Motivational Interviewing in Adolescent Patients with Type 1 Diabetes

Sarah Tsai, MD
13th Annual Great Plains Pediatric Endocrine Symposium
Breakout Session - October 28, 2016
Presentation Outline and Objectives

- Describe motivational interviewing
- Discuss important studies involving the use of MI in youth with Type 1 Diabetes
- Review preliminary results of the MI:Teens With Diabetes Study
WHAT IS MOTIVATIONAL INTERVIEWING?
What is Motivational Interviewing?

- Adherence-promoting intervention that is patient-centered and directive.

- Addresses ambivalence and identifies barriers to achieving patient-defined goals

- Enhances a patient’s own motivation & feelings about change by exploring ambivalence about making changes
The central elements of MI are

1. Expressing empathy
2. Developing discrepancy
3. Rolling with resistance
4. Supporting self-efficacy

In MI, attainable goals are proposed by the patient and are then refined with help from a health-care professional.

1. Miller & Rollnick, 2002
“What if we don’t change at all ... and something magical just happens?”
The Spirit of Motivational Interviewing

- Partnership: 
  - Active collaboration between experts
  - Positive

- Acceptance: 
  - Inherent worth and potential of every human being
  - Letting go of the burden that you have to (or can) make people change

- Compassion: 
  - Actively promote the other’s welfare

- Evocation: 
  - People already have much of what is needed to change, and our task is to evoke it
General Strategies

- Open questions
- Affirmations
- Reflections
- Summaries

OARS
Open Ended Questions

- What would you like to discuss?
- Tell me about some of the hassles with having diabetes.
- What changes have you noticed?
- What are the most important reasons why you would consider making a change?
- In the past, how have you done something really difficult or hard?
Closed Ended Questions

Examples...

- Where did you grow up?
- Are you willing to come back for a follow-up visit?
- Have you ever thought about walking as a simple form of exercise?
- Do you care about your health?
- Will you try this for one week?
Examples…

– Thanks for talking with me today.
– I appreciate that you took a big step in agreeing to do this.
– That’s a good suggestion.
– You’re clearly a resourceful person, to cope with such difficulties for so long.
– You seem like the type of person who really sticks to their goals.
– I enjoyed talking with you today, and getting to know you a bit.
Reflections

- The essence of a reflective listening response is that it makes a guess as to the speakers meaning.
- Reflective listening is a way of checking, rather than assuming that you already know what the patient means.
- Good reflections move forward rather than simply repeating what the speaker says.
Reframing

- A specific type of reflection
- Acknowledges the validity of the patient’s raw observations, but offers a new meaning or interpretation.
  - Example:
    - Patient: My parents are always nagging me about not checking my blood sugars.
    - Clinician: It sounds like they really care about you, and are very concerned about you.
  - [Clinician reframes “nagging” as “concern”]
Summaries

- Summary statements serve to link together and reinforce material that has been discussed.
VIDEO EXAMPLE

- MI training video
Change Talk Vs Sustain Talk

**Change Talk**
- Any patient speech that favors movement toward a particular change goal.

**Sustain Talk**
- Any patient speech that favors the status quo rather than movement toward a change goal

Miller & Rollnick, 2002
I don’t feel well a lot of the time.

CHANGE TALK

SUSTAIN TALK
Maybe my parents would get off my back.
It hurts when I check my blood sugar.

CHANGE TALK

SUSTAIN TALK
This is too hard.

CHANGE TALK

SUSTAIN TALK
I thought about switching my pump site one extra time.
Additional Elements of MI

- Explore barriers to care
- Explore goals and values
  - “How does continuing your current level of diabetes adherence/self-care fit in with all that?”
- Use Importance and Confidence Rulers
- Complete Change Plan
“What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?”
MOTIVATIONAL INTERVIEWING IN TEENS WITH DIABETES
Why are Behavioral Interventions Important in Patients with Chronic Medical Conditions?

- Improve adherence
- Improve short term medical outcomes
- Improve long term medical outcomes
- Improve quality of life
Adherence in Teens with T1D

- A meta-analysis of 21 studies involving a total of 2492 youth revealed that as adherence increases, A1C values decrease, regardless of socio-demographic characteristics\(^1\)

- Adherence can be challenging at any age, but it is particularly difficult during adolescence
  - Peer pressure
  - Family conflict
  - Increased physiologic insulin needs\(^2\)
  - Other priorities

\(^1\) Hood, 2009
\(^2\) Borus, 2010
A Multicenter Randomized Controlled Trial of Motivational Interviewing in Teenagers With Diabetes

Sue J. Channon, d clin psych1
Michelle V. Huws-Thomas, msc2
Stephen Rollnick, phD3
Kerenza Hood, phD4

Rebecca L. Cannings-John, msc3
Carol Rogers, rgn3
John W. Gregory, md3

OBJECTIVE — We sought to examine the efficacy of motivational interviewing with teenag-
was a need for more well-designed trials of such interventions, particularly in the U.K. health care context. Motivational in-
terviewing, a counseling approach to fa-
cilitate behavioral change (5), has been demonstrated as effective in adults in some health care settin-
gs (6,7) and there

Diabetes Care, 2007
Channon et al, 2007

- Primary outcome was change in mean A1C
- Secondary outcomes measures:
  - Diabetes QOL Measure for Youths
  - Diabetes Knowledge Scale
  - Self-Efficacy for Diabetes Scale
  - Diabetes Family Behavior Scale
At 12 and 24 months, significant improvements were seen in A1C, well-being, and quality of life in the MI group.

The intervention was carried out in a non-clinical setting, the interventions were conducted by the same person every time.

The interventionists had a nursing background, and the number of sessions and locations was decided by the participant.
The participant’s diabetes care was not addressed in these sessions and was left to the diabetes team, who was blinded to the study.

The control group also received additional support contact outside of the clinical setting (6 visits on average for control versus 4 on average for the MI group), but did not undergo MI.

The training involved videos, workshops, role-playing and individual supervision.

The study did not focus on at-risk adolescents in poor glycemic control, as there was no A1C criterion for inclusion in the study.
<table>
<thead>
<tr>
<th>Time point</th>
<th>MI group (n = 27)</th>
<th>Control group (n = 20)</th>
<th>Difference between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>9.3 ± 2.11</td>
<td>9.0 ± 1.56</td>
<td>0.3 ± 1.90 (−0.80 to 1.40)</td>
</tr>
<tr>
<td>6 months</td>
<td>9.0 ± 1.63</td>
<td>9.5 ± 1.93</td>
<td>−0.5 ± 1.76 (−1.52 to 0.52)</td>
</tr>
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<td>12 months</td>
<td>8.7 ± 1.84</td>
<td>9.2 ± 1.78</td>
<td>−0.5 ± 1.81 (−1.55 to 0.55)</td>
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<tr>
<td>24 months</td>
<td>8.7 ± 1.88</td>
<td>9.1 ± 1.51</td>
<td>−0.4 ± 1.73 (−1.40 to 0.60)</td>
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</table>

Data are means ± SD (95% CI). MI, motivational interviewing.
Table 2—Psychosocial measures at 12 months

<table>
<thead>
<tr>
<th>Measure</th>
<th>Intervention group</th>
<th>Control group</th>
<th>F</th>
<th>P</th>
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<tr>
<td></td>
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</tr>
<tr>
<td>DQoLY</td>
<td></td>
<td></td>
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<tr>
<td>Satisfaction</td>
<td>33.28 ± 9.88</td>
<td>45.55 ± 10.79</td>
<td>31.769</td>
<td>&lt;0.001</td>
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<tr>
<td>Impact</td>
<td>30.49 ± 12.05</td>
<td>61.05 ± 18.48</td>
<td>9.553</td>
<td>0.003</td>
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<tr>
<td>Worries*</td>
<td>17.71 ± 7.15</td>
<td>30.23 ± 11.59</td>
<td>22.209</td>
<td>&lt;0.001</td>
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<td>CHLC</td>
<td>15.88 ± 2.39</td>
<td>16.40 ± 1.95</td>
<td>0.034</td>
<td>NS</td>
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<tr>
<td>HCCQ</td>
<td>78.06 ± 20.34</td>
<td>84.25 ± 13.30</td>
<td>0.010</td>
<td>NS</td>
</tr>
<tr>
<td>DKN</td>
<td>11.16 ± 1.86</td>
<td>11.75 ± 1.77</td>
<td>1.406</td>
<td>NS</td>
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<tr>
<td>SEDS</td>
<td>175.92 ± 22.73</td>
<td>169.85 ± 27.45</td>
<td>0.733</td>
<td>NS</td>
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<tr>
<td>WBQ</td>
<td></td>
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<tr>
<td>Depression</td>
<td>10.08 ± 2.23</td>
<td>11.85 ± 1.81</td>
<td>4.326</td>
<td>0.044</td>
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<td>Anxiety</td>
<td>6.03 ± 2.23</td>
<td>11.55 ± 3.69</td>
<td>41.267</td>
<td>0.001</td>
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<tr>
<td>Energy</td>
<td>6.19 ± 1.86</td>
<td>7.20 ± 2.31</td>
<td>2.086</td>
<td>0.156</td>
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<tr>
<td>Positive well-being</td>
<td>14.48 ± 3.20</td>
<td>10.24 ± 3.27</td>
<td>22.923</td>
<td>&lt;0.001</td>
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<tr>
<td>Total well-being</td>
<td>40.56 ± 4.51</td>
<td>30.31 ± 5.90</td>
<td>39.419</td>
<td>&lt;0.001</td>
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<tr>
<td>DFBS</td>
<td>145.56 ± 20.64</td>
<td>155.57 ± 16.45</td>
<td>1.162</td>
<td>NS</td>
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<td>PMDO</td>
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<tr>
<td>Importance</td>
<td>32.58 ± 5.06</td>
<td>22.84 ± 4.02</td>
<td>64.776</td>
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<td>Likely</td>
<td>41.46 ± 6.25</td>
<td>29.52 ± 5.54</td>
<td>59.056</td>
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<tr>
<td>Worry</td>
<td>33.19 ± 8.76</td>
<td>24.78 ± 5.98</td>
<td>13.605</td>
<td>&lt;0.001</td>
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<tr>
<td>Agree/disagree</td>
<td>28.32 ± 5.66</td>
<td>34.52 ± 6.23</td>
<td>13.845</td>
<td>&lt;0.001</td>
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<tr>
<td>Total</td>
<td>135.53 ± 15.30</td>
<td>111.66 ± 10.97</td>
<td>44.642</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Data are means ± SD unless otherwise indicated. *Lower score indicates higher quality of life. CHLC, Child Health Locus of Control; DFBS, Diabetes Family Behavior Scale; DKN, Diabetes Knowledge Scale; DQoLY, Diabetes Quality of Life Measure for Youths; HCCQ, Modified Health Care Climate Questionnaire; PMDO, Personal Models of Diabetes Scale; SEDS, Self-Efficacy for Diabetes Scale; WBQ, Well-Being Questionnaire.
A Randomized Controlled Trial Comparing Motivational Interviewing in Education to Structured Diabetes Education in Teens With Type 1 Diabetes

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Sunita M. Stewart, PhD²
Marsha Mackenzie, RD, CDE³
Paul A. Nakonezny, PhD⁴
Deidre Edwards, MS²
Perrin C. White, MD¹

planned (T2) if A1C continued to be ≥9%.

Three diabetes educators were assigned to the MI arm and trained on motivational interviewing at a 2-day...
Control group had additional sessions of structured diabetes education.

1st MI session at enrollment, second by phone 1-2 months later

Study duration 9 months

MI training involved a 2 day workshop with subsequent skill refreshers.

- The sessions involved reading an MI manual, journals and guidance from an MI trainer.
- Interviews were recorded and coded
Inclusion Criteria

- A1C >9.0
- Diabetes >1 year
- 12-18 years old
- MI had no benefit in glycemic control or psychosocial measures compared to structured diabetes education over 9 months.
Viner\textsuperscript{1} piloted a non-randomized multicomponent intervention that included motivational interviewing and solution focused therapy.

This study focused on youth with A1C >8.5%.

Self-selected participants (21 in intervention, 20 controls)

6 weekly group sessions.

At 6 months, there was a significant decline in A1C by 1.5% compared to no significant change in controls.

Group differences were not maintained at one year.
Multicomponent Interventions

- Stranger\(^{1}\) implemented a multicomponent intervention
  - (1) MI, (2) CBT, (3) Family based contingency management
- Adolescents with poorly controlled T1D and A1C >8%.
- 12/17 participants completed the 14 week program
- Pre-intervention mean A1C of 11.6% and post-intervention A1C of 9.11%.
- The A1C also remained significantly lower at 3 month follow-up.
- Multi-component intervention may prove superior to MI alone.

Stranger, 2013
A meta-analysis of MI in pediatrics indicated that the effect size was larger for stand-alone MI compared to integrated MI interventions.

For the two multicomponent pediatric diabetes studies incorporating MI, the outcomes appear to be better than those with stand-alone MI.

The clear next step would be to conduct a randomized control trial in youth with T1D that involves MI as part of a multicomponent intervention.
MI: TEENS WITH DIABETES STUDY
Primary Aim

- Compare the efficacy of MI for improving glycemic control to traditional patient/provider interactions in at-risk adolescents with suboptimal T1D control in a randomized controlled trial.

  - The working hypotheses was that MI will lead to an improvement in glycemic control (specifically a reduction of Hemoglobin A1C ≥ 1) relative to traditional patient/provider interactions among at-risk teens, and that the improvement will be sustained over a 12-month period.
Secondary Aim

- Determine the degree to which MI changes adherence to the diabetes regimen, as well as self-efficacy in diabetes management.

- Self-efficacy, Michigan Diabetes Knowledge Test, self-monitoring of blood glucose, quality of life scores, treatment satisfaction, and Self-Care Inventory at baseline, and at 3 subsequent visits.
Methods

- Participants randomized to MI group or control
  - Age 12-17
  - T1D, >1 year
  - A1C ≥ 8.5%
Methods cont.

- **MI group**
  - MI session and booster session
  - 2 “standard” visits

- **Control group**
  - 4 standard visits

- All patients filled out questionnaires at every visit

- Diabetes management otherwise unchanged
Training

- The interventionists received a total of 24 hours of training
  - 16 hours of training in general motivational interviewing, which involved didactics, live and video demonstration, and structured practice
  - 8 hours of training focused on this specific intervention
  - An intervention manual was used as a guideline for how to structure the conversation
  - Interventionists then participated in full-length role-plays of the structured study MI session

- 3 of 16 pediatric endocrinologists, 2 of 5 nurse practitioners, and 2 of 18 diabetes educators volunteered to act as interventionists
Quality Control

- Study sessions audio recorded and were coded by our MI trainer (using the Motivational Interviewing Treatment Integrity coding system; MITI)\(^1\) to ensure that they were adherent with the spirit and style of motivational interviewing.

- Individual feedback was provided as required

- A total of 17 supervision sessions were held over the course of 11 months during the active study period.

\(^1\) - Moyers, Martin, Manuel, Miller & Ernst, 2007
Reflections on Incorporating a Behavioral Intervention into a Busy Pediatric Subspecialty Clinic

Sarah L. Tsai, MD, Mark A. Clements, MD, PhD, & Timothy R. Apodaca, PhD

Journal of Pediatric Health Care, 2016
Results

86 Enrolled

73 completed

13 withdrew
Motivational Interviewing (MI) Demographics

- More females in MI group
- More males in control
- Most patients white
- Most patients on the pump

<table>
<thead>
<tr>
<th></th>
<th>Overall (n=79)</th>
<th>MI (n=38)</th>
<th>Control (n=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>40 (51%)</td>
<td>13 (34%)</td>
<td>27 (66%)</td>
</tr>
<tr>
<td>Female</td>
<td>39 (49%)</td>
<td>25 (66%)</td>
<td>14 (34%)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
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<tr>
<td>White</td>
<td>70 (89%)</td>
<td>35 (92%)</td>
<td>35 (85%)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>6 (8%)</td>
<td>2 (5%)</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>1 (1%)</td>
<td>1 (3%)</td>
<td>0 (0%)</td>
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<tr>
<td>Multiracial</td>
<td>1 (1%)</td>
<td>0 (0%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (1%)</td>
<td>0 (0%)</td>
<td>1 (2%)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
<td>Non-Hispanic/Non-Latino</td>
<td>77 (97%)</td>
<td>37 (97%)</td>
<td>40 (98%)</td>
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<tr>
<td>Hispanic/Latino</td>
<td>2 (3%)</td>
<td>1 (3%)</td>
<td>1 (2%)</td>
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<tr>
<td><strong>CGM Pump Type</strong></td>
<td>(n=70)</td>
<td>(n=33)</td>
<td>(n=37)</td>
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<tr>
<td>Medtronic</td>
<td>47 (67%)</td>
<td>21 (64%)</td>
<td>26 (70%)</td>
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<tr>
<td>Omnipod</td>
<td>6 (9%)</td>
<td>4 (12%)</td>
<td>2 (5%)</td>
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<tr>
<td>Animas</td>
<td>5 (7%)</td>
<td>1 (3%)</td>
<td>4 (11%)</td>
</tr>
<tr>
<td>T-Slim</td>
<td>5 (7%)</td>
<td>2 (6%)</td>
<td>3 (8%)</td>
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<tr>
<td>Other</td>
<td>4 (6%)</td>
<td>3 (9%)</td>
<td>1 (3%)</td>
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<tr>
<td>Dexcom</td>
<td>3 (4%)</td>
<td>2 (6%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Group and Visit</td>
<td>Mean±SD</td>
<td>p-value$^a$</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
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<tr>
<td><strong>Baseline (n=79)</strong></td>
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<tr>
<td>MI (n=38)</td>
<td>10.14±1.39</td>
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<tr>
<td>Control (n=41)</td>
<td>10.32±1.68</td>
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<tr>
<td><strong>Visit 1 (n=75)</strong></td>
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<tr>
<td>MI (n=36)</td>
<td>9.91±1.43</td>
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<td>Control (n=39)</td>
<td>10.05±1.53</td>
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<td><strong>Visit 2 (n=75)</strong></td>
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<td>Control (n=40)</td>
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<tr>
<td>MI (n=34)</td>
<td>10.08±2.02</td>
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<td>Control (n=36)</td>
<td>10.32±1.76</td>
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## Self-Care Inventory

<table>
<thead>
<tr>
<th></th>
<th>Mean±SD</th>
<th>p-value&lt;sup&gt;a)&lt;/sup&gt;</th>
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<tr>
<td><strong>Baseline (n=78)</strong></td>
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<td>MI (n=37)</td>
<td>49.46±7.43</td>
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<td>53.22±7.12</td>
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<td>Control (n=40)</td>
<td>52.23±7.69</td>
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<td><strong>Visit 3 (n=69)</strong></td>
<td>51.43±7.40</td>
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<td>50.38±7.40</td>
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<tr>
<td>Control (n=35)</td>
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## Self-Efficacy

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<td><strong>Baseline (n=78)</strong></td>
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<td>50.86±19.13</td>
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<td>63.02±21.05</td>
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<td>MI (n=34)</td>
<td>67.62±17.33</td>
<td>0.5983</td>
</tr>
<tr>
<td>Control (n=35)</td>
<td>65±23.23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean±SD</td>
<td>p-value&lt;sup&gt;a)&lt;/sup&gt;</td>
</tr>
<tr>
<td>------------------</td>
<td>------------</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Baseline (n=67)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI (n=37)</td>
<td>15.97±8.29</td>
<td></td>
</tr>
<tr>
<td>Control (n=30)</td>
<td>17.63±8.05</td>
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</tr>
<tr>
<td><strong>Visit 1 (n=74)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI (n=36)</td>
<td>18.61±9.29</td>
<td></td>
</tr>
<tr>
<td>Control (n=38)</td>
<td>16.58±10.35</td>
<td></td>
</tr>
<tr>
<td><strong>Visit 2 (n=74)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI (n=35)</td>
<td>15.34±9.32</td>
<td></td>
</tr>
<tr>
<td>Control (n=39)</td>
<td>16.69±8.36</td>
<td></td>
</tr>
<tr>
<td><strong>Visit 3 (n=66)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI (n=31)</td>
<td>15.35±9.08</td>
<td></td>
</tr>
<tr>
<td>Control (n=35)</td>
<td>16.86±10.16</td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Does this describe how I feel about my diabetes right now?</td>
<td>Stage</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>I do not intend to make any changes in my diabetes management.</td>
<td>Yes [ ]</td>
<td>Precontemplation</td>
</tr>
<tr>
<td></td>
<td>No [ ]</td>
<td></td>
</tr>
<tr>
<td>I am intending to make changes in my diabetes management in the next 6 months</td>
<td>Yes [ ]</td>
<td>Contemplation</td>
</tr>
<tr>
<td></td>
<td>No [ ]</td>
<td></td>
</tr>
<tr>
<td>I am intending to make changes in my diabetes management in the next month</td>
<td>Yes [ ]</td>
<td>Preparation</td>
</tr>
<tr>
<td></td>
<td>No [ ]</td>
<td></td>
</tr>
<tr>
<td>I have made changes in my diabetes management in the last 6 months</td>
<td>Yes [ ]</td>
<td>Action</td>
</tr>
<tr>
<td></td>
<td>No [ ]</td>
<td></td>
</tr>
<tr>
<td>My diabetes has been in good control for more than 6 months</td>
<td>Yes [ ]</td>
<td>Maintenance</td>
</tr>
<tr>
<td></td>
<td>No [ ]</td>
<td></td>
</tr>
</tbody>
</table>
Percent in RTC Stage at Baseline Visit (n=78)

- Precontemplation: MI - 0.0, Control - 0.0
- Contemplation: MI - 5.4, Control - 2.4
- Preparation: MI - 27.0, Control - 14.6
- Action: MI - 51.4, Control - 58.5
- Maintenance: MI - 16.2, Control - 24.4

Percent in RTC Stage at Visit 1 (n=75)

- Precontemplation: MI - 2.8, Control - 0.0
- Contemplation: MI - 5.6, Control - 2.6
- Preparation: MI - 16.7, Control - 17.9
- Action: MI - 47.2, Control - 48.7
- Maintenance: MI - 27.8, Control - 30.8

Percent in RTC Stage at Visit 2 (n=71)

- Precontemplation: MI - 3.0, Control - 0.0
- Contemplation: MI - 0.0, Control - 0.0
- Preparation: MI - 30.3, Control - 18.4
- Action: MI - 42.4, Control - 42.1

Percent in RTC Stage at Visit 3 (n=68)

- Precontemplation: MI - 0.0, Control - 2.9
- Contemplation: MI - 2.9, Control - 5.9
- Preparation: MI - 26.5, Control - 17.6
- Action: MI - 47.1, Control - 35.3
- Maintenance: MI - 23.5, Control - 38.2
Models did not show an association between sex, age or duration of diabetes with A1C and group assignment
Additional Analyses

- Quality of Life
- Diabetes related emergencies
- Coping Scale
- Depression Scale
- Diabetes knowledge
- Patient and provider satisfaction
- Glucometer and insulin pump downloads
Interpretation of Results

- This study and Wang et al included patients with poor glycemic control
  - Perhaps more support is needed to lead to significant change
- A significant number of patients seems to already think that they were well controlled
Conclusions

- For this study
  - To date, no evidence that MI intervention has significant impact
  - Additional data to be review before drawing final conclusions
Future Directions

Multi-component intervention targeting youth with poor glycemic control

- closer follow-up
- education
- technology
Acknowledgements

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- Endocrine Research Coordinators: in particular, Darlene Brenson-Hughes CRC, and Lois Hester, RN CRC
- Children’s Mercy Division of Endocrinology: in particular, the Diabetes Team and Dr. W. Moore MD, PhD
- The patients and their families
Thanks for your attention!

Questions or comments?
“It’s easy. The first step is to entirely change who you are.”
- MI Demonstration Video