Provider and Patient Expectations for Dietary Supplement Discussions

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BACKGROUND: Dietary supplement use in the United States is common. Patients can procure supplements without a prescription, and often do not disclose supplement use to their healthcare providers. Providers and patients may be uncertain about what would be appropriate or helpful in discussions of supplements during routine office visits.

OBJECTIVE: To explore provider and patient expectations for discussions of dietary supplements.

DESIGN: Semi-structured interviews were conducted with a purposeful sample of healthcare providers from three specialties and their patients who reported taking supplements.

PARTICIPANTS: Thirty-five outpatient providers (14 primary care, six integrative medicine, and 15 complementary and alternative medicine (CAM) providers) and 107 of their patients.

APPROACH: Qualitative analysis of transcripts using grounded theory and iterative review.

RESULTS: Both providers and patients raised twelve common topics about dietary supplements that they felt were important to discuss during office visits, such as: supplements taken; supplement risks (interactions, safety/harm, side effects/adverse events); treatment benefits; efficacy; alternative treatments; and patient expectations/preferences for treatment. Some topics were mentioned more frequently by providers than patients, such as how to take, reason for taking, and evidence for use. Providers raised several topics that were mentioned infrequently by patients. Supplement costs and regulations were not brought up by any patients, even though consideration of these topics could influence patient decisions to take supplements. Complementary healthcare providers brought up topics not mentioned by primary care providers, such as the importance of supplement brands and supplement mega-dosing.

CONCLUSIONS: Patients and providers have concordant views about the need to discuss patient supplement use and ensure patient safety. Patients may undervalue, be unaware of, or discount information about cost or regulations that could affect their decision-making about supplement use. Future studies could examine the value, acceptability, and influence of a more comprehensive approach to discussions to help patients appropriately evaluate supplements.

Received September 19, 2013
Revised February 24, 2014
Accepted May 9, 2014
Published online May 30, 2014

KEY WORDS: dietary supplements; complementary and alternative medicine; provider–patient relations; communication; qualitative interviews.
J Gen Intern Med 29(9):1242–9
DOI: 10.1007/s11606-014-2899-5
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BACKGROUND

More than 50 % of Americans[1–3] and up to 64 % of those taking a prescription medication[3–5] take at least one dietary supplement. Dietary supplements are defined by the Dietary Supplement Health and Education Act (DSHEA) of 1994 as a product containing one or more of the following: vitamins, minerals, herbs/other botanicals, amino acids, or other substance used to supplement the diet.[6] Some supplements may pose substantial risk for patients with certain medical conditions,[7,8] and also may result in prescription drug-supplement interactions.[9–11] This is problematic because patients procure supplements without a prescription, and may seek information about supplements on their own, instead of turning to their providers for advice.[12,13] But these other sources of information may often minimize supplement risks,[14] make unsubstantiated health claims about supplements,[15,16] or provide harmful inaccurate information.[17–19]

Primary care providers know about their patients' medical conditions and medications, and are well-positioned to identify and advise patients about supplement–drug interactions and other potential supplement risks.[9,10,20–22] As patients become more aware about potential supplement risks, they may increasingly turn

toward providers for guidance about taking supplements. But the requisite content of provider–patient supplement discussions is unclear, and the few existing recommendations may be difficult for primary care providers to adequately address.[23–25] For example, Ashar and Rowland-Seymour proposed a six-step approach that includes discussing regulatory issues, safety/efficacy data, and risk/benefit profiles for supplements versus conventional treatments.[26] But providers may have limited knowledge about these topics, and also may have limited time to research or address these issues during office visits. In addition, it is unknown whether patients want their primary care physicians to broach all of these topics.

This study adds to the literature by investigating and comparing provider and patient expectations for communication about supplements. A better understanding of these expectations may help improve discussions with patients.[27,28] The primary goals of this study were to use patient and provider interviews to explore the expected content of discussions concerning dietary supplements, and to examine differences in expectations among primary care physicians and complementary medicine providers.

METHODS

Study Design

Data presented in this study were collected as part of a larger study on provider–patient communication about dietary supplements. Subjects were recruited and interviewed between November 2011 and May 2013. We purposively recruited conventional physicians (i.e., primary care physicians) and complementary medicine providers based on practice specialty and location. Complementary medicine providers consisted of integrative medicine physicians (i.e., physicians who indicate that they practice integrative medicine), and complementary and alternative medicine (CAM) providers (naturopaths, chiropractors, acupuncturists). Research team members presented the study during provider office meetings or telephoned providers and met with those who expressed interest in study participation. Providers practiced in academic, managed care, community health, and private practice settings around the Los Angeles metropolitan area, in a total of 33 different offices. A research assistant recruited patients of participating providers from waiting rooms on the day of an office visit. Eligible patients were aged 18 years or older, able to provide informed consent, English-speaking, and available for a telephone interview within one week of their visit.

In the larger study, we recruited a sample of 61 providers and 604 patients; we purposively sampled 35 of the 61 providers and 116 of their patients, and we conducted semi-structured interviews. These interviews provided the data for the findings reported here. Providers were sampled based on training and practice setting. We interviewed at least five of each type of provider represented in the study. Providers from 27 of the 33 offices participating in the study were interviewed, and all selected providers completed the interview. Of 116 patients selected, 107 (92.2 %) were interviewed. Eight patients could not be reached within the specified time frame, and one changed their mind due to time constraints. All but one patient selected for the interview reported on a post-visit survey that they took at least one dietary supplement (based on the DSHEA of 1994's definition, which is used by the Food and Drug Administration [FDA]) within 30 days of their office visit. That patient reported taking supplements within 12 months of their office visit. Half of the patients (n=53) disclosed their supplement use during their office visit. The study protocol was approved by the University of California, Los Angeles Institutional Review Board (IRB #11-002569).

Data Collection

All subjects participating in the larger study completed demographic surveys, and a subset participated in a single semi-structured interview by telephone. Interviews were audio recorded and transcribed. Provider and patient interviews lasted a mean of 30.3 (SD=8.4) and 30.2 (SD=8.6) minutes, respectively. Provider interviews were conducted by a medical sociologist (DAP) experienced in using qualitative methods to examine provider–patient interactions. A medical linguist (JSG) or medical anthropologist (JRG) took notes during the provider interviews, and conducted all patient interviews. Both have doctoral degrees, and were experienced interviewers serving as study project coordinators. None of the interviewers had previously established relationships with the interviewees.

Interviewers used a semi-structured interview guide and probed subjects as needed for more detailed answers during the interviews. Questions were modified slightly after each interview to prompt more detailed and valid subject responses.[29] Patients were asked to think of their own supplement use when responding to questions. Table 1 illustrates the major questions asked of subjects.

Analysis of Interviews

Two investigators (DMT, DAP) used an iterative and grounded approach to analyze the transcripts of audio recordings.[30,31] One of the investigators (DMT) is a practicing primary care physician experienced in qualitative research methods and provider–patient communication; the other (DAP) is a medical sociologist who conducted the provider interviews for this study. Beginning with a subset of transcripts, they searched for both manifest (what was

Table 1. Semi-Structured Interview Questions*

Major Interview Questions
1. If dietary supplements came up during your last office visit: a. Can you describe in as much detail as possible how supplements came up and what you talked about? b. What information about the supplements was particularly helpful to discuss? c. What recommendations were made about the supplements that were discussed? d. What would you have liked to talk about in more detail, or what didn't come up? 2. When a new medication is prescribed that may have serious interactions when taken with certain dietary supplements, who is responsible for bringing up or asking about supplement use? 3. In general, how important do you feel it is to talk about supplement use during office visits, and why? 4. What should providers talk about when supplements are brought up in office visits? 5. When is it the patient's responsibility to ask about whether a supplement might have potential problems?

Question 1 is presented as asked to patients who disclosed taking a dietary supplement during an office visit. Patients who did not disclose supplement use during their last office visit were asked to reflect upon a discussion that arose during their last few doctor's visits, while providers were asked to describe the last patient visit in which they had an extended discussion about an herbal supplement

actually said) and latent (underlying meaning of conversations) themes describing subject opinions about the content of dietary supplement-related discussions.[32,33] Each generated theme corresponded to a topic that subjects felt important to mention during office visits. The list of themes for coding transcripts was then checked against additional transcripts. Theoretical saturation, in which no new major themes emerged in the data, was reached after coding 14 patient and nine provider transcripts.[34] DMT and DAP independently analyzed transcripts, came to a consensus about recurring themes, and developed a code book to describe the themes. A third investigator (JRG) iteratively applied coding categories to all of the transcripts using ATLAS.ti 7 (Scientific Software Development, Berlin, Germany), a qualitative data analysis software program used to organize, code, and search for themes and patterns across transcripts. DMT reviewed all quotations assigned to each code to assess coding validity and consistency. Ambiguity in coding was resolved in group discussions between DMT, JRG and DAP, with attention to potential significance in the clinical context.

We examined whether topics were raised by providers or patients, and classified topics into those that were mentioned: both by providers and patients; predominantly by providers; by patients; and by complementary medicine providers.

RESULTS

Provider and Patient Characteristics

Primary care providers were mostly male (54.3 %), while integrative medicine and CAM providers were mostly female (66.7 % and 60.0 %, respectively). Integrative medicine providers were older than primary care and CAM providers, and were predominantly white (83.3 %), while primary care and CAM providers were more ethnically diverse. All of the integrative medicine providers in the study reported taking dietary supplements, compared to 93.3 % of the CAM providers and 50.0 % of the primary care providers (Table 2).

Table 2. Patient and Physician Characteristics

Characteristics	Patients *n*=107	Primary care providers *n*=14	Integrative medicine providers *n*=6	CAM providers *n*=15
Female, n (%)	73 (68.2)	5 (35.7)	4 (66.7)	9 (60.0)
Age in years, mean (SD)	49.6 (16.3)	41.3 (9.9)	51.0 (11.1)	42.5 (9.9)
Race / Ethnicity, n (%)				
White	55 (51.4)	5 (35.7)	5 (83.3)	8 (53.3)
Hispanic	20 (18.7)	5 (35.7)	0	2 (13.3)
Black	14 (13.1)	1 (7.1)	0	0
Asian	6 (5.61)	3 (21.4)	1 (16.7)	3 (20.0)
Other	12 (11.2)	0	0	2 (13.3)
Highest level of education completed, n (%)				
High school or less	2 (1.87)	-	-	-
Some college	34 (31.8)	-	-	-
College graduate	71 (66.4)	-	-	-
Type of provider seen, n (%)				
Primary care	46 (43.0)	-	-	-
Integrative medicine	23 (21.5)	-	-	-
Complementary and alternative medicine	38 (35.5)	-	-	-
Disclosed dietary supplement use during office visit, n (%)	55 (51.4)	-	-	-
Years in practice, mean (SD)	-	10.5 (8.6)	20.3 (11.5)	12.5 (8.9)
Number of patients seen per week, mean (SD) [range]	-	104.9 (55.4) [40–250]	78.3 (32.4) [30–120]	39.1 (36.7) [7–120]
Taking dietary supplements, n (%)		7 (50.0)	6 (100.0)	14 (93.3)

Patients had a mean age of 49.9 (SD=16.0), were mostly female (69.2 %), and were ethnically diverse (Table 2). Most had completed at least some college education (90.3 %). Forty-seven percent saw a primary care provider.

Topics Raised by Both Providers and Patients

Providers and patients indicated that 12 common dietary supplement-related topics should be discussed during provider–patient visits (Table 3). Nearly all interviewees believed that the supplements taken by a patient should be mentioned. Other topics frequently raised by both parties related to supplement risks: supplement–drug interactions; potential supplement side effects or adverse events; and supplement safety or harm. Many providers and patients also mentioned the importance of providers advising or providing an opinion about supplements and discussing supplement benefits.

Both groups felt that discussions about alternative or adjunct treatments were important when talking about supplements, but patients and providers spoke differently about the content of these conversations. Many patients believed that doctors should talk about alternatives to prescription medications. As one patient stated:

> …I think doctors are very…keen to just give you medicine when…sometimes a little bit of natural remedy could help. I think it is important for the doctors to know what different natural remedies are available and give that as an option (Patient 440).

Of the handful of primary care providers who mentioned discussions about alternative treatments, most cautioned that patients should understand that dietary supplements may be inferior to prescription medications. For example: "…[the supplement] might actually be a potentially inferior choice…so therefore he might not be getting the full benefit of a prescription medication" (Provider 66). Only one primary care provider mentioned discussing dietary supplements as an alternative to prescription medications. Integrative medicine and CAM providers, on the other hand,

Table 3. Examples of Supplement-Related Information that Providers and Patients Felt Were Important to Discuss During Office Visits (in Order of Frequency of Mention)

Important topics	Examples from Interviews
Raised by both providers and patients	
Supplements taken	**Provider 46**: That should be a basic question, "What supplements are you taking?" **Patient 362**: The patient should report whatever they're taking.
Advice (give opinion or recommendation)	**Provider 97**: …my place is more to advise. **Patient 971**: I would like them to reiterate, "… These supplements are okay."
Interactions	**Provider 15**: The medical provider that is prescribing a medication or prescription medication should definitely let the patient know about the potential drug interaction, so as to not take with those [supplements]. **Patient 521**: If there's something that can interact and cause damage to [a] patient, that needs to be discussed.
Benefits	**Patient 776**: I would like them to talk about the pros and the cons and how I can benefit from it.
Side effects/adverse events	**Provider 40**: Just I like to educate them that you know, just because it's natural doesn't mean there's not side effects. **Patient 425**: I think doctors and physicians should inform their patients of…potential side effects…
Safety/harm	**Provider 96**: Safety with taking them - that's where I think I try to provide…assistance and try to guide the patient. **Patient 906**: I think it's the physician's responsibility to tell [patients] what is okay and what is safe.
Directions for use	**Provider 25**: Dosage I think is—I think is helpful…
Reason for use	**Provider 58**: I like to ask…what they're taking it for.
Alternative/adjunct treatments	**Provider 97**: …certainly if there's a reluctancy to use pharmaceuticals, I will bring up the issue of some of the herbal supplements. **Patient 667**: Anytime somebody is on medication, I think herbal supplements ought to come up to find out what could be used.
Efficacy (how well it works)	**Provider 73**: We sort of talk about…the effectiveness and claims for effectiveness. **Patient 591**: …I would like for her to talk about efficacy, effectiveness…or her opinion of efficacy about that particular supplement.
Evidence for use	**Provider 12**: I also like to discuss with them just kind of what the studies have shown, if it helps if doesn't help. **Patient 618**: I'd like them to tell me about any new research they know about.
Patient expectations/ preferences	**Provider 14**: if the patient has a very strong opinion on the supplements they're taking, they should certainly make the doctor aware of that too. **Patient 363**: [The provider should ask,] "What do you expect from it?"
Raised predominantly by providers	
Source of information	**Provider 66**: Are they going based off of anecdotal evidence from friends, the internet? So sources of information are important to me.
Provider knowledge / experience	**Provider 30**: If I really don't know what…the supplement is, I tell them that I don't know what this is. **Patient 157**: I want them to be honest and tell me they don't know about it, and not just tell me not to take it.
Cost/affordability	**Provider 57**: I tell them just to be careful and not to spend a lot of money, because…that is one of my concerns.
Regulatory issues	**Provider 88**: I feel almost responsible to let them know [supplements] are not FDA regulated.

mostly advocated for supplements, and referenced the importance of giving patients information about all potential treatments. As one CAM provider stated, “I think that if you know there’s something better or there’s an alternative and you don’t bring it up, then you’re not being a good doctor. It’s all about the patient here” (Provider 15).

Providers brought up some topics more frequently than patients. These included how to take supplements, reason for taking, evidence, and efficacy for use (how well a supplement works). The latter two topics can inform patient decisions to take a supplement. Though mentioned by both groups, providers and patients talked about evidence very differently. Primary care providers mostly discussed the need to caution patients, for example, “…there’s not enough evidence or not enough research on this supplement for me to advise you to take it or not take it” (Provider 30). Patients, however, gave no indication that they considered their use of supplements had insufficient evidence.

Topics Raised Predominantly by Providers

Several supplement-related topics that providers said were important to discuss were mentioned by fewer than 5 % of the patients interviewed. Discussions about costs or affordability can help patients make informed decisions about whether they can afford the costs of a supplement. Regulatory issues were not mentioned by any patients, but a few providers raised the importance of letting patients know that supplements and prescription medications are not regulated in the same manner with potential implications for quality and safety. Some providers also advocated being open about their knowledge and experience with supplements, and telling patients when they are unfamiliar with a supplement.

Topics Raised Only by Patients

Patients raised only one topic not mentioned by providers. Several patients said they felt providers should provide feedback about the accuracy of information obtained from outside sources, such as friends, the internet, television, or other healthcare providers. As one patient stated: “It would be nice to be confirmed by a medical professional that the information I'm getting—it’s hearsay from friends, not necessarily factual—is indeed true” (patient 691).

Topics Raised Only by Patients and Complementary Medicine Providers

Only patients and complementary medicine providers mentioned topics related to supplement characteristics, including several issues related to composition, purity and quality, and whether natural or synthetic and plant or animal based (Table 4). Two primary care providers discussed the importance of composition during their interviews, but unlike the complementary medicine providers, these PCPs were concerned about the ingredients in different supplements. As one of them stated, “If they know what the ingredients are, that’s helpful…those are the questions I usually ask” (Provider 96). Another topic raised only by patients and complementary medicine providers was “mega-dosing,” where patients take very high supplement doses, have problems stemming from taking too much of a supplement, or are concerned about overdosing on supplements.

Other topics not brought up by primary care providers were issues that typically arise only when providers recommend supplements. These included the importance of taking a supplement, special precautions to follow when

Table 4. Themes Mentioned Only by Patients and Complementary Medicine Providers (In Order of Frequency of Mention)

Theme	Examples from Interviews
Effects (what it does)	**Patient 642**: …it’s up to the person prescribing it to make you aware of what [the supplement] is and what it’s going to do
Composition*	**Provider 14**: I like to educate patients: “Okay, let’s look at the form these vitamins are in. Is it an activated form? Is it not in an activated form? Is it in a natural form or is it a synthetic vitamin?”
	Patient 291: I would like the doctor to see the ingredients and make comments on that to me.
Monitoring	
For need	**Patient 667**: …if they see in your blood test that there’s definitely a deficiency, then of course it would be their responsibility to bring it up so that you can supplement…
For therapeutic effect	**Provider 61**: I’ll say these herbs are meant to last for you a week and I’d like for you to come in for a follow-up in a week and that way I can reassess your condition.
	Patient 228: I would have liked to know where my levels were to make sure that I was taking the right amount, not taking too much.
Brand	**Provider 95**: I want to know the manufacturer, the brand…
	Patient 115: That’s one of the things that I do look to [the provider] for, is recommending appropriate brands.
Special precautions	**Provider 72**: …what I consistently will talk to them about is making sure they’re not taking their supplements on an empty stomach. If they are taking them…with food they will assimilate better.
Mega-dosing	**Provider 87**: Some patients are afraid of taking doses of supplements that are high dose…on the back of the label they’ll say things like 100 % daily recommended values and some will say like thousands of percent. Patients, I think, want information on whether or not they’re going to overdose.
	Patient 672: If it’s something that if you’re taking in mega doses or taking a lot, then you should maybe bring it up because the doctor should know about it.
Importance of taking	**Patient 311**: …how important [a supplement] is within the condition [of] being a diabetic [and] being obese.

Composition was mentioned by two primary care providers

taking a supplement, and monitoring for the need to take a supplement or for its therapeutic effect.

Example of Typical Primary Care Discussion

During their interviews, several primary care providers gave examples of succinct approaches to dietary supplement discussions. These providers mostly stated that they tried to give patients a framework for evaluating the appropriateness of taking a dietary supplement. As one primary care provider stated:

> I try to tell people you can take it if I see it, and it's not gonna harm them. I say, if you feel like it's helping you then go ahead and continue taking it, but if you're—and essentially the evidence is that some of them don't work, and don't really do anything. I say you can go ahead, and save your money because I don't want them—…my patients are low-income patients, and I don't want them spending their money on something that isn't really going to help them (Provider 12).

Thus, this provider routinely touches upon what a patient takes, supplement safety/harm, efficacy, evidence for use and cost, and advises the patient about taking the supplement. In general, complementary medicine providers reported having much more detailed approaches to discussions.

DISCUSSION

In-depth interviews with conventional and complementary health providers and their patients demonstrate overwhelming agreement that provider–patient discussions should touch upon all of a patient's dietary supplements. In general, interviewees believed it was important to discuss supplement risks; specifically to prevent supplement–drug interactions, recognize potential side effects or adverse reactions, and review the potential benefits, safety, and harm of dietary supplements. Given these concordant views, it is surprising that the majority of patients do not disclose their supplement use to their providers.[35–38] Both parties are to blame—providers frequently do not ask about patients' supplement use,[35,39] and patients may not think to let their providers know.[40]

Although providers may have inadequate information or suboptimal training regarding supplements,[41,42] in their interviews they much more frequently cited the importance of discussing certain topics than did patients. Several of these topics could better inform patient decisions about supplement use, such as supplement effectiveness, scientific evidence for use, cost/affordability, and FDA regulation. It is unclear why patients appear less concerned about discussing these topics than providers. Perhaps patients are unaware of the potential harms of seemingly "natural" or "plant-based" substances. Alternatively, they may not understand that dietary supplements are not scientifically tested and regulated in the same manner as prescription medications.[43–45] Some patients may not be receptive to discussions with their providers, whom they may believe are uninformed about or skeptical of supplement use.[46] Patients also may choose to turn to their own research, personal experiences, or advice from family and friends to validate their supplement use, instead of trusting evidence-based scientific literature.[44]

From a policy perspective, our results raise several issues. Many conventional medical providers have limited training in dietary supplements[41,42] and might consider supplements to be outside the realm of conventional medicine because patients can procure them on their own. Indeed, patients often believe they are more knowledgeable about their supplements than their primary care providers.[44,46] In addition, many herbal and naturopathic remedies are not uniformly discussed in the conventional medical literature or during medical training. Safety issues may arise because complementary providers, who routinely recommend supplements, may not have extensive training about prescription medications, or where they do, because they do not have prescriptive authority, they lack the experience of using prescription medications, and therefore may be unaware of potential supplement–drug interactions. Patient disclosure about both supplements and prescription medications to all of their healthcare providers is important to ensuring patient safety. But patients cannot be mandated to disclose, and frequently fail to do so (for numerous reasons).[35] The amount of knowledge required to determine supplement safety may be beyond both patients and those who sell supplements. Therefore, one solution to ensuring patient safety may be to mandate education about supplement–drug interactions for all providers (conventional and complementary). More research is required to determine if supplement risks are enough to warrant such action.

The study is limited by the content of the interview protocol, which did not specifically query patients about requisite provider responsibilities for supplement discussions. Our analyses coded for both manifest (what subjects actually said) and latent content (the underlying meaning of what was said).[32,33] Latent coding is not as reliable as manifest coding because it involves some interpretation, but we strengthened our coding reliability by having at least two investigators review the codes applied. Most of the interviewed patients were female and had at least some college education, yet these characteristics reflect those of persons in the general population who take dietary supplements.[47]

In conclusion, this study adds to the literature by providing insight into what providers and patients want or

expect from conversations about dietary supplements, a topic previously unexplored. Both providers and patients concur that the content of discussions about supplements should emphasize what patients are taking and assess supplement risks for individual patients. Interventions to enhance communication about dietary supplements should therefore focus primarily on educating both providers and patients about the importance of these issues. There are other discussions that could potentially help inform patient decisions about supplement use, but it is unclear whether patients want their providers to discuss these issues, or whether there should be another forum through which patients could obtain this information. Before designing interventions to enhance provider–patient discussions about dietary supplements, it may be important to investigate additional questions, such as whether providers should play a larger role in discussing dietary supplements with their patients, and whether patients want greater provider input, perhaps at the expense of discussions about other issues during an office visit. The influence of provider–patient discussions on patients' decision-making about supplements also should be evaluated.

Acknowledgments: *Dr. Tarn had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. The authors report no conflicts of interest or financial disclosures. This publication was made possible by Grant Number R01AT005883 from the National Center for Complementary and Alternative Medicines (NCCAM) and the Office of Dietary Supplements (ODS). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NCCAM, ODS, or the National Institutes of Health. Contents of this manuscript were presented at the North American Primary Care Research Group (NAPCRG) Annual Meeting on 2 December 2012 and at the Society of Teachers in Family Medicine Annual Spring Conference on 4 May 2013.*

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

Financial disclosures: *The authors report no financial disclosures.*

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