Randomized Trial of Teaching Brief Motivational Interviewing to Pediatric Trainees to Promote Healthy Behaviors in Families

Paula Lozano, MD, MPH; Heather A. McPhillips, MD, MPH; Bryan Hartzler, PhD; Andrea S. Robertson, MPH; Cecilia Runkle, PhD; Kelley A. Scholz, MSW; James W. Stout, MD, MPH; Gail M. Kieckhefer, ARNP, PhD

Hypothesis: That pediatric resident trainees would demonstrate increased counseling skill following training in brief motivational interviewing (MI).

Design: Randomized controlled trial.

Setting: University of Washington Pediatric Residency.

Participants: Pediatric residents (N=18), including residents in postgraduate years 1, 2, 3, and 4.

Interventions: Collaborative Management in Pediatrics, a 9-hour behavior change curriculum based on brief MI plus written feedback on communication skills (based on a 3-month Objective Standardized Clinical Evaluation [OSCE]).

Main Outcome Measure: The percentage of MI-consistent behavior (%MICO), a summary score for MI skill, was assessed via OSCEs in which standardized patients portray parents of children with asthma in 3 clinical scenarios (stations). The OSCEs were conducted at baseline and 3 and 7 months. Blinded coders rated videotaped OSCEs using a validated tool to tally communication behaviors. Training effects were assessed using linear regression controlling for baseline %MICO. Global ratings of counseling style served as secondary outcome measures.

Results: Trained residents demonstrated a trend toward increased skill (%MICO score) at 3 months compared with control residents. At 7 months, %MICO scores increased 16% to 20% (P < .02) across all OSCE stations after the combined intervention of Collaborative Management in Pediatrics training plus written feedback. The effect of training on global ratings supported the main findings.

Conclusions: Pediatric trainees' skills in behavior change counseling improved following the combination of training in brief MI plus personalized feedback.

Trial Registration: clinicaltrials.gov Identifier: NCT00510341


Here is growing acknowledgment that support for behavior change is necessary to optimize a variety of health outcomes such as promoting medication adherence, tobacco avoidance, and healthy eating.1,2 Pediatric competency requirements now recognize pediatricians' roles in supporting healthy behaviors.3 Furthermore, pediatricians rate behavior change counseling as one of the most clinically important research areas.4 This raises questions about how to effectively train pediatricians to counsel families about behavior change and to what extent physicians can acquire these skills.5-10

Motivational interviewing (MI) has emerged as an approach to assisting primary care patients with behavior change.8 A directive, patient-centered counseling style, MI helps people explore and resolve their ambivalence about changing behavior.11 Two central goals of MI are (1) to create and amplify, from the patient's perspective, a discrepancy between present behavior and broader goals and values and (2) to evoke from patients statements indicating their reasons for, desire to, or intent to change (change talk). The MI counselor builds trust and directs the patient toward increasing readiness for change.11 Techniques of MI include listening reflectively, examining both sides of patients' ambivalence, and reducing resistance by not promoting change prematurely.12 This approach differs from the traditional medical paradigm in which the
We conducted a small randomized trial of training in brief MI in which residents were randomized to behavior change training (Collaborative Management in Pediatrics [CMP]) or a waitlist control group. We assessed change in trainees' skills at baseline and at 3 and 7 months using Objective Standardized Clinical Evaluations (OSCEs) with SPs. The 3-month CMP time point was chosen instead of immediately after training owing to scheduling constraints. The 7-month time point allowed OSCEs to be completed within the academic year.

PARTICIPANTS

We recruited pediatric residents and chief residents at the University of Washington Pediatric Residency between July and September 2006. Inclusion criteria were (1) having a continuity clinic at 1 of 3 large sites representing 75% of residents, (2) being on elective rotation at least once between August and October (to coincide with workshop dates), and (3) not having participated in previous CMP pilot workshops. We excluded residents who were on vacation or post-call on workshop dates. Study staff allocated participants to the intervention or control arms using a random number generator. We also recruited families of children with asthma (aged 2 to 12 years) scheduled for well child visits with SPs. Parents received a $20 gift certificate after each OSCE. All SPs were experienced in simulating patients in health care education settings. The SPs received training regarding CMP and rehearsed OSCE stations.

Intervention residents participated in a 9-hour workshop using CMP, the brief MI curriculum developed by our team, and received written performance-based feedback on their 3-month OSCE. Intervention arm participants also received performance-based feedback on their 3-month OSCE (described below). A trainer reviewed OSCE tapes and provided written feedback in the form of a letter noting CMP skills and tools used particularly skillfully and those warranting further practice. The OSCE videotapes were used both as outcomes assessment and intervention component (Figure 1).
Collaborative Management in Pediatrics

Set the Stage
- Ask permission to discuss topic
- Explore thoughts and feelings
- Listen

Provide Information and Feedback
- Present facts
- Express concern about possible health consequences
- Elicit patient response
- Listen

Assess Readiness to Change
- Use ruler
- Acknowledge patient’s position
- Explore number choice
- Summarize

Explore Ambivalence/Elicit Change Talk

<table>
<thead>
<tr>
<th>Readiness (rating on 0-10 ruler)</th>
<th>Approaches</th>
<th>Sample Statements and Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Ready (9-12)</td>
<td>Advise</td>
<td>“I understand you’re not ready. This may not be the right time for you.”</td>
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<tr>
<td></td>
<td>Encourage</td>
<td>“What you do cut down on the smoke in your home could really make her asthma better.”</td>
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<td></td>
<td></td>
<td>“What would need to be different for you to start her on a controller?”</td>
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<td></td>
<td></td>
<td>“I’m here to help and I’m confident you can make a change in his eating habits when you’re ready.”</td>
</tr>
<tr>
<td>Unsure (4-7)</td>
<td>Explore Ambivalence</td>
<td>“What do you like about smoking?...What don’t you like about smoking?”</td>
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<tr>
<td></td>
<td>Ask about the next step</td>
<td>“What are some reasons you can think of for building more physical activity into her routine?”</td>
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<tr>
<td></td>
<td></td>
<td>“Where does this leave you now? Is there anything you’d like to do between now and our next visit?”</td>
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<tr>
<td>Ready (7-10)</td>
<td>Strengthen commitment</td>
<td>“Why do you feel ready now?”</td>
</tr>
<tr>
<td></td>
<td>Facilitate action planning</td>
<td>“Why is eating healthier important to you?”</td>
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<tr>
<td></td>
<td></td>
<td>“What’s your next step?”</td>
</tr>
</tbody>
</table>

Close the Conversation
- Summarize change talk
- Express confidence
- Acknowledge patient’s willingness to discuss change
- Confirm next steps, including follow-up visit

Figure 1. Summary of steps taught, modeled, and practiced in Collaborative Management in Pediatrics (CMP) workshops. The CMP workshop was adapted from Brief Negotiation with permission from Kaiser Permanente.

MITI 2.0 SCALE

The MITI 2.0 is an established instrument for measuring MI fidelity, previously used to code SP encounters in medical settings. Seven practitioner communication behaviors are tallied continuously; among these were (1) open questions (questions that promote patient narrative by allowing a range of responses); (2) reflections (statements that convey understanding of patient perspective by repeating or paraphrasing parent statements or those that introduce new meaning or emphasis); and (3) MI-adherent behaviors (eg, asking permission to discuss a topic, affirming/supporting the parent, emphasizing parent control). In addition, the MITI 2.0 includes 2 global ratings (reviewers’ gestalt judgments) of residents’ counseling styles regarding empathy/understanding and MI spirit (a composite of the resident’s collaboration with the SP, attempts to evoke the SP’s perspective, and support for SP autonomy), rated on a Likert scale (scores, 1-7).

OUTCOME MEASURES

Guided by others using the MITI to capture practitioners’ MI skillfulness, we computed the percentage of MI-consistent behavior (%MICO) summary score. We defined %MICO as the proportion of all resident communication behaviors coded as open questions, reflections, or MI-adherent behaviors. These behaviors are more likely than others to be followed by patient change and are associated with behavior change. We computed %MICO scores for each OSCE recording and computed group means by station. Secondary measures were global ratings of MI spirit and empathy.

SCORING RELIABILITY

Interrater reliability was computed for MITI elements in a random 40% of encounters reviewed by all raters. Pooling intraclass correlation coefficients were computed using 2-way mixed model, reflecting collective rater agreement. Compared with published psychometric standards and prior MI studies, our data had adequate scoring reliability across all counted behaviors and global ratings (intraclass correlation coefficients, 0.57-0.93). Reliability was excellent for open and closed questions; good for giving information, MI-nonadherent behavior, and simple reflections; and fair for complex reflections, MI-adherent behavior, empathy, and MI spirit. In addition to sound measurement across the individual constructs, our computed primary outcome measure, %MICO score, also demonstrated high interrater reliability (intraclass correlation coefficient, 0.88).

We used a traditional scale reliability approach to assess the consistency of MITI elements across OSCE stations (not ready, unsure, and ready). For each MITI element, a 3-item scale was formed consisting of the element as assessed in the 3 stations. Cronbach α values computed for these scales were generally low, suggesting variability in resident behavior across OSCE stations. Accordingly, randomized controlled trial analyses were conducted separately by station.

STATISTICAL ANALYSIS AND POWER

Effects of training and feedback on resident skill (%MICO score, empathy, and MI spirit) were assessed using linear regression, controlling for baseline values, stratified by OSCE station. Sample...
size was limited by the number of residents available to participate. All eligible residents were approached.

A convenience subsample of 8 participants from both arms provided a total of 10 audiotapes of patient visits after training to assess the ecological validity of OSCE-derived skill assessments. Spearman correlations assessed the strength of the association between %MICO in this set of tapes and %MICO at the 7-month OSCE for the same residents. Statistical analyses were run using Stata 9.0 (Stata Corp, College Station, Texas).

RESULTS

Of the 84 residents, 29 met inclusion criteria (Figure 3), of whom 11 refused (reasons included lack of interest or time). Eighteen residents provided consent and were randomized to training plus feedback or wait list control. Two had incomplete data. The eventual sample (n=16) was predominantly female (75%), representative of the residency program. Participants consisted of 7 residents in postgraduate year 1, 5 in year 2, 3 in year 3, and 1 chief resident (postgraduate year 4). All reported some exposure to MI during medical school, typically a single lecture. Intervention arm residents attended the CMP workshop and received personalized written feedback based on 3-month OSCEs. Intervention and control groups were balanced with respect to postgraduate year.

Resident use of MI-consistent behaviors (%MICO score) at 3 time points is shown in Table 1. Prior to training, the two arms were similar, with close to a third of utterances consistent with MI (Table 1). Among control residents, the effect of time on %MICO score varied across stations, from a slight increase (ready) to a slight decrease (unsure). Among residents trained in CMP, the %MICO score in the ready and not ready stations rose at 3 months and stayed higher than baseline at 7 months. In the unsure station, the %MICO score fell slightly at 3 months then rose to slightly above baseline at 7 months.

Linear regression results, controlling for %MICO score at baseline, are shown in Table 2. At 3 months there was a significant effect of training on the %MICO score in the ready station (+18%; P=.009). Increases in the other 2 stations were not statistically significant. Training plus feedback was associated with significant increases in all 3 stations at 7 months: not ready (+18%; P=.02), unsure (+20%; P=.001), and ready (+16%; P=.01) relative to untrained controls. Sample size did not permit subanalyses.

At baseline, the mean (SD) ratings of residents’ MI spirit were 3.6 (1.6) in the ready station; 2.9 (1.4), unsure; and 2.4 (1.1), not ready (range, 1-7). At both 3 and 7 months, MI spirit ratings of resident counseling style in all stations rose more from baseline in trained residents compared with controls. In linear regression models controlling for baseline ratings, the effect at 3 months was statistically significant in the not ready (+1.8; P=.02) and ready (+3.5; P<.001) stations only. At 7 months, this difference between arms was statistically significant in the unsure (+1.6; P=.02) and ready (+1.8; P<.001) stations only. The effect of training on empathy ratings was less pronounced.

We compared the %MICO scores in audio taped clinic visits with %MICO score in the OSCEs in a convenience sample of 8 residents from the 2 arms to assess the OSCEs’ ecological validity. Spearman correlation coefficients were 0.49 for the not ready station, 0.94 for unsure, and 0.70 for ready, suggesting that the OSCEs provided a reasonable approximation of actual clinical practice.
This study provides support for the effect of training in brief MI on the communication style that pediatric trainees exhibit with standardized patients. We found an increase in resident use of MI-consistent behaviors (eg, open-ended questions, reflections, affirmations, and supportive statements) following CMP training when compared with an untrained, randomly assigned control group. Global rating of counseling style (MI spirit) also rose more among residents who received training.

The effect of CMP training on %MICO is more pronounced at 7 months than at 3 months in the residents, increasing by 16% to 20% from a baseline of 25% to 37%. Others have found that, following the posttraining skill increase, skills decline without additional doses of training. The greater increase in %MICO score at 7 months in our study may be owing, in part, to the written feedback based on 3-month OSCEs (Table 2). It is also possible that trained residents had clinical experiences that reinforced their use of brief MI apart from formal feedback.

Our study adds to the growing literature on training health professionals in brief MI. Ours is one of a few studies to use validated tools to assess performance-based outcomes, either based on videotaped encounters or written responses, making comparisons difficult. Our main outcome measure (%MICO) is computed from the validated MITI 2.0 instrument, represents a broad behavioral index of key MI1 elements, and is consistent with training objectives. Prior research suggests that similarly conceived indices correlate with other MI fidelity measures, are responsive to training, and predict health behavior change.

Trials documenting MI’s efficacy in health care rely largely on interventionists with prior MI experience or who receive extensive training and supervision. In contrast, most health care clinicians using brief MI receive modest training and minimal performance feedback. As interest in MI grows, standards for training, skill assessment, and proficiency benchmarking will be critical for maintaining treatment fidelity and safeguarding internal validity. The wide variability in %MICO scores found for our trainees (SD range, 6-17; Table 1) supports the importance of skill assessment in rigorous evaluation of brief MI curricula.

The study has several limitations. The small sample size, single institution, and 38% refusal rate limit generalizability to the larger population of pediatric residents. Were this training to be made mandatory, it is not clear that the same effect would be achieved. However, there were no outliers in the distributions of our main outcome (%MICO), and secondary outcomes echoed the main findings. Because we did not assess skills immediately after training, any changes in the 3 months after training would have gone undetected. We did not assess long-term training effects beyond 7 months; yet, this time frame exceeds that of many published training trials. Possible barriers to dissemination to other residency programs include time commitment (a 9-hour workshop may be infeasible) and the dearth of faculty with MI skills. Finally, lack of patient outcomes limits our ability to extrapolate from behavior change counselling to actual patient and/or family behavior change. However, clinician proficiency in MI is associated with behavioral outcomes such as medication adherence, smoking cessation, and reduced problem drinking. Caveats notwithstanding, trial findings advance our understanding of how training plus feedback can enhance pediatric residents’ skills in delivering empirically supported counseling.

The therapeutic stance and skills taught of MI—eliciting patient/family perspective, affirming patient autonomy, and supporting self-efficacy—are relevant to ongoing national quality improvement efforts that put provider communication style and patient-centered care in the forefront of health care innovation and medical education. The Institute of Medicine has advocated for patient-centered care, defined as providing care that is respectful of and responsive to individual patient preferences, needs, and values, as a key to improving health care quality. The Accreditation Council for Graduate Medical Education’s Pediatric Residency Review Committee recognizes the need for formal training in communication with patients and families, requiring that residents demonstrate “interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates.” Motivational interviewing-based approaches may confer benefits beyond the realm of behavior change counseling by enhancing the patient-centeredness of other facets of the health care encounter.

Training pediatric residents in brief MI produces measurable improvements in counseling skill that persist for at least 7 months. Replication of our findings in a larger multicenter sample with a broader variety of skill indicators is needed. Future trials should address optimal length/format of training, integration of MI into residency training, sustainability of skills, integration of behavior change counseling into the health care encounter, and the effect of adoption of MI skills by pediatricians on patient outcomes.

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Correspondence: Paula Lozano, MD, MPH, Center for Child Health Behavior and Development, Seattle Children’s Research Institute, 1100 Olive Way, Ste 500, Mailstop 8-1, Seattle, WA 98101 (plozano@uw.edu).


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