Understanding and Addressing Problematic Medication Adherence in Diabetes

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Percentage of Patients Achieving ADA Treatment Targets

Kazemian et al, 2019
Fred’s Story

• Age 59, recently divorced, lives alone, lost his job 2 months ago
• T2D 12 yrs, BMI 34, last A1C 9.1%
• Admits that he often “forgets” his OHAs and basal insulin
• Eats what he wants
• Rarely checks BGs (“no point to it”)
• Never misses medical appointments
• Knows diabetes can harm him, but has many other things to worry about that seem more pressing
Behavioral Contributors to A1C

**ALL SELF-CARE BEHAVIORS + COVARIATES**

- General Diet: 0.06
- Specific Diet: -0.04
- Exercise: -0.03
- SMBG: -0.002
- Medications: -0.16

*Covariates, age, gender, race, ethnicity, income, education, insurance status, insulin status and duration of diabetes. HbA1c assessed with a point-of-care device; *P*<0.05 Osborn et al, 2016*
WHY AREN'T WE SEEING DRAMATIC IMPROVEMENTS?
CLINICAL TRIAL RESULTS LOOK GOOD, BUT…

Identified 11 pivotal randomized controlled trials with published change in HbA1c (7 GLP-1 RA [2600 patients] and 4 DPP-4i [1889 patients]).

Optum/Humedica SmartFile database (2007-2014) was used (GLP-1 RA 221 patients; DPP-4i 652 patients). Change in HbA1c measured from drug initiation to 365±90 days later.

Carls et al, 2017
THE EFFICACY MIRAGE

HbA1c

Time

REAL WORLD

CLINICAL TRIAL

EFFICACY UNREALIZED
POOR ADHERENCE IS THE KEY

GLP-1 RA Adherence Rate in Real World = 29%

RCT, randomized clinical trial.

a Linear regression model fitted to estimate the change in HbA1c 1 year after initiating GLP-1 RA or DPP-4i based on baseline and treatment characteristics.

b Optum/Humedica SmartFile database (2007-2014) was used (GLP-1 RA 221 patients; DPP-4i 652 patients). Change in HbA1c measured from drug initiation to 365±90 days later.

c Medical adherence classified as poorly adherent if percentage of days covered (PDC) <80%.

DEFINING POOR ADHERENCE

- Proportion of days covered
- Typically measured after first refill
- PDC doesn’t account for
  - Prescriptions that are never filled at all\(^1\)
  - What the patient actually takes

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Adherence Rates for T2D Agents

PDC, proportion of days covered; SU, sulfonylurea; TZD, thiazolidinedione.
Symphony PTD Data Set; Nov 2016 – Sep 2017 - Baseline characteristics of the total cohort (N=6,086,767, No of Claims=62,224,558)
Among 75,589 insured patients in the first year of a community-based e-prescribing initiative, 31% of new prescriptions for diabetes medications were never filled.

BASAL INSULIN PERSISTENCE AT 12 MONTHS

Fig. 1. Kaplan-Meier curve on time to discontinuation of insulin treatment (90th percentile).

Wei et al, 2014

n = 4804 T2D 's
Conclusions

This study found that only 21%-22% of patients with T2DM were persistent with both basal and bolus insulin therapy over 1 year as defined by 2 different methods. Poor persistence with MDI was associated with greater medical costs, greater HCRU, and poorer glycemic control as compared with persistence among matched patient cohorts. Further research is necessary to standardize the definition of persistence using electronic databases, as well as to identify factors associated with insulin nonpersistence. Interventions are needed to improve basal and
Impact of Poor Adherence

Hospitalization risk increases with higher rates of poor adherence\(^1,2\)

<table>
<thead>
<tr>
<th>Adherence Level, %</th>
<th>Probability of Hospitalization, %</th>
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<tbody>
<tr>
<td>≥80</td>
<td>37%</td>
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<tr>
<td>60-79</td>
<td>41%</td>
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<tr>
<td>40-59</td>
<td>45%</td>
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<tr>
<td>20-39</td>
<td>50%</td>
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<tr>
<td>0-19</td>
<td>56%</td>
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Data was provided by a large, Medicare supplemental (MarketScan) database from July 1, 2009 to June 30, 2014. There were 123,235 patients with T2D aged ≥65 who received glucose-lowering agents. Comparisons between adherent (defined as PDC ≥80%) and poorly adherent (PDC <80%) were all statistically significant at \(P<0.001\).\(^1\)


73% increased risk of all-cause mortality due to poor adherence to oral hypoglycemics\(^2\)

Poor adherence defined as PDC <0.8
INTERVENTION STRATEGIES TO ADDRESS MEDICATION ADHERENCE

• Written medication instructions
• Goal setting
• Stimuli/prompts to take medications
• Enhancing support from significant others
• Special packaging of medications
• Self-monitoring of medication adherence
• Habit analysis and intervention

Conn and Rupar, 2017
Review of 771 RCTs indicate that effects are modest (Cohen’s d):

- Overall: 0.29
- Behavioral strategies: 0.33
- Addressing habits: 0.37
- No behavioral strategies: 0.28

"Much room remains for improvement."

Conn and Ruppar, 2017
Effect of Reminder Devices on Medication Adherence
The REMIND Randomized Clinical Clinical Trial

N = 52,294
Multiple chronic disease conditions
Taking ≤ 3 chronic disease medications
Poorly adherent (MPR < 80%) to ≥ 1 medication

Choudhry et al, 2017
Effect of Reminder Devices on Medication Adherence
The REMIND Randomized Clinical Clinical Trial

Niteesh K. Choudhry, MD, PhD; Alexis A. Krumme, MS; Patrick M. Ercole, PhD, MPH; Charmaine Girdish, MPH;
Angela Y. Tong, MS; Nazleen F. Khan, BS; Troyen A. Brennan, MD, JD, MPH; Olga S. Matlin, PhD;
William H. Shrank, MD, MSHS; Jessica M. Franklin, PhD

4 conditions:
1. Received nothing
2. Standard pillbox organizer
3. Pillbox strip with toggles
4. Pill bottle cap with digital timer
“although forgetfulness is the most frequently reported barrier to adherence, this factor may not have been the primary driver of non-adherence in our study population.”
In Summary

- Only ~50% of patients with T2D have A1C <7%; this has not changed over the last decade
- Clinical trial outcomes are not replicated in the real world due primarily to poor adherence
- Common behavioral interventions not very effective
WHAT ARE WE MISSING?
THE PROBLEM: FORGETFULNESS?
THE SOLUTION: FIX FORGETFULNESS?
“Patient’s medication beliefs, especially perceived need for medication and perceived medication affordability, were strong predictors of unintentional non-adherence.”

Gadkari and McHorney, 2012
Summarizing 53 qualitative studies, 16 countries

“This evidence… adds weight to the criticism of educational interventions that assume poor adherence is due to patients’ failings, either in knowledge or remembering to take drugs. The participants in the studies presented here did not simply have a knowledge deficit but held alternative explanations for their hypertension; many deliberately chose to avoid drugs.”

“It’s our job to help patients live as long as possible free of CVD complications. Although most patients share that goal, we don’t always see the same pathways to get there. I want to believe that if patients knew what I know, they would take their medicine. What I’ve learned is that if I felt what they feel, I’d understand why they don’t.”
Necessity-Concerns Framework
Perceived Treatment Inefficacy

Lack of tangible benefits contributes to discouragement and poor adherence

Out-of-Pocket Costs
Competing Priorities
And when something falls off or I start feeling bad, I’ll be ready to work hard on this. But so far, so good!
Suspicious about Medications
Failure to Warn Claims

Invokana\Invokamet  Call Now If You Suffered
Farxiga  Ketoacidosis
Jardiance  Kidney Failure
Glyxambi  Heart Attack
Xigduo XR  Wrongful Death

1-8888-LAW-2390
WHY DO PATIENTS FEEL THIS WAY?

• Threatening patients with medication
  - “If you can’t make some positive changes, then we’ll have no choice but to put you on more medication, and perhaps even start insulin.”

• Underlying messages
  - More medication should be avoided at all costs
  - You have failed
  - You are to be punished
Lack of Physician Trust

Differences in prevalence of poor refill adherence for any cardiometabolic medication in a cohort of 9377 patients with diabetes. Respondents were classified as poorly adherent when they had no medication supply for >20% of the observation time.

*Trust is defined using 2 items from the Trust in Physicians Scale (TIPS) modified to match the 4-point Consumer Assessment of Healthcare Providers and Systems (CAHPS) scale options during the preceding 12 months. †Shared decision-making was determined using 2 items from the Interpersonal Processes of Care (IPC) instrument during the preceding 12 months.

SO WHAT TO DO?
THE Critical Skill: Ask Correctly

• NOT so good:
  • “Any problems taking those medications?”
THE Critical Skill: Ask Correctly

MUCH better:

• “What’s one thing about taking your meds that’s been challenging?”
• “What do you like and what do you dislike about those meds you’ve been prescribed?”
• “What’s one thing about your diabetes medicines that bothers you, or concerns you?”
THE Critical Skill: Ask Correctly

MUCH better:

• Can you tell whether your diabetes medicines are helping you in any way?
• How do your diabetes medicines affect you?
• What have you heard about other people’s experiences with those diabetes medicines?
• What do you worry about when you think about starting insulin?”
SO WHAT TO DO?

1. Ask correctly

2. Forgetfulness
   - “Aside from forgetting, what else is tough about taking your meds?”
   - Anchoring strategies
   - Simplify the regimen
SO WHAT TO DO?

1. Ask correctly
2. Forgetfulness
3. Patient-provider trust and collaboration
   • Listen, listen, listen
Association Between Primary Care Practitioner Empathy and Risk of Cardiovascular Events and All-Cause Mortality Among Patients With Type 2 Diabetes: A Population-Based Prospective Cohort Study

Hajira Dambha-Miller, MRCGP, PhD\(^1,3\)
Adina L. Feldman, PhD\(^2\)
Ann Louise Kinmonth, FRCGP

**ABSTRACT**

**PURPOSE** To examine the association between primary care practitioner (physician and nurse) empathy and incidence of cardiovascular disease (CVD) events and all-cause mortality among patients with type 2 diabetes.
Assessing Your HCPs’ Empathy

How good was your HCP at:
1. making you feel at ease
2. letting you tell your story
3. really listening
4. being interested in you as a whole person
5. fully understanding your concerns
6. showing care and compassion
7. being positive
8. explaining things clearly
9. helping you to take control
10. making a plan of action with you

Dambha-Miller et al, 2019
HCP Empathy and Mortality Outcomes

- 10-year follow up of patients with newly diagnosed T2D:
- “those reporting better experiences of empathy in the first 12 months after diagnosis had a significantly lower risk (40% to 50%) of all-cause mortality over the subsequent 10 years vs. those who experienced low practitioner empathy.”

Dambha-Miller et al, 2019
SO WHAT TO DO?

1. Ask correctly
2. Forgetfulness
3. Patient-provider trust
4. Talk about beliefs about diabetes/meds
   • Perceived necessity
   • Perceived concerns
“Of all the positive steps you could take, taking your diabetes med is one of the most powerful things you can do to improve your health.”

“This may surprise you, but your med are working even if you can’t feel it. Looking at how your A1C changes over time can help us to see that.”
Discussing “Concerns” with Fred

- “There are always pluses and minuses, but the minuses may not be as big as you think.”
- “Needing all of these meds isn’t because you have done anything wrong.”
- “If you need more meds than the next person, this doesn’t mean you’re sicker; taking fewer meds doesn’t mean you’re healthier.”
<table>
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<tr>
<th>PROS</th>
<th>CONS</th>
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But What about Insulin?
How Common is Initiation Delay?

3295 insulin-naïve T2Ds were identified who had been recommended insulin:

- 984 (29.9%) declined
- Of the 984 who declined, 374 (38%) eventually started insulin
- Of the 374 who finally initiated, mean time to insulin initiation was 790 days.

Hosomura et al, 2017
Key Initiation Obstacles

1. **Injection pain and anxiety**
   - Discomfort/apprehension with injections
   - Needle phobia
2. **Personal failure**
   • “If I take insulin, it means I have failed, that I haven’t done a good enough job taking care of my T2D.”

Peyrot et al, 2005
Seven Initiation Obstacles

3. **Concerns about adverse effects**
   - **Negative influence on work/social life**
     - “My friendships may suffer (46%).”
   - **Will lead to poorer health**
     - IT “may cause hypo’s, weight gain, or perhaps serious problems with my eyes or kidneys.”
   - **Represents sickness**
     - “Starting insulin means I’m sicker, and my diabetes will become a more serious disease.”

Yoshioka et al, 2013
Why Such Negative Attitudes About Insulin?

- Threatening patients
  - “If you can’t make some positive changes in your diet, then we’ll have no choice but to start insulin.”

- Underlying messages
  - Avoid insulin at all costs
  - You have failed
  - You are to be punished
So What To Do?

• Retrospective survey, n= 594 T2Ds:
• All subjects indicated an initial unwillingness to start insulin, but had eventually done so.

Polonsky et al, 2019
1. Encourage an Immediate Injection

“Patients [n = 96]… found that giving an injection when insulin was introduced to be very helpful, yet in-office demonstration was reported by only one-half of the PCPs.”

Krall et al, 2015
2. Put Forward a Sense of Control

• The Insulin Challenge:

I’d like you to try insulin for just a month. At the end of the month, if you don’t think it’s been worthwhile, or if it still seems as awful as you’re imagining it might be, I promise to help you stop.”
What are some of the reasons why taking insulin seems so bad to you?”
# Addressing Insulin Misbeliefs

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<tr>
<th>Obstacles</th>
<th>Discuss</th>
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<tbody>
<tr>
<td>It means I have failed</td>
<td>• No matter what you do, you may need IT, because diabetes is “progressive”</td>
</tr>
<tr>
<td>I will get complications</td>
<td>• Review those old family stories</td>
</tr>
<tr>
<td></td>
<td>• Insulin is much more likely to reduce than raise complications risk</td>
</tr>
<tr>
<td>It means my diabetes is getting worse</td>
<td>• Insulin helps control BG levels and thus keeps the disease from getting worse</td>
</tr>
<tr>
<td>Insulin won’t help</td>
<td>• List long-term benefits of good control</td>
</tr>
<tr>
<td></td>
<td>• Nobel Prize not given for drugs that suck</td>
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CONCLUSIONS

Poor medication adherence:

• ... explains a great deal of poor cardiometabolic progress we’ve seen over the past decade

• ... is commonly an attitudinal issue, not just a behavioral issue.

• ... is best addressed by considering the patient’s perspective, and encouraging a two-way conversation about the perceived pro’s and con’s of the medication.
Further Reading


Thanks for Listening!

Critical Psychosocial Issues in Diabetes
Web-based video modules

The Critical Psychosocial Issues in Diabetes web-based program is a series of video modules designed to examine psychosocial issues in diabetes, provide a brief review of the research literature, clarify how and why the problems manifest themselves among patients with diabetes, and put forward practical solutions for the busy healthcare professional.

The American Diabetes Association published its first Psychosocial Position Statement in December, 2016, recognizing the important

www.behavioraldiabetes.org