90-second message, problem or possible dependent drinkers receive a 2-minute message, and those with both risks receive a 3-minute message. The advice message is delivered in a supportive, nonjudgmental manner with an emphasis on personal choice and responsibility. The advice message incorporates several key elements identified as critical for effective brief interventions. These critical elements have been summarized by the acronym FRAMES (Miller & Sanchez, 1994). They are as follows:

Feedback. Provide patients with personal feedback regarding their individual status and where they stand in relationship to norms and standards.
Responsibility. Emphasize patients' freedom of choice and personal responsibility for their choices.
Advice. Provide clear recommendations in a supportive, nonthreatening manner.
Menu of options. Provide options for patients to choose from.
Empathy. Listen reflectively; demonstrate a warm, respectful, collaborative, and nonjudgmental approach.
Self-efficacy. Reinforce patients' sense of self-efficacy regarding their ability to make behavior change.

Figure 1 provides an example of the video doctor delivering an advice message to a participant who smokes. For problem or possible dependent drinkers, advice messages also include recommendations for low-risk drinking (U.S. Department of Health and

"Thank you for taking the time to answer my questions."

"Based on your answers, I was hoping to spend a couple more minutes sharing some information with you about cigarette smoking. Would that be OK?" [Participant says "yes."]

"All right, let's continue."

"As you might guess, I want to talk with you about your cigarette smoking because I'm concerned that it may be putting your overall health at risk."

"It's obviously your decision—but to play it safe—I would highly recommend that you consider quitting smoking."

"Experts agree that quitting smoking is the single most important thing that most people can do to live longer and healthier lives."

"I know from experience that quitting smoking is not an easy thing to do, but I'm confident that if there comes a time when you make a firm decision to quit—and you stick with that decision—you will find a way to do it."

"And the good news is that there are a number of different ways a person may go about quitting smoking."

"If you're interested, I'd like you to receive a general information pamphlet on cigarette smoking that outlines options and resources for quitting. Would you like to receive this pamphlet?"

FIGURE 1 Brief Intervention 1: Patient-Centered Advice Message (current smoker)

Human Services, 1995) and information on the symptoms and signs of alcohol dependency.

Brief Intervention 2: Brief Motivational Intervention

The video doctor delivers the brief motivational intervention in 3 to 5 minutes. The length of the intervention varies according to participants' identified risks (current smoker and/or problem or possible dependent drinker). The brief motivational intervention builds on the brief advice message and also integrates several brief motivation-enhancing strategies. The brief motivational intervention is specifically designed to increase participants' awareness of health risk and readiness to change and to mobilize participants' use of their own resources for smoking and/or alcohol-related behavior changes. In developing the brief motivational intervention, great care was taken to approximate the "spirit" of motivational interviewing (Miller & Rollnick, 1991; Rollnick & Miller, 1995), although there is no direct human contact between the video doctor and the participants. The artificial nature of our brief motivational intervention potentially challenges the assumption that a computer cannot replace the helping relationship around which motivational interventions are built (Rollnick, 1996).

In the following section, we describe in sequence the motivation-enhancing strategies used by the video doctor in the order participants experience them. Figure 2 provides one of myriad possible examples of the video doctor delivering a brief motivational intervention; this particular intervention is for a problem-drinking woman who is not ready to change her drinking behavior.

Personal Feedback

Based on participants' responses to the health-risk questions, the video doctor presents personalized feedback in regard to the average number of cigarettes smoked per day and/or the average number of standard drinks of alcohol consumed per week (see Figure 2). This feedback is then compared with normative reference data from the general U.S. population. The personal feedback is delivered in a neutral, objective manner and is supported by a visual graphic showing, for example, how the participants' drinking compares with other men or women in the United States. Other studies demonstrate that providing clients with personal feedback regarding their individual status can be a powerful catalyst for change (Agostinelli, Brown, & Miller, 1995; Bien et al., 1993; Brown & Miller, 1993; Miller, Sovereign, & Krege, 1988).

Information Exchange

Participants identified as problem drinkers are presented recommendations for low-risk drinking (U.S. Department of Health and Human Services, 1995) and the risks associated with heavy drinking (see Figure 2). Possible dependent drinkers are presented this same information along with information on the signs and symptoms of alcohol dependency. Current smokers are presented information on the risks associated with smoking and statistics about the number of people who have successfully quit. This information is presented in a neutral, objective manner and is supported by visual graphics.

Patient-Centered Advice

Depending on participants' smoking and/or alcohol risks, the video doctor offers—in an empathic, nonjudgmental manner—a simple, patient-centered advice message (see Figure 2).

Agenda Setting

For participants who are current smokers and problem or possible dependent drinkers, the video doctor

"Thank you for taking the time to answer my questions."

Asking permission

"Based on your answers, I was hoping to spend a couple more minutes sharing some information with you about alcohol. Would that be OK?"
[Participant says "yes."]

"All right, let's continue."

"As you might guess, I want to talk with you about alcohol because I'm concerned that your current drinking habits may be putting your overall health at risk."

"My hope is that the information I'm about to share with you will support you in making decisions about drinking that are best for you."

Personal feedback

"Your answers to the questions about alcohol indicate that you're currently drinking about 17 to 21 drinks of alcohol a week."

"To give you an idea of how your drinking compares with other American women, National Alcohol Surveys suggest that women drinking between 17 to 21 standard drinks of alcohol per week are at what's called the 96th percentile. In other words, if there were 100 women in this room, on average, 96 of them would drink less than you and 4 would drink more than you."

Information exchange

"For the majority of women who choose to drink, experts are recommending that you have at least 2 days a week when you do not drink and that you have no more than one standard drink in a day."

"Just so you know, a standard drink is 12 ounces of regular beer, a 5-ounce glass of wine, a 12-ounce wine cooler, or 1.5 ounces of liquor in a shot or mixed drink. Each of these drinks contains about 1/2 an ounce of pure ethyl alcohol."

"Research studies suggest that women who drink more than what's recommended suffer many more diseases, accidents, and family and work problems than do light drinkers or nondrinkers."

"Experts strongly recommended that a woman not drink any alcohol

if she's pregnant, trying to get pregnant, or breast-feeding;
if she is taking a medication that interacts with alcohol; ask your doctor if you are unsure;
if she is driving or doing anything else that requires coordination and judgment; or
if a certain medical condition is present, such as heart disease, diabetes, or ulcers.
Experts also strongly recommended that a woman who is alcohol dependent not drink any alcohol."

Patient-centered advice

"So—based on your current drinking habits—and more importantly, on my own experience with my patients—I strongly encourage you to consider following these drinking guidelines, which may mean cutting back on the amount of alcohol you generally drink and/or not drinking in certain situations. I recognize, however, that only you can decide to change your drinking."

Asking permission

"Would it be OK if we spent a few more minutes talking about your drinking?"
[Participant says "yes."]

"All right, let's continue."

Assessment of readiness to change

"To help me understand how you feel about your alcohol use, I have a question for you: On a scale of 0 to 10, where a 0 means not at all ready and a 10 means extremely ready, how ready would you say you are to consider—sometime in the near future—cutting back on the amount of alcohol you generally drink?"
[Participant picks a 2]

"I'm assuming you picked a 2 because you are not ready to make a change. Am I understanding you?"
[Participant says "yes."]

(continued)

FIGURE 2   Brief Intervention 2: Brief Motivational Intervention (female, problem drinker, consumes 18 standard drinks per week, not ready to cut back)

Tailored message

"I appreciate your honesty and can understand that you're not in a place to be ready to cut down on the amount of alcohol you generally drink. I know from experience that it's not easy to make the decision to cut down on drinking. But I'm confident that if there comes a time when you make a firm decision to do so—and you stick with that decision—you'll find a way to do it. And the good news is that there are a number of different ways a person may go about making a change in their drinking."

Asking permission

"If you're interested, I'd like for you to receive a general information pamphlet on alcohol that outlines options and resources for making drinking-related changes. Would you like to receive this pamphlet?"

[Participant says "yes."]

"OK, at the end of your appointment, the research assistant will ask you several more questions. At this time you will receive the pamphlet. Take care and good luck."

FIGURE 2 (continued)

asks them to identify which behavior they think is affecting their health the most. When asking the agenda-setting question, a visual graphic showing two circles appears on the screen: one contains the word *smoking* and the other *alcohol*. This strategy is based on a strategy outlined by Stott et al. (1995) and Rollnick et al. (1999).

Asking Permission

Midway through the brief motivational intervention, participants are asked if they would be willing to spend a few more minutes continuing to talk about their identified risk behavior and in the case of participants who are at risk for both behaviors, the behavior they have personally identified as especially problematic (see Figure 2). For participants who decline to continue, the video doctor immediately concludes the encounter by thanking the participants and asking if they would like to receive a risk-specific pamphlet.

We believe that "asking permission" will enhance participants' perception of personal control and freedom as well as their receptivity to the video doctor's message.

Assessment of Readiness to Change

The video doctor presents participants with a visual graphic of a "readiness ruler" numbered 0 to 10 (Butler et al., 1999; Rollnick et al., 1997) and asks them to select the number that best describes how ready they are to consider the following options: (a) quitting smoking, (b) cutting back on the amount of alcohol they generally drink, or (c) giving up drinking alcohol completely (see Figure 2). After participants select a specific number, the video doctor asks a confirmation question to determine if the number chosen corresponds to an assumed stage of change (e.g., "I'm assuming you picked that

number because you have mixed feelings about cutting back on your drinking? Am I understanding you?"). If the participant says "Yes," the video doctor proceeds to offer a tailored message. If the participant says "No," the video doctor asks an additional question to determine readiness to change (e.g., "Oh, could you tell me which of the following best describes your current feelings about quitting smoking? Are you not ready to quit smoking? Do you have mixed feelings about quitting smoking? Or are you ready to quit smoking?").

Tailored Messages

Following a determination of participants' readiness to change a specific behavior, the video doctor presents one of the following three tailored messages: (a) not ready to change, (b) unsure about change, or (c) ready to change (see Figure 2).

Not ready to change. The not-ready message includes the following elements: (a) showing appreciation for honesty, (b) acknowledging the challenge in making a decision to change behavior, (c) voicing confidence in ability to change when a committed decision is made, (d) emphasizing the good news that there are a number of different ways a person may go about making change, (e) offering pamphlets, and (f) thanking the participant for taking the time to hear recommendations.

Unsure about change. The unsure message includes the following elements: (a) validating the normalcy and naturalness of feeling unsure about making behavior change, (b) suggesting a process of thinking about—and writing down—the good and not-so-good things about changing behavior, (c) acknowledging the challenge in making a decision to change behavior, (d) voicing confidence in ability to change—when a committed decision is made, (e) emphasizing the good news that there are a

number of different ways a person may go about making change, (f) offering pamphlets, and (g) thanking the participants for taking the time to hear recommendations.

Ready to change. The ready message includes the following elements: (a) offering congratulations for making a decision to change, (b) affirming that the first step in making a change is making a firm decision and commitment, (c) suggesting a process of thinking about—and writing down—all of the personal reasons why making a change is important, (d) recommending the development of a change action plan, (e) voicing confidence in ability to change—when a committed decision is made, (f) validating the possibility of set-backs and how each attempt at making change brings one closer to the goal, (g) emphasizing the good news that there are a number of different ways a person may go about making change, (h) offering pamphlets, and (i) thanking the participant for taking the time to hear recommendations.

For the three identified risks (smoking, problem drinking, possible dependent drinking), the tailored messages follow a similar format except for minor variations. The tailored messages for possible dependent drinkers, for example, include an additional advice statement (e.g., "It's obviously your decision—but to play it safe—I would strongly encourage you to talk with your doctor about your drinking or consult with an alcohol specialist").

▶ PROJECT CHOICE PILOT STUDY

Methods

To evaluate the feasibility and acceptability of the video doctor computer program, we conducted a pilot study among 52 participants randomized into Project Choice. After meeting with the video doctor, participants were interviewed by a research assistant and asked questions about their perceptions of the video doctor computer program, of the actor-portrayed video doctor, and about receiving the video doctor's health risk assessment and intervention. The majority of questions were assessed on 7-point Likert-type scales (from 1 = low to 7 = high) with anchor statements at the extremes. A few questions were asked in a multiple choice or open-ended format. Depending on whether participants were randomized into the control or intervention conditions, the structured interviews lasted 5 to 15 minutes.

All participants were asked questions about their perceptions of the video doctor computer program ("On a scale of 1 to 7, was the video doctor computer program easy to use?"), the actor-portrayed video doctor herself ("On a scale of 1 to 7, how much did you like the video doctor?"), and their perceptions about receiving the health risk assessment and/or brief intervention from a video doctor ("On a scale of 1 to 7, how comfortable were you in discussing personal health matters with the video doctor?"). Intervention participants were asked

FIGURE 3   Participants' Perceptions of the Acceptability and Feasibility of Computer Program and Video Doctor (*n* = 52)

additional questions in each of these categories particular to their experiences (e.g., "On a scale of 1 to 7, do you think you'll follow the video doctor's recommendations for quitting smoking?").

Results

The 52 participants ranged in age from 18 to 65, with approximately equal proportions of men (25) and women (27). A total of 48% were African American, 23% Caucasian, 12% Latino, 10% Asian, and 8% other. Of the participants, 16 were randomly assigned to the control group and 36 to one of the two interventions. A total of 31% were current smokers, 40% were drinking at risky or hazardous levels, and 29% were a combination of both.

Consistent with the literature, research assistants reported that the video doctor computer program generated a lot of interest from other patients waiting for appointments in clinic waiting rooms and that this interest subsequently facilitated recruitment of a convenience sample. Virtually all intervention-group participants were able to complete the video doctor program without assistance and in a relatively short amount of time, ranging from 3 minutes for those who received the advice message to 17 minutes for those who received the brief motivational intervention. Both research assistants and clinic staff members reported that the computer program had a negligible impact on clinic patient flow.

Figure 3 summarizes the acceptability and feasibility of the video doctor computer program and the video doctor herself: Participants liked the program (mean = 5.69 on our 7-point scale) and the video doctor (mean = 6.13), found the program easy to use (mean = 6.79), and reported encouraging perceptions about their intent to change their behaviors after receiving the intervention (smokers, mean = 5.94; alcohol users, mean = 4.42). In addition, participants found interacting with the program to be a private experience (mean = 5.95), believed it took the right amount of time to complete (mean =

5.71), were confident that personal information given to the video doctor would be kept confidential (mean = 5.94), and found the program entertaining (mean = 5.25) and the graphics and visual images easy to understand (mean = 6.80). Those participants who were randomized into the intervention believed they learned something new from meeting with the video doctor (mean = 4.90). Despite this overall positive response to the program, 72% of participants said they would be more comfortable answering questions about personal health from a "real doctor" compared with a video doctor and 71% said they believe a "real doctor" would do a better job of offering patients recommendations about wellness and healthy living than would a video doctor.

Participants perceived the video doctor to be clear and understandable (i.e., her voice) (mean = 6.85), authentic (mean = 6.09), warm and/or friendly (mean = 6.23), respectful (mean = 5.95), collaborative (mean = 6.00), knowledgeable (mean = 6.47), professional (mean = 6.61), and as having excellent communication skills (mean = 6.57) and pleasant facial expressions (mean = 6.57). In addition to feeling comfortable talking with her about personal health matters (mean = 6.25), participants reported they were completely honest in answering her questions (mean = 6.94) and interested in meeting with her in the future (mean = 5.97). Participants also indicated they would have met with the video doctor even if not offered a gift certificate (mean = 5.71), were neutral about choosing a video doctor of a certain race or sex (mean = 4.2), and would be interested in meeting with the video doctor at home or on the Internet (mean = 5.83).

▶ DISCUSSION

Although we have yet to determine if the two brief interventions described in this article influence patients' smoking and/or alcohol behaviors, we can report that the state-of-the-art video doctor computer program was well received and widely accepted by participants—and that those who received the intervention believed they would change their behaviors. Overall, participants found the program interesting, engaging, easy to use, and valuable as a way to receive health information and recommendations; most said they would recommend it to friends and family. Research assistants in the clinic waiting rooms reported that even older participants and those who had little or no computer experience completed the program with ease and were eager to meet with the video doctor. Although the majority of our participants reported they would feel more comfortable answering personal questions and talking about wellness and health behavior change with a "real doctor," prior research has found that patients are more likely to actually disclose sensitive information and personal health information to computers than to human interviewers (Gerbert et al., 1999; Turner et al., 1998).

The positive results from our pilot study are consistent with the literature and suggest that our interactive, multimedia video doctor program could be a powerful tool to support overburdened providers in meeting their goals of improved screening for alcohol and tobacco use. To realize this potential, we are currently developing a plan to integrate our video doctor program into primary care practice as part of routine care. The staff members at the health care setting will direct patients with scheduled appointments to the video doctor, and patients will administer the program on their own in the waiting room. After the program is completed by the patients, the program will produce a report to be placed in the patients' medical records that contains a summary of the patients' risk behaviors and readiness to change as well as an easy-to-follow script that offers providers targeted prevention messages that will reinforce messages from the video doctor. These modifications to the current research design of the video doctor program will allow the program to be built into patients' routine scheduled appointments and will maximize the use of the technology in conjunction with the efforts of providers. If one or both of the brief interventions prove effective in reducing patients' smoking and/or alcohol risks, routine assessment and brief intervention could be seamlessly integrated into primary care practice.

The video doctor program has limitations and strengths. Because the program is designed for use in clinics and focuses specifically on assessing and changing individuals' smoking and alcohol behaviors, it does not offer patients the access, information scope, and flexibility of computer-based health educational programs on the Internet. Video doctor technology, however, could direct patients who want further information to relevant computer-based educational Web sites. The video doctor assessment and intervention does take advantage of the credibility and influence that physicians bring to the patient-provider encounter by allowing patients to interact with the image of a physician. Although an actor-portrayed video doctor may never be able to approximate the subtle interpersonal qualities and human dynamics that invoke and inspire behavior change (Miller & Rollnick, 1991), branching logic allows the video doctor to respond accurately to patient input and to tailor intervention messages to the patient, thereby simulating an interview with a live person. Video doctor computer programs in health care settings also generate interest and attract individuals to participate, can be easily and privately used by patients in waiting rooms prior to their medical appointment, give patients the message that their risk behaviors are of concern to their health care professionals, and potentially provide staff members and physicians in these settings with a learning model for effective communication and counseling skills.

Perhaps the most promising advantage of video doctor technology is that there is no human fallibility, time pressure, or inconsistency in delivery or style. The

video doctor computer program guarantees a consistent display of the physician communication style related to positive patient outcomes (Hall, Roter, & Katz, 1988; Stewart, 1995). It also guarantees a high degree of fidelity in the assessment of health risks and in the delivery of quality interventions across varying populations.

We recognize that video doctor technology may not be financially feasible for some primary care providers (e.g., initial start-up costs may not be available in some underresourced clinics). Given the physician barriers to screening and intervening with alcohol and smoking, we strongly urge health care settings to find other ways to support physicians and augment patient care in this area. The intervention principles outlined in this article could be incorporated into a written or audio video doctor assessment or could be used by a nonphysician staff person who would deliver the assessment and/or intervention prior to the patient's appointment. We want to emphasize, however, that the ongoing costs of implementing the video doctor program would be low, whereas the benefits to patients may be high.

This pilot study revealed a noteworthy difference between smokers and problem drinkers in their beliefs about whether they would follow the video doctor's recommendations for making change. Smokers' intentions to quit were somewhat stronger than were problem drinkers' intentions to reduce their drinking. Compared with the perceptions of the smokers, the drinkers in our sample may be more resistant to changing their risk behaviors, perhaps because they are less convinced that their drinking is problematic or because they perceive their drinking to be less risky to their overall health (Becker, 1974; Rogers, 1975; Sjoberg, 1998).

CONCLUSION

Innovative, effective ways to support physicians in screening and intervening with their patients to change health-risk behaviors must be implemented and evaluated without delay. The positive results from this survey of participants' experiences in using a video doctor computer program for assessing health risks and for delivering brief smoking and/or alcohol interventions indicate that it was well received and that it potentially provides a practical way to support providers' efforts to reduce their patients' smoking and alcohol use that would be cost-effective in the long term.

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