

# Improving Diabetes Care

by

# Embracing Insulin

- Clinician Presentation -



# Goals

**Review the benefits of A1c Control**

**Understand barriers to achieving ideal A1c Control**

**Understand the limitations of oral medications & the benefits of adding hs NPH insulin**

**Understand the myths and concerns about adding insulin**

# Does this case sound familiar?

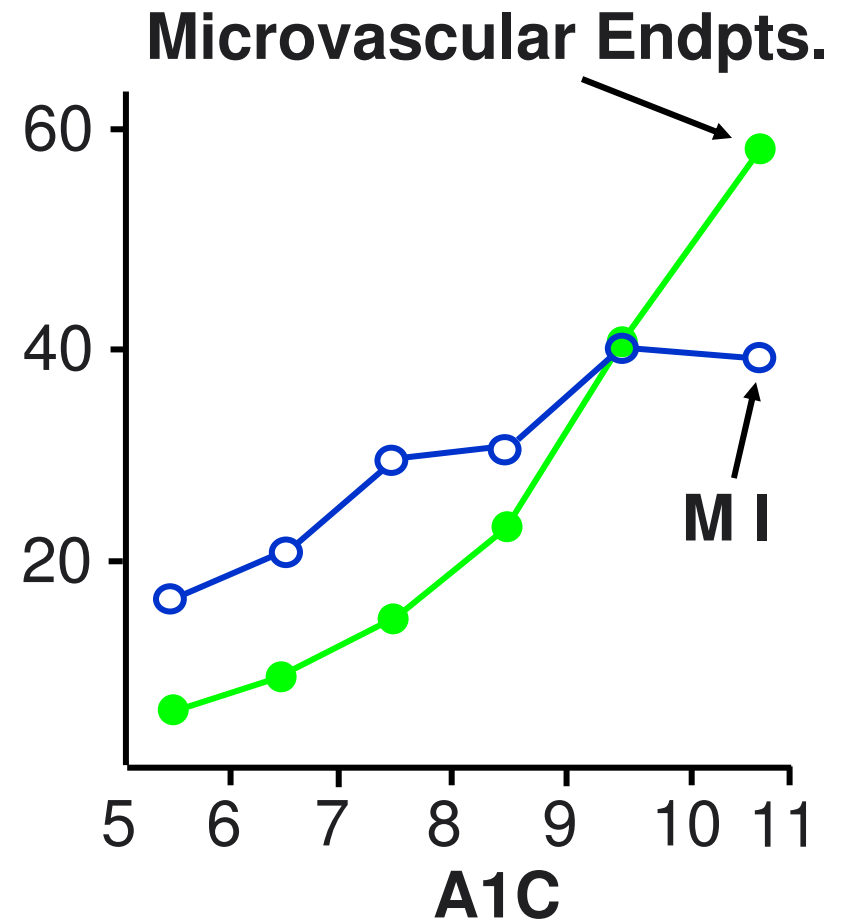
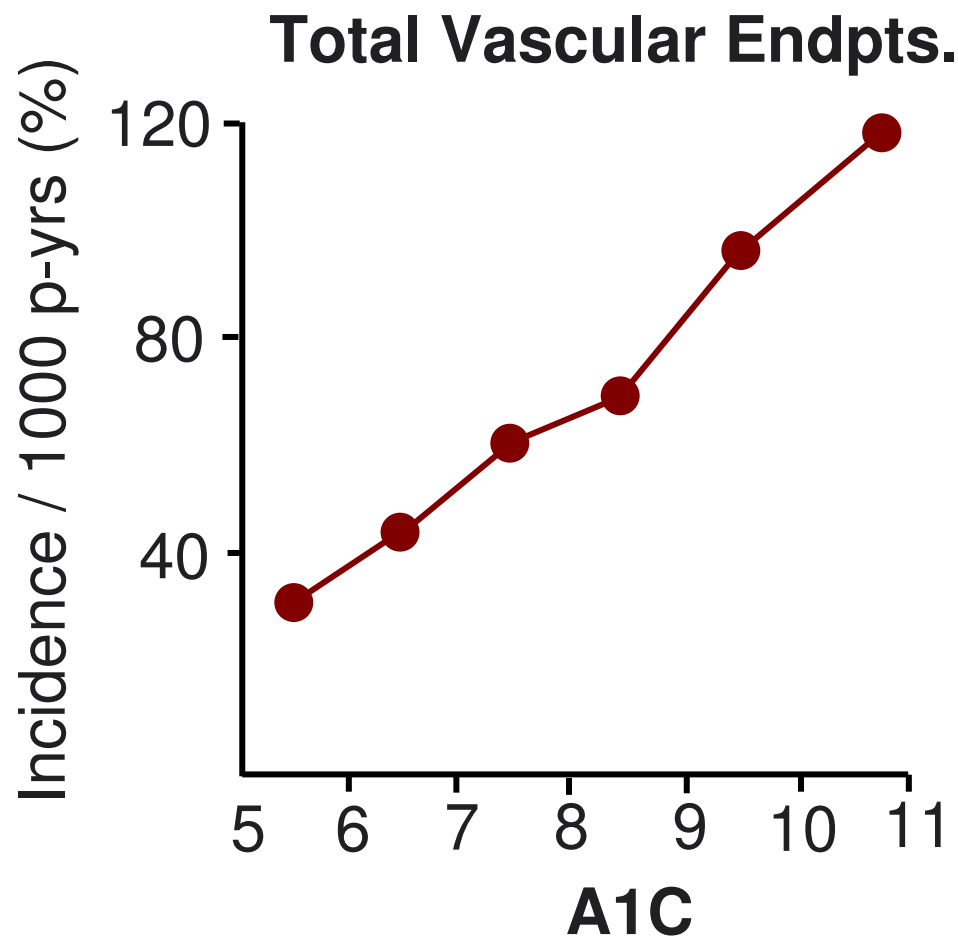
62 Female, BMI 34, DM x 4 years, A1C 10.7

Glucophage 1000 mg BID + Glipizide 10 mg BID

What do you suggest?

1. Add Actos 15 mg daily x 6 months
2. Add NPH insulin 10 units SQ HS and self titrate
3. Admit to ICU for IV Intensive Insulin Therapy
4. Continue same meds and repeat A1C 3 months
5. Transfuse with 12 units packed RBC's, repeat A1C in 1 week, before the new RBC's get glycosylated

# A1C & Vascular Complications in Pts w. DM2



# So When Do Doctors Escalate Treatment?

**When Diet & Exercise isn't enough . . .**

**Average # months above 8% = 8.7 mo**

**Average A1C at intervention = 8.6 %**

**When Sulfonyluria Alone isn't enough . . .**

**Average # months above 8% = 20.5 mo**

**Average A1C at intervention = 8.8 %**

**When Metformin Alone isn't enough . . .**

**Average # months above 8% = 14.5 mo**

**Average A1C at intervention = 9.1 %**

**When Combination (M + S) isn't enough . . .**

**Average # months above 8% = 25.6 mo**

**Average A1C at intervention = 9.6 %**

# What about NPH insulin Therapy?

**Inexpensive**

**No maximum daily dose**

**No drug interactions**

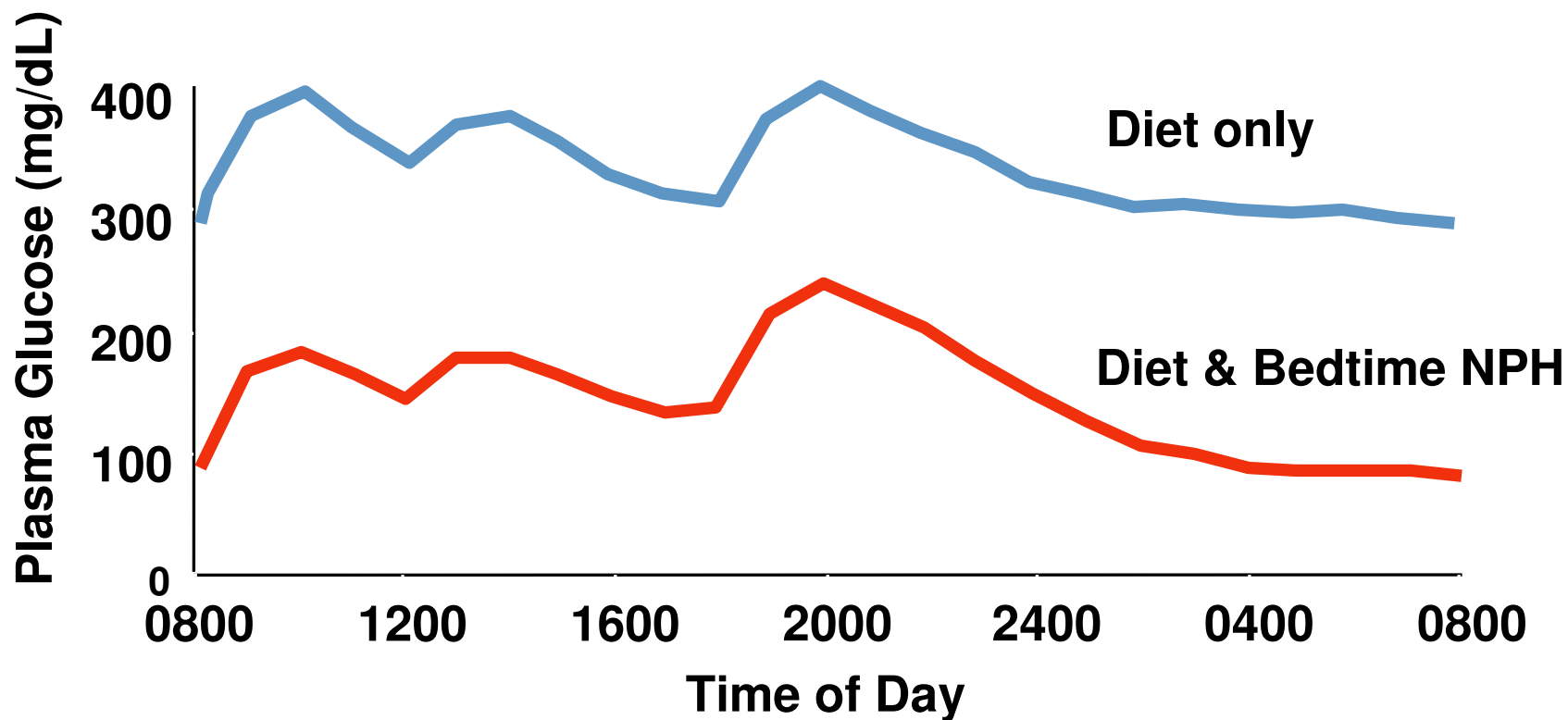
**No contraindications**

**Flexible dosing schedule**



# Bedtime NPH is VERY Effective!

## The Effect of Diet & Bedtime NPH on Glucose



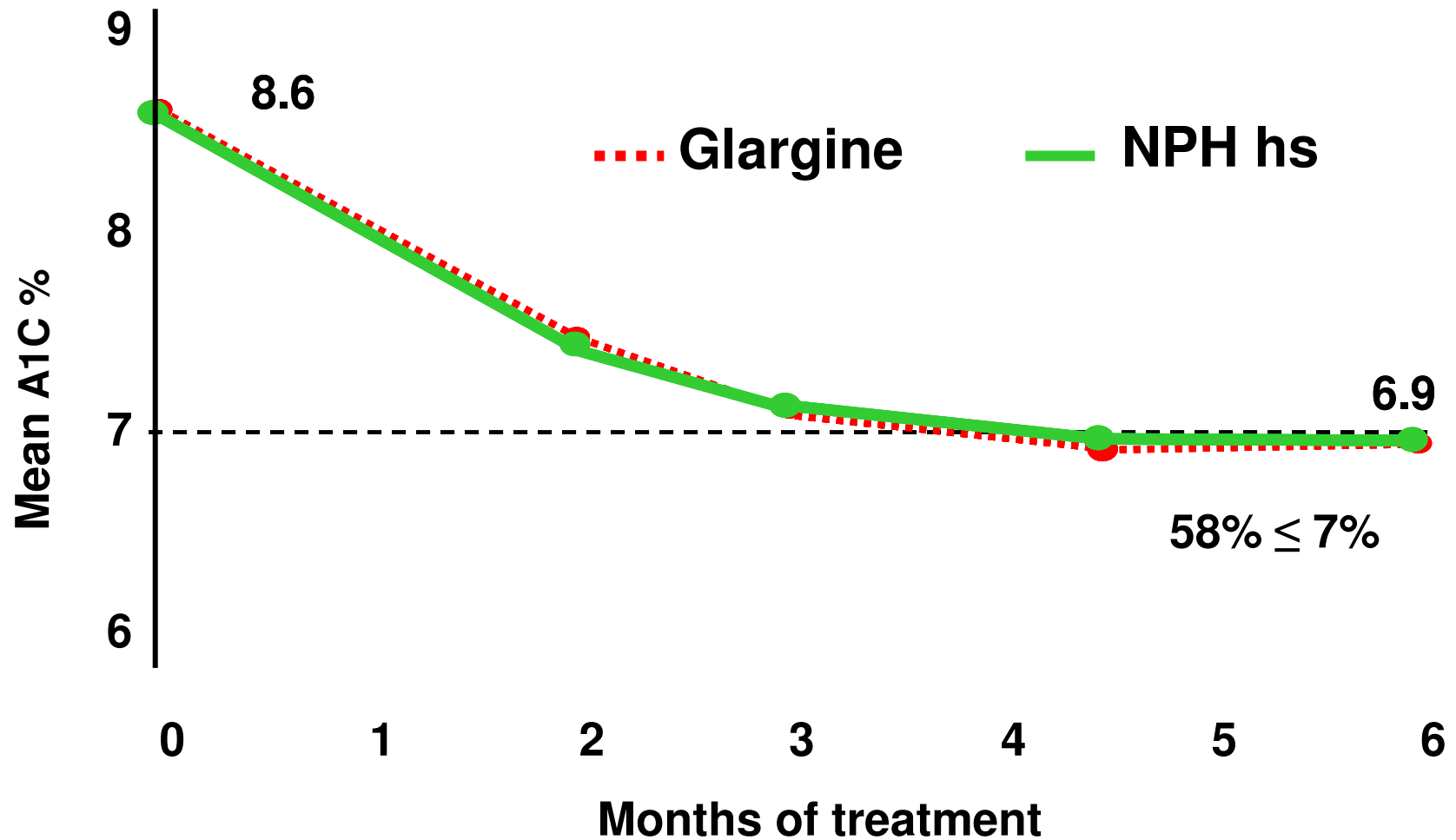
*Diabetes Care*. Volume 18(6), June 1995.

# What is NPH?



1936 - NPH (Neutral Protamine Hagedorn) Insulin was developed by Hans Christian Hagedorn

# Treat to Target Trial NPH vs. Glargine to achieve A1C <7%



# Hypoglycemia in the Treat to Target Trial

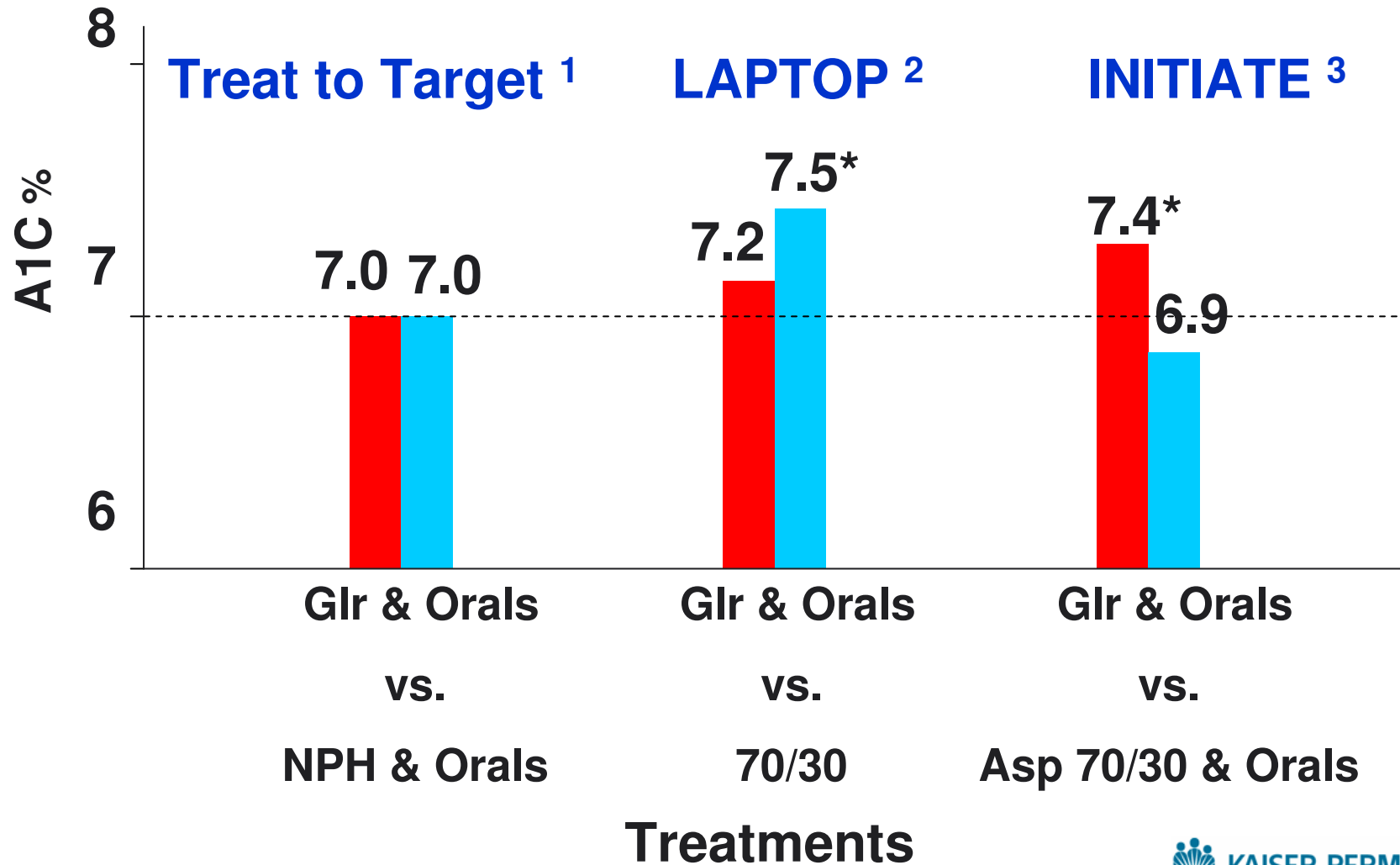
<b>Blood Glucose</b>	<b>Events per pt. year</b>	
	<b>Glargine</b>	<b>NPH</b>
<b>Symptomatic</b>	<b>13.9</b>	<b>17.7</b>
<b>BG <math>\leq</math> 72 mg/dl</b>	<b>9.2</b>	<b>12.9</b>
<b>BG <math>\leq</math> 56 mg/dl</b>	<b>3.0</b>	<b>5.1</b>

# No A1c Benefit of Mixed Insulin vs NPH

<sup>1</sup>Riddle. Diabetes Care 2003;26: 3080-6

<sup>2</sup>Janka. Diabetes Care 2005;28:254-9

<sup>3</sup>Raskin. Diabetes Care 2005;28:260-5

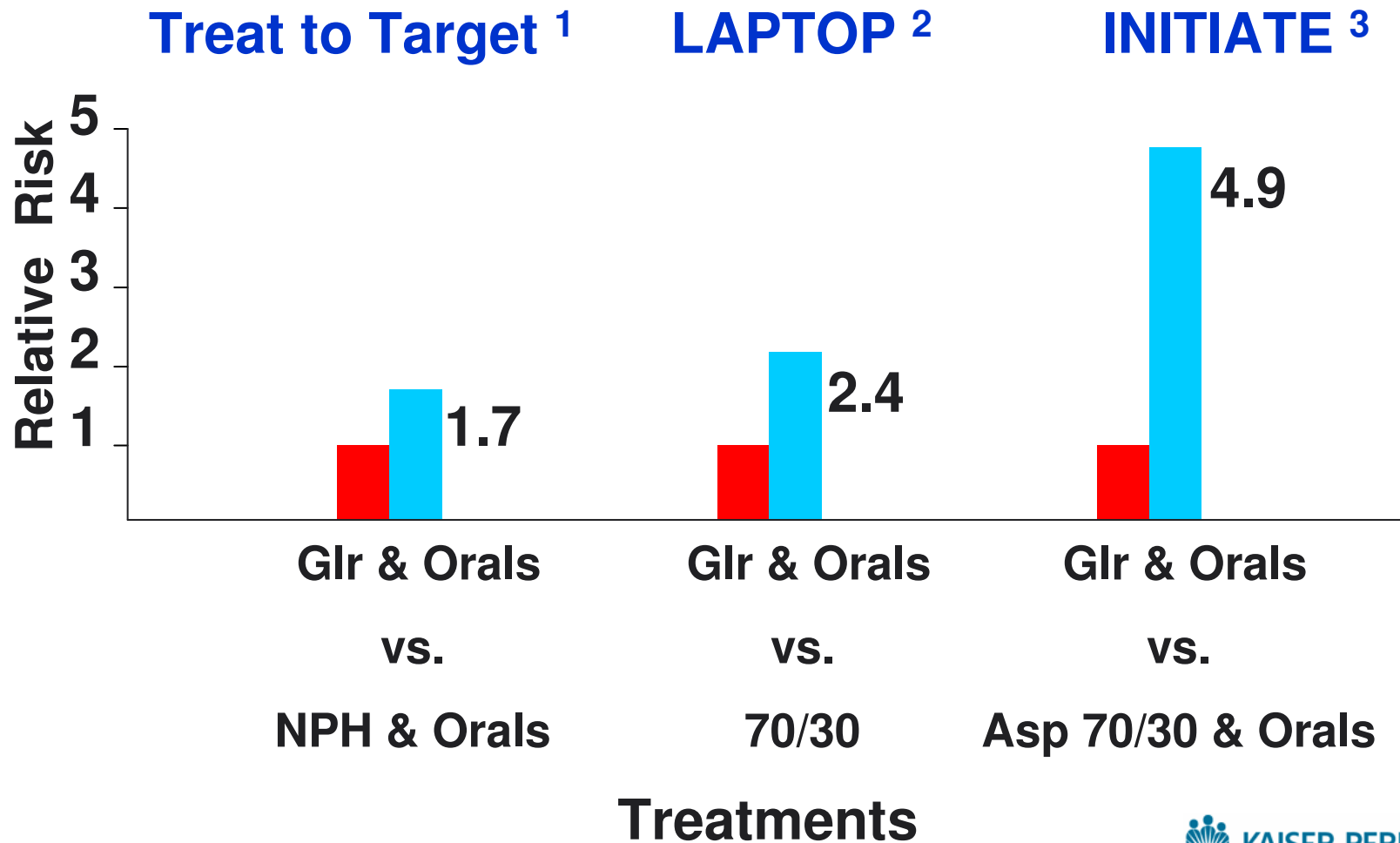


# More Hypoglycemia with Mixed Insulin

<sup>1</sup>Riddle. Diabetes Care 2003;26: 3080-6

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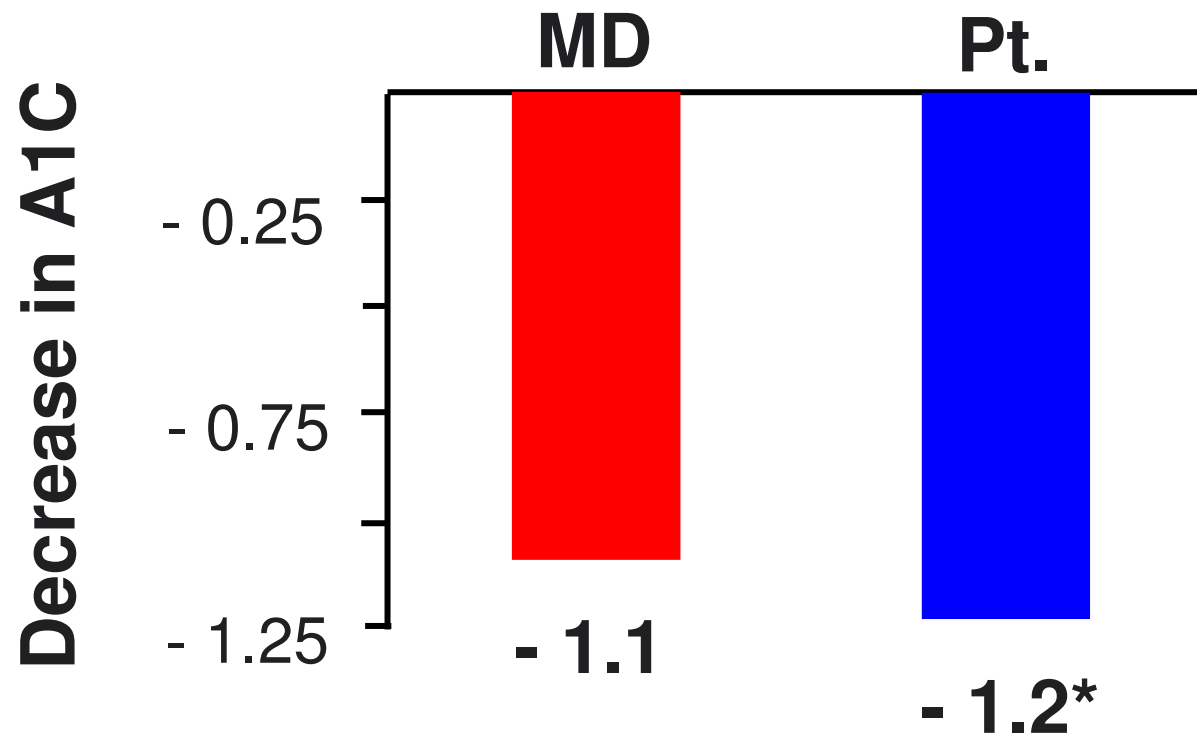
<sup>3</sup>Raskin. Diabetes Care 2005;28:260-5



# Physician vs. Patient Self Titration

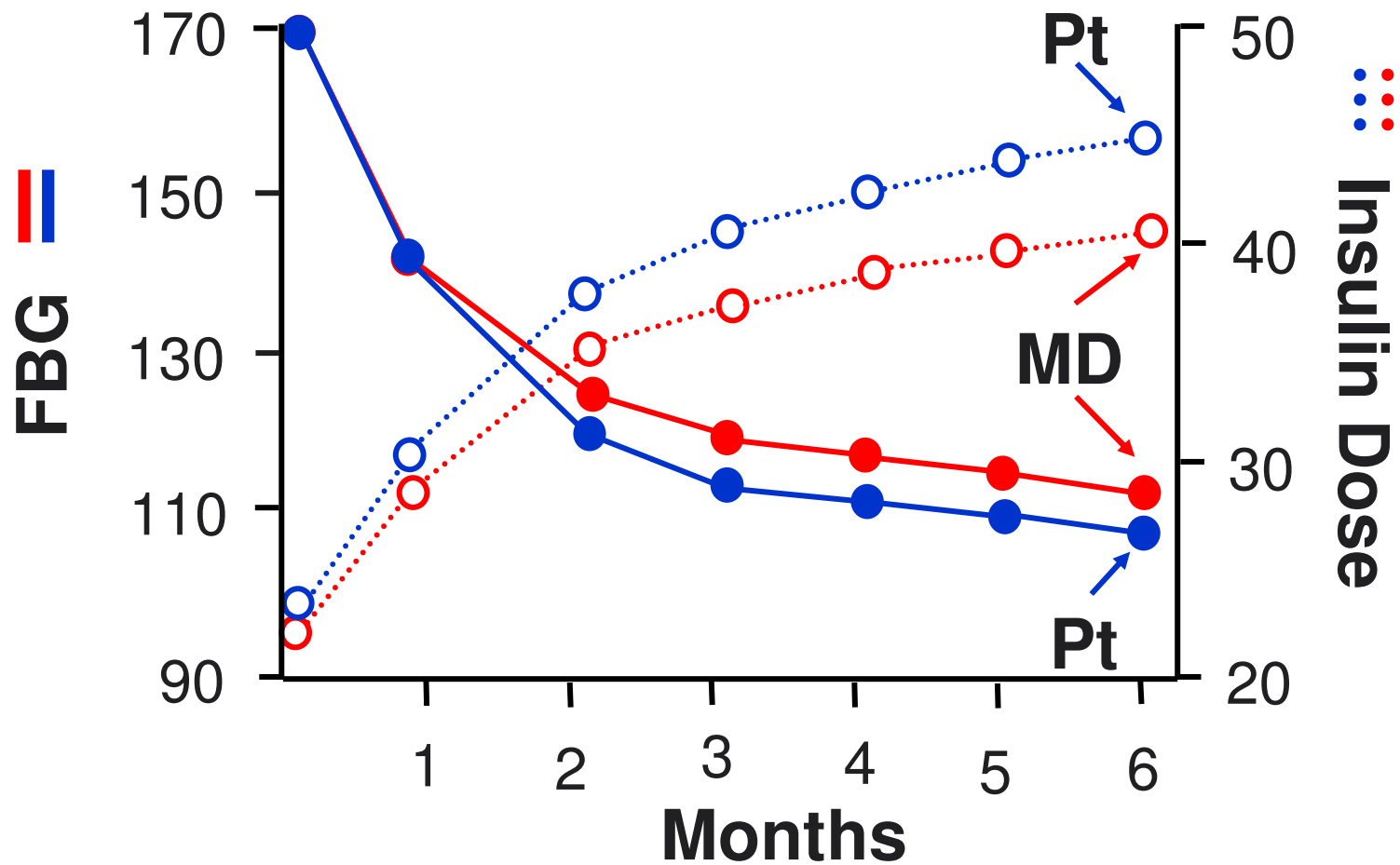
<b>Ave FBG</b>	<b>Titration (units)</b>	
	<b>MD q week</b>	<b>Pt q 3 days</b>
<b>100 - 119</b>	<b>0 - 2</b>	<b>0</b>
<b>120 - 139</b>	<b>2</b>	<b>2</b>
<b>140 - 179</b>	<b>4</b>	<b>2</b>
<b>180+</b>	<b>6 - 8</b>	<b>2</b>

# Patients Were AS Effective as Physicians!



Davies, Diabetes Care: 2005, 28; 1282

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# Psychological Resistance to Using Insulin

- **Perceived ↓ of Control**
- **Perceived Personal Failure**
- **Perceived ↑ in Disease Severity**
- **Lack of Confidence in Their Ability**
- **Injection Anxiety**
- **Perceived Lack of Benefit**

# Psychological Insulin Resistance

*“Look, doc, there is just no way I could take the needle.”*

*“Please, I just need a few more months to see if I can drop this weight.”*

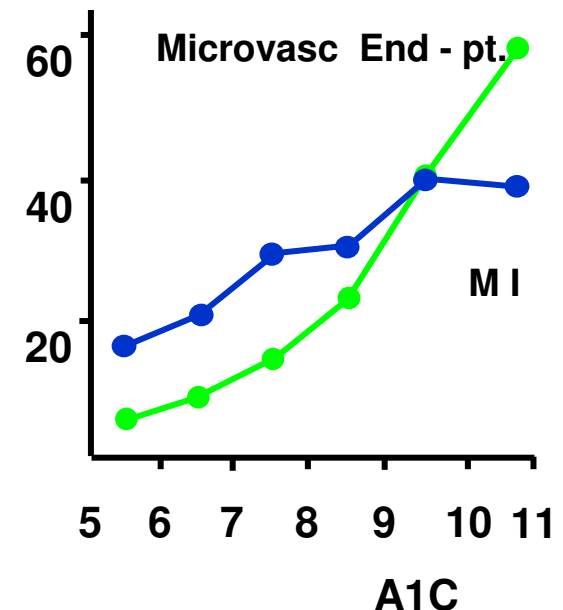
*“Mrs. Sincere, I know you’re trying to follow your diet and exercise plan, but **if the next A1c is still this high, I’m afraid we’ll have no choice but to try insulin.**”*

# Overcoming Resistance

- **Remember – your patient is in control**
- **Normalize the use of insulin**
- **Educate about A1C and prevention**
- **Keep things flexible and simple**
- **Insulin is an option, not a threat**
- **Work toward common goals**

# Tips for Talking To Pts. About NPH Insulin

“So, Mr. Sweet, we’ve reviewed how the A1C test relates to complications of diabetes. Right now your A1C is 8.5%. Are you happy with that or would you like to add a medication to get your A1C lower?”



“I’m glad to hear that you’re interested in getting your A1C < 7%. Since you’re on the maximum doses of Metformin and Glipizide, I am confident that adding NPH insulin at bedtime will get you closer to your goal. How does that sound?”

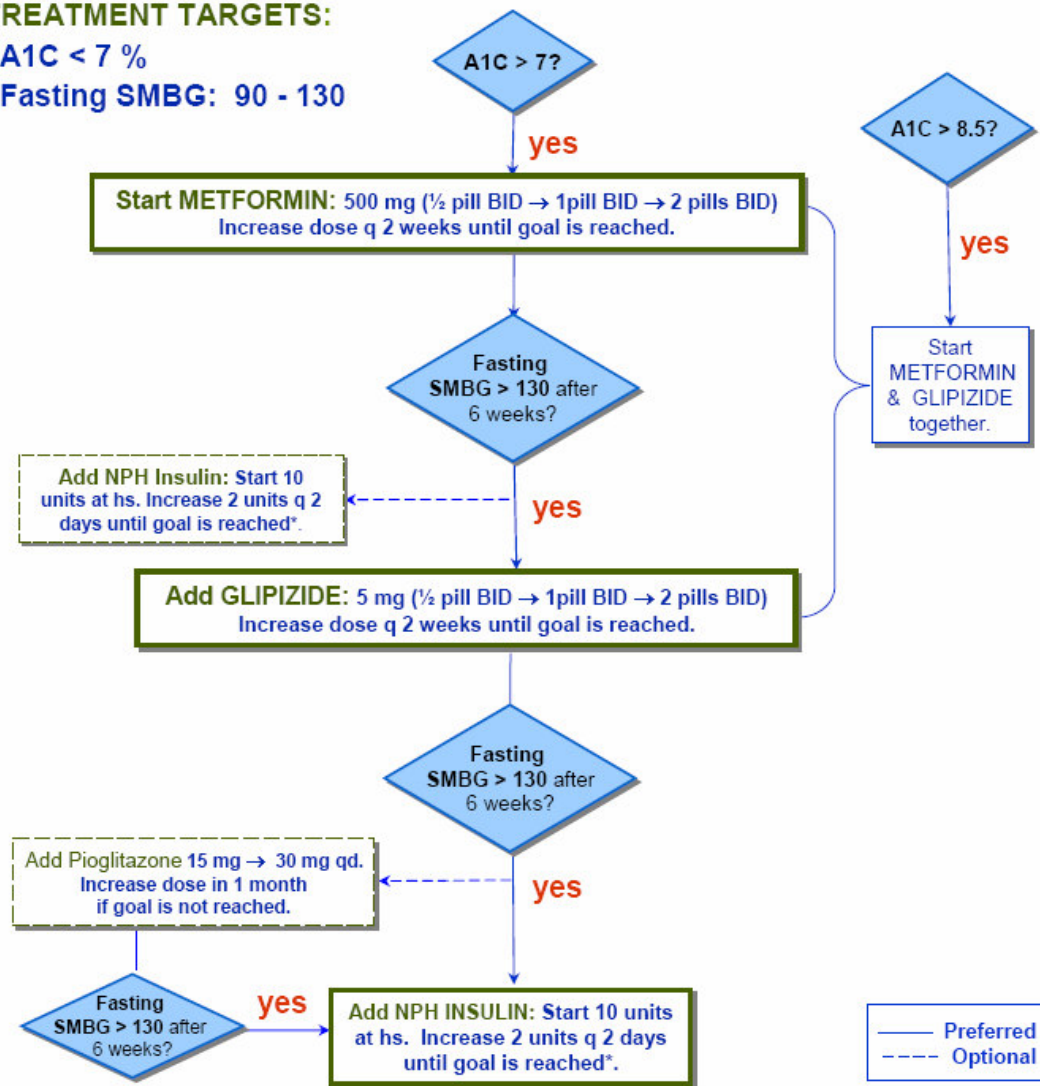
# Glucose Control Algorithm

## Type 2 Diabetes

### TREATMENT TARGETS:

A1C < 7 %

Fasting SMBG: 90 - 130



\*If ≥ 40 units, consider splitting dose to bid.

Metformin 500 mg  
(up to 1000 mg bid)



Glipizide 5 mg  
(up to 10 mg BID)



NPH Insulin  
10 units @ hs  
(consider TZD)

# Key Messages on A1C Control

- For ↓ CV risk, use ASA, ACE, & Statin & control BP (120's / 70's) and LDL ( $\leq 99$ )
- A1C Control helps prevent micro-vascular complications & likely prevents macro-vascular complications
- Oral medications have limited effects
- Most pts with DM will CHOOSE to use insulin to maintain ideal A1C levels
- NPH Insulin at bedtime is easy & effective

# Key Messages on NPH Insulin

- **Pts can self-titrate bedtime NPH insulin**
  - 2 units q 2 days to achieve FBG < 130
- **Consider Glargine for pts at higher risk for hypoglycemia**
- **Make insulin an ‘easy effective option’ NOT a punishment or failure**
- **Work with patients toward shared goals**

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