

Evaluation of Physical Activity Counseling in Primary Care Using Direct Observation of the 5As

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ABSTRACT

BACKGROUND The 5As (ask, advise, assess, assist, arrange) are recommended as a strategy for brief physical activity counseling in primary care. There is no reference standard for measurement, however, and patient participation is not well understood. This study's objectives were to (1) develop a coding scheme to measure the 5As using audio-recordings of primary care visits and (2) describe the degree to which patients and physicians accomplish the 5As.

METHODS We developed a coding scheme using previously published definitions of the 5As, direct-observation measures, and evaluation of audio-recorded discussions of physical activity. We applied the coding scheme to 361 audio-recorded visits by patients reporting low levels of physical activity and 28 physicians in northeast Ohio.

RESULTS The coding scheme achieved good inter-rater agreement for each of the 5As ($\kappa = 0.62$ -1.0). A total of 135 visits included discussion of physical activity. Although ask tasks occurred in 91% of visits, it infrequently elicited sufficient detail about current activity. Patient readiness to change physical activity (assess) was infrequently directly elicited by the physician (24%), but readiness was commonly expressed by the patient in response to an assessment of current level of physical activity (53%). Ambivalence was infrequently followed by physician assistance (49%).

CONCLUSIONS Our newly developed measure showed that (1) physicians infrequently assess patient readiness to change, (2) patient expressions of ambivalence are common, and (3) specific mention of recommended guidelines for exercise is nearly absent. Future work should increase clinician skills in exploring ambivalence and readiness to change, as well as improve explicit mention of recommended guidelines for physical activity.

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INTRODUCTION

With a high prevalence of obesity in the United States,¹ primary care faces an ongoing challenge and opportunity to translate promising physical activity interventions into practice.² Current recommendations are for all healthy adults aged 18 to 65 years to obtain moderate-intensity aerobic physical activity for a minimum of 30 minutes a day for 5 days a week, vigorous intensity activity for a minimum of 20 minutes a day for 3 or more days a week, or a combination.³

The 5As (ask, advise, assess, assist, arrange) are a framework for clinicians to ask about current behavior, advise a change, assess readiness to change, assist with goal-setting, and arrange follow-up. The 5As have been endorsed as a unifying framework for behavioral counseling in primary care.⁴⁻⁸ The level of evidence is moderately strong for several health behaviors⁵ and is growing for physical activity.⁹⁻¹¹ Despite a growing evidence

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base supporting use of the 5A guidelines,^{5,12} health care clinicians have difficulty with implementation. Competing demands for limited time often push primary prevention to the bottom of the agenda for many routine primary care visits.¹³ Yet because primary care clinicians are a major source of health behavior advice, strategies to improve their ability to counsel patients effectively are needed. Understanding the degree to which the 5As are accomplished can identify both gaps and opportunities in physical activity counseling in primary care and can guide development of future interventions to improve physical activity counseling.

Delivery of the 5As has been evaluated from medical records abstraction and patient or physician self-report. Each method is vulnerable to biases and inaccuracies.¹⁴ Direct observation methods involving audio- or video-recording the interaction have been identified as the reference standard.¹⁵ The 5As have been traditionally conceived of as a physician-focused framework for communication with little emphasis on patient participation. Yet, patient engagement in discussions of physical activity may support initiation and maintenance of behavior change.¹⁶ For various health behaviors, patients contribute to the 5As by specifying a realistic goal and action plan for change, problem-solving about anticipated challenges, and identifying strategies for support.¹⁷ For all of these reasons, we sought to develop a new means to assess physical activity discussion using directly observed, audio-recorded data that incorporated both patient and physician participation.

The goal of this study was to examine patient-clinician physical activity discussions according to the 5As framework. Specifically, our objective was to develop and apply a new coding scheme to measure the 5As for physical activity counseling using audio-recorded patient-physician discussions.

METHODS

This study had 2 phases: (1) development of our coding scheme, and (2) application of our coding scheme to audio-recorded primary care visits. Details on data collection procedures for audio-recorded visits used for both phase 1 and phase 2 of this report have been previously published.¹⁷ Briefly, adult patients (aged 18 to 70 years) scheduled to see a participating physician during data collection days received a letter and a telephone call inviting their participation in the study. Patients who agreed participated in a previsit telephone survey to assess health risks and behaviors including physical activity level. On the day of the scheduled visit, a data collector confirmed patient consent and accompanied the patient in the examination room to audio-record the visit.

The physician sample consisted of 28 physicians in northeast Ohio drawn from practices in the Research Association of Practices (RAP), a practice-based research network. Eligible patients (n = 361) were adults scheduled for routine follow-up, health care maintenance, or chronic care visits. Physicians were blinded to both the study hypotheses and the content of the patient survey instrument. To assess whether the survey topics or the presence of the observer biased the discussion in the visits, we asked patients whether the observer's presence altered the content of the visit; 86% said not at all, and 8% said very little.

The initial steps for developing the coding scheme (phase 1) involved reviewing published definitions of the 5As⁵ and examining prior direct-observation measures of the 5As¹⁷⁻¹⁹ to refine definitions and coding rules suitable for audio-recorded discussions of physical activity. Earlier work examining the 5As for smoking found that patients contributed to accomplishing some of the 5As^{17,20}; therefore, the coding scheme for the 5As for physical activity incorporated patient contribution to accomplishing the 5As. Drawing from a sample of 135 office visits with audio-recorded discussions of physical activity, we used the preliminary template to code an initial sample of 10 discussions. An eligible discussion could be as brief as the statement, "What do you do for exercise?" These 10 cases were reviewed, and the coding scheme was further refined with 2 more sets of 5 cases analyzed. During this iterative process, we selected physical activity examples for each of the 5As to illustrate and operationalize the coding scheme. The coding definitions for the finalized 5As coding scheme are summarized in Table 1. During the development phase, a few other features of the physical activity talk were also noted as potentially important: patient's current physical activity status; patient's expression of willingness, unwillingness, or ambivalence to change; talk involving barriers to improving physical activ-

Table 1. Operationalized Definitions of 5As for Assessment From Audio-Recorded Discussions of Physical Activity

Task	Definition
Ask	Identification of current behaviors related to physical fitness by the physician or by the patient
Advise	Recommendation, by the physician or the patient, that the patient would benefit from increased physical activity
Assess	Determination of the patient's readiness and/or willingness to change his/her physical activity status—made by either physician or patient
Assist	Construction of a specific goals and/or plan of action for the purposes of improving physical activity status—by the physician or patient
Arrange	Establishment, by either the physician or patient, of a method of follow-up to track the patient's progress

ity status, and mention of the recommended level of physical activity. Codes for these variables were developed using a process similar to that described above. The category of ambivalent was defined as a patient's expression of neither willingness nor unwillingness to improve his or her physical activity status, but rather a conflicted or uncertainty about changing physical activity. Details of the coding process and examples are included in the coding manual (Supplemental Appendix, available at <http://www.annfammed.org/cgi/content/full/9/5/416/DC1>).

Phase 2 was the application of our coding scheme to a sample of audio-recorded office visits. A total of 361 patients reported in the previsit survey that they did not meet the recommended level of physical activity (at least 30 minutes of moderate activity 5 days a week).^{21,22} Physical activity was discussed in 135 of these cases. From this group (n = 135), we chose a random subsample of 21 physical activity discussions (separate from the phase 1 sample), which were coded by 2 raters to generate a κ statistic as a measure of inter-rater agreement for each of the 5As. The κ statistics were in the very good to excellent range: ask = 1.0, assess = 0.62, advise = 0.81, assist = 0.72, and arrange = 1.0.

For the analysis, we calculated the frequency and the percentage of each of the 5As accomplished by the patient vs the physician. SPSS 17 (SPSS Inc, Chicago, Illinois) was used to manage the data and to generate the output. We also examined the frequency of patient ambivalence for changing physical activity and physician responses to patient ambivalence. One rater coded all of the cases, a second assisted in the development of the coding scheme and coded the randomly selected cases for the reliability assessment. Two authors assisted in resolving cases that were difficult to code. The study procedures were approved by the Institutional Review Board of University Hospitals of Cleveland.

RESULTS

Sample Characteristics

Participating physicians (n = 28) were 50% female and trained in internal medicine (71%) or family medicine (29%). More than one-half (57%) were white, 32% were black, and 11% were of other race/ethnicity. The average number of years since residency completion was 14 years. Table 2 shows sociodemographic and health characteristics of participants (n = 135). The mean age was 54 years, 67% were white, and 26% were black participants. Educational attainment was high overall, with 84% having had at least some college education or greater. High blood pressure and high cholesterol levels were the most commonly reported chronic conditions (52% and 47% of participants, respectively).

Overall Discussion of the 5As for Physical Activity

Table 3 shows the frequency for each of the 5As. Overall, there were 135 discussions of physical activity among the 361 patients who reported in response to the survey that they did not meet the physical activity guidelines (37% of total eligible patients). Ask tasks occurred in 91% (n = 123) of discussions. Although 44

Table 2. Patient and Visit Characteristics (N = 135)

Characteristics	No. (%)
Patients	
Age ^a	54.1 (10.1)
Race	
White	89 (66.9)
Black	34 (25.6)
Other	10 (7.5)
Hispanic	2 (1.5)
Female	99 (73.3)
Education	
High school diploma or less	29 (21.5)
Some college	47 (34.8)
College degree	38 (28.1)
Graduate degree	21 (15.6)
Chronic conditions	
Diabetes	28 (20.7)
High cholesterol level	63 (46.7)
High blood pressure	70 (51.9)
Heart disease	7 (5.2)
None of the above conditions	33 (24.4)
Self-reported health status	
Excellent	16 (11.9)
Very good	47 (34.8)
Good	46 (34.1)
Fair	20 (14.8)
Poor	6 (4.4)
Visits	
Visit duration, min ^a	23.0 (11.1)
Visit type	
Acute care	30 (22.2)
Chronic care	63 (46.7)
Well-care	42 (31.1)

^a Mean (SD) reported for continuous variables.

Table 3. Frequency of 5As Tasks Among 135 Discussions of Physical Activity

Task	Accomplished n (%)	Accomplished by Patient n (%) ^a
Ask	123 (91)	44 (36)
Advise	71 (53)	9 (13)
Assess	76 (56)	48 (63)
Assist	52 (39)	9 (17)
Arrange	8 (6)	0 (0)

^a The number of instances accomplished by the patient divided by the total number of instances accomplished (eg, 44/123 = 35.7%).

of the patients (36%) in the 123 discussions reported being physically active to the physician, the exact level of activity (such as type, duration, intensity, or frequency) was rarely specified. Advise tasks occurred in 53% (n = 71) of the physical activity discussions, and assess readiness tasks were accomplished in 56% (n = 76) of the discussions. Assist tasks were observed in 39% (n = 52) of the discussions, and arrange tasks occurred during 6% (n = 8) of the discussions.

Patterns of Patient Participation in 5As Discussions

Among the 5As, patients were least likely to contribute to arrange (0%) and advise (13%) tasks. Patients were most likely to accomplish an assess task (63%), that is, unprompted, they provided information indicating readiness or not to change. When patients accomplished an assess task, it was commonly (53%) in response to a physician ask task—that is, rather than providing a response

about their current physical activity status, patients commented on their intention or desire to do more, or commented on perceived barriers to doing physical activity. In the remainder of cases (47%), patient assess task comments consisted of either introducing the topic of their readiness to change (31%) or expressing ambivalence about changing. Only 5 patients (6%) explicitly expressed an unwillingness to change.

Ambivalence

We defined ambivalence as a patient's simultaneous expression of (1) an understanding of the importance of increased physical activity and (2) uncertainty or reluctance about changing his or her physical activity. Of the total number of patient assess statements (n = 76) during the physical activity discussions, 37 (48%) contained an expression of ambivalence.

Among the patients with ambivalent responses, most (78%, n = 29) were not active. Among this group, ambivalence was expressed through their difficulty in getting started with exercise despite an awareness of its importance (Table 4, examples 1 and 2).

Most ambivalent patients (62%, n = 23) tended to describe the barriers they experienced (Table 4, example 3). For a smaller group of patients expressing ambivalence and also reporting current physical activity (22%, n = 8), their expression of ambivalence regarding readiness to increase physical activity often took the form of frustration with their ability to do more (Table 4, example 4)

Physician Response to Patient Ambivalence

In about one-half of the instances of patient ambivalence (n = 19 of 37, or 51%), the physician offered limited assistance. In such cases, the physician assisted by briefly (1) acknowledging barriers brought up by the patient, (2) problem-solving about ways to overcome barriers, and (3) providing specific suggestions or resources. Table 4, example 5 shows a typical level of physician assist. In the other 49% of cases, however, there was no physician assistance provided to the patient, as shown in Table 4, example 6. In cases such as example 6, in which a patient expressed ambivalence and the physician did not provide assistance, physicians' responses were often avoidant, vague, and dominating, usually by changing the subject. When the conversation was redirected to another topic, the patient did not raise the subject again in the visit.

Table 4. Selected Quotations From Patient-Physician 5As Discussions

Example 1	Patient: I have to try to figure out a way to make myself do the exercise I need to do.
Example 2	Physician: You like to exercise, or...? Patient: Exercise, yes. I know I need to, and I just can't [laughter] make myself do it.
Example 3	Patient: See the big problem is I work the 3 to 11 pm shift. And I'll typically wake up later and then I usually don't eat before I go to work. I'll have something at work, and then I'll go home and eat, and I know that's terrible, cause then I go to bed.... You know I, I do understand that (I need to improve exercise), but it's hard, just hard to break out of routine.
Example 4	Patient: I walk the dogs regularly...it's not enough to get my heart rate up, because you know, they stop and sniff... But what I'm trying to do is use an exercise bike. But I'm minimally successful with that...it's not a knowledge deficit. I mean, I know what I need to do. It's [laughter], it's a performance deficit. It's clear to me that I need more of that moderate exercise.
Example 5	Physician: Okay, now are you exercising regularly? Patient: Okay, no. Physician: Oh, I guess it's kind of hard with 4 kids. Patient: If chasing 4 kids count, then yes. But I know that probably is not on the list. Physician: You know, 30 minutes of dedicated exercise—it would be great if you could put them in a stroller and just go for a walk.
Example 6	Physician: Are you exercising regularly? Patient: Not like I should. No. Physician: No? All right, I suppose <laughter> that's true for most of us. Patient: [Laughter] Physician: Is that <laughter> is that something that you can start to get into? Patient: [Sigh] I'm going to try to do better. Physician: Okay. All I ask is that you try, you know, so and then, um, a quick question for you. It looks like you're coming up due for a mammogram?

DISCUSSION

Using a newly developed coding scheme to measure audio-recorded patient-physician 5As discussions, we found it to be a robust and reliable measure. When we

applied the scheme to a sample of patient-physician discussions about physical activity, we found that patients actively participated in 4 of the 5 As (ask, advise, assess, and assist). Our most salient findings were that (1) assessment of patient readiness to change was rarely elicited by the physician directly; instead, it was revealed by the patient; and (2) patient ambivalence about change was common, and physician response to ambivalence was split between limited attempts to offer assistance or no attempt to offer assistance. We also found that the duration and intensity of physical activity was not clearly specified either in the patient report or the physician recommendation. The overall frequency of (any) 5As talk about physical activity (38%) was within the range of 20% to 87% reported in other observational studies.^{18,19,23,24}

The finding that patients actively contribute to accomplishing the 5As (rather than merely being passive recipients of physician counseling) is encouraging, as was our finding that it was common for patients to be willing to consider changing their physical activity. Other work has shown that improving patient engagement may be useful in promoting behavior change²⁵; physical activity discussions with physicians may prime patients, making them more open to considering change.²⁶ We also found, however, that physician responses to ambivalence were limited or absent. One explanation is that physicians may interpret expressions of ambivalence as patient unwillingness to change, and that further discussion is therefore likely to be unproductive. Another explanation is that physicians may consider exploration of ambivalence to be outside their scope of practice, skill set, or time availability; these latter barriers have been reported elsewhere in the literature extensively.^{4,27,28} Though our study did not have data available on physician perspectives, other well-documented barriers to physician counseling include lack of confidence, knowledge, and time, as well as uncertainty about billing and coding.²⁷ Indeed, other reports have also shown that 5As are limited in discussions about diet, exercise, and weight loss, especially for the assist and arrange tasks.^{18,19,29,30}

Understanding patient participation in 5As discussions is both a challenge and opportunity to improve the quality of clinical counseling. A focus group study of obese African Americans³¹ provides support for the importance of physicians first inquiring about readiness to change and exploring attitudes about behavior change (in that study, weight loss) before proceeding with specific recommendations. Physician use of a patient-centered approach has been shown to be associated with patient intention to exercise.²⁰ Exploring ambivalence is an important feature of patient-centered physical activity discussions. Patient-centered com-

munication skills may be particularly helpful when physical activity is discussed in the context of weight management, as it is common for patients and physicians to have discrepant perceptions regarding weight. For example, one study found that patients were more intrinsically motivated to change than their physicians predicted.^{20,32} Physician use of the 5As could be more effective by noting and responding to patient cues, such as expressions of ambivalence. Motivational interviewing—*noting, discussing, clarifying, and ultimately resolving the source of a patient's ambivalence*—as opposed to prematurely concluding a patient is unmotivated may give the physician an opportunity to engage the patient in strategizing about next steps to consider for change.

The 5Rs (relevance, risks, rewards, roadblocks, repetition) provide a motivational interviewing framework to help clinicians elicit talking about change for ambivalent patients or those unwilling to change. The role of the 5Rs is supported in the smoking cessation literature. The 5Rs could help address ambivalence about physical activity because the 5Rs promote problem solving, identification of reasons to change, and rewards associated with change. A recent meta-analysis indicated that motivational interviewing techniques outperformed traditional advice-giving in approximately 80% of the studies reviewed, with an effect seen for 8 of the 10 weight loss and physical activity studies reviewed.³³ Future work examining the 5As should include evaluation of the 5Rs and strategies for addressing patient ambivalence.

Interventions directed at physicians, patients, and other health professionals using the 5As to promote physical activity are promising.^{9-11,34-36} Though physician involvement in the 5As interventions has varied, results have been effective overall. Huang et al³⁷ showed that patients who recalled having received weight loss counseling from their physicians were more likely to have a greater readiness to change and be engaged in weight loss activities. Strong associations were found between physicians' counseling and patients' understanding of the need to lose weight, desire to lose weight, and current weight loss activities, even when controlling for age, sex, race, body mass index, and literacy level. In the STEP trial,¹¹ the intervention arm focused on physicians delivering all of the 5As for increasing physical activity, and those patients then made significant improvements in cardiorespiratory fitness at 6 and 12 months compared with controls.

Other work shows that the last 2 of the 5As, assist and arrange, may be best achieved by collaboration with health educators, clinical psychologists, community programs, or other health care personnel, given the competing demands that primary care clinicians

often face.^{2,5,12,38-40} This, however, is a double-edged sword in the sense that if such resources are not available to clinicians, it may undermine clinician motivation to use the 5As in a typical busy office visit.

Certain limitations and strengths of this study should be kept in mind. First, this study was conducted with community primary care physicians and patients in northeast Ohio, which may not be generalizable to other settings. Our data came from cross-sectional, audio-recorded discussions during single visits. A longitudinal study audio-recording multiple continuity visits would be of great value, though it would labor-intensive to undertake. Ethnic minority groups, such as Hispanics and Asians, were represented by only a few participants in our sample; thus, we cannot comment on how translatable the 5As might be for diverse ethnic and linguistic populations. Although the overall interrater reliability of the coding scheme was excellent, we found that assess had the lowest κ value (.62), largely because of the indirect way physicians elicit patients' willingness to change and the often vague way in which patients responded. Thus, assess was the most challenging of the 5As to document.

A major strength of this study was the use of audio-recorded visits as the primary data source, which is the reference standard for this type of communication research. Audio-recorded data shed light on the degree to which the 5As are actually happening during routine primary care visits without the biases of other indirect recall or reporting methods. Lastly, our study sample size was larger than has been reported previously.

Future research should further explore patient participation and engagement in 5As discussions. Reasons for infrequent assist and arrange tasks should be explored; they may be indicative of larger challenges, such as lack of sufficient collaborations with community programs, facilities, or other resources. For clinicians, patients' expressions of uncertainty or hesitation about change may represent an opportunity to explore the source of ambivalence and engage the patient in strategizing about next steps to consider for change.

In summary, our newly developed measure was robust and replicable. The measure allowed us to identify patterns of ineffective 5As communication and the potential promise of patient participation in 5As. Discussions of physical activity often have gaps in the 5As tasks and rarely mention specific recommended guidelines. Future work should explore strategies to improve assess tasks by eliciting patient readiness to change and develop physicians' skills to use patient ambivalence to tailor advice, and assist tasks by improving patient engagement and problem solving.

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Key words: Health behavior; physical activity; direct observation; doctor patient communication; health care delivery; health services research; health promotion; disease prevention

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