

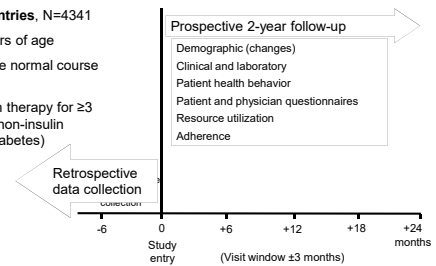
Background/Rationale

- Among insulin-treated patients with T2DM, treatment changes to optimize glycemic control may not occur in a timely manner
- The distribution of individualized targets that are set and factors associated with selection of those targets are not well understood
- Global data on frequency and type of treatment changes in this population are scarce
- Multinational Observational Study Assessing Insulin use (MOSA1c) was a 2-year prospective observational study in 18 countries

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MOSA1c Study Design

- Global, 18 countries, N=4341
- T2DM, ≥18 years of age
- Presented in the normal course of care
- On initial insulin therapy for ≥3 months (± any non-insulin treatment for diabetes)



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18 Countries in the MOSA1c Study



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Study Methods: Objective 1

- At study entry, physicians selected a target HbA1c level for each patient for the next 2 years
- For descriptive analyses, patients were divided into 4 groups based on individualized HbA1c target

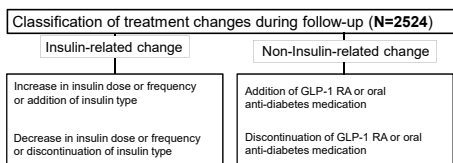


- For inclusion in the analysis, patients (N=2328) were required to have complete data on treatments and HbA1c target
- A multivariable logistic regression model compared baseline factors associated with targets of ≤7% vs >7%

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Study Methods: Objective 2

- Countries were classified into 3 economic groups according to 2015 World Bank categories
- Analyses include only patients with non-missing treatment data at all visits



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Results

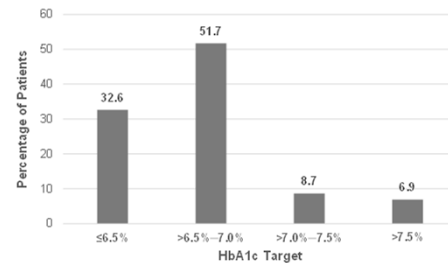
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Objective 1

➤ What factors are associated with the individualized HbA1c target set by the physician for T2DM patients on insulin therapy?

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Distribution of Individualized HbA1c Targets



*2328 patients reported HbA1c targets

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Selected Baseline Characteristics

Baseline Characteristic	GROUP 1 ≤6.5% (N=760)	GROUP 2 >6.5-7.0% (N=1,204)	GROUP 3 >7.0-7.5% (N=203)	GROUP 4 >7.5% (N=161)
Demographics				
Age (years; mean, SD)	61.2 (11.1)	60.5 (10.5)	64.3 (10.6)	60.4 (10.4)
Gender (female; n, %)	393 (51.7%)	578 (48.0%)	90 (44.3%)	90 (55.9%)
Ethnicity (Hispanic/Latino; n, %)	189 (24.9%)	185 (15.4%)	21 (10.3%)	36 (22.4%)
Clinical Characteristics				
Duration of diabetes (years; mean, SD)	11.7 (7.7)	12.4 (7.8)	15.2 (8.2)	13.2 (7.4)
BMI (m/kg ² ; mean, SD)	28.3 (5.6)	29.6 (6.2)	29.1 (5.0)	28.8 (6.1)
Microvascular complication (n, %)	323 (44.1%)	503 (43.5%)	128 (65.0%)	88 (57.9%)
Macrovascular complication (n, %)	199 (27.1%)	264 (22.7%)	61 (30.5%)	44 (28.2%)
≥1 hypoglycemic episode in last month (n, %)	145 (23.4%)	269 (24.4%)	47 (25.1%)	26 (20.2%)
Baseline HbA1c level (%; mean, SD)	7.2 (1.7)	8.2 (1.7)	8.5 (1.8)	9.7 (1.7)

Abbreviations: BMI = body mass index; HbA1c = glycosylated hemoglobin; SD = standard deviation. Percentages calculated among patients with non-missing data on the characteristic.

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Selected Baseline Characteristics (cont'd)

Baseline Characteristic	GROUP 1 ≤6.5% (N=760)	GROUP 2 >6.5-7.0% (N=1,204)	GROUP 3 >7.0-7.5% (N=203)	GROUP 4 >7.5% (N=161)
Insulin Type Taken at Baseline (n, %)				
Basal only	439 (57.8%)	674 (56.0%)	87 (42.9%)	86 (53.4%)
Prandial only	50 (6.6%)	42 (3.5%)	4 (2.0%)	3 (1.9%)
Mixed only	246 (32.4%)	422 (35.0%)	96 (47.3%)	59 (36.6%)
Combination	25 (3.3%)	66 (5.5%)	16 (7.9%)	13 (8.1%)
Baseline Oral Anti-diabetes Medication (n, %)				
	444 (58.4%)	910 (75.6%)	149 (73.4%)	103 (64.0%)
Country Economic Group				
Lower-middle income	128 (16.8%)	392 (32.6%)	60 (29.6%)	41 (25.5%)
Upper-middle income	323 (42.5%)	203 (16.9%)	46 (22.7%)	25 (15.5%)
High income	309 (40.7%)	609 (50.6%)	97 (47.8%)	95 (59.0%)

Abbreviations: BMI = body mass index; HbA1c = glycosylated hemoglobin; SD = standard deviation. Percentages calculated among patients with non-missing data on the characteristic.

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Selected Baseline and Patient-reported Characteristics

Baseline Characteristic	GROUP 1 ≤6.5% (N=760)	GROUP 2 >6.5-7.0% (N=1,204)	GROUP 3 >7.0-7.5% (N=203)	GROUP 4 >7.5% (N=161)
Patient-reported Patient and Physician Characteristics				
Diabetes Knowledge Test score (range 0-9)	5.0 (4.0 - 7.0)	5.0 (3.0 - 6.0)	4.0 (3.0 - 6.0)	4.0 (2.0 - 5.0)
Diabetes Distress Scale (range 1-6)	1.6 (1.3 - 2.5)	1.9 (1.4 - 3.2)	1.7 (1.3 - 2.9)	2.1 (1.4 - 3.1)
Interpersonal Process of Care (range 1-5)				
Compassionate and respectful (higher = better)	4.2 (3.6 - 5.0)	4.2 (3.6 - 5.0)	4.4 (3.8 - 5.0)	4.0 (3.4 - 5.0)
Discrimination (higher = worse)	1.0 (1.0 - 2.0)	1.3 (1.0 - 2.0)	1.0 (1.0 - 1.8)	1.0 (1.0 - 1.8)
Elicited concerns (higher = better)	4.0 (3.3 - 5.0)	4.0 (3.3 - 5.0)	4.3 (3.7 - 5.0)	4.0 (3.0 - 5.0)
Explained results (higher = better)	4.3 (3.5 - 5.0)	4.0 (3.3 - 4.8)	4.0 (3.3 - 4.8)	4.0 (3.0 - 4.5)
Patient-centered decision making (higher = better)	3.8 (2.5 - 4.5)	3.5 (2.5 - 4.3)	3.8 (2.3 - 4.5)	3.3 (2.0 - 4.0)
Hurried communication (higher = worse)	1.2 (1.0 - 1.8)	1.2 (1.0 - 2.0)	1.2 (1.0 - 1.8)	1.2 (1.0 - 2.0)

Cell values are median (interquartile range) unless otherwise indicated. Percentages calculated among patients with non-missing data on the characteristic.

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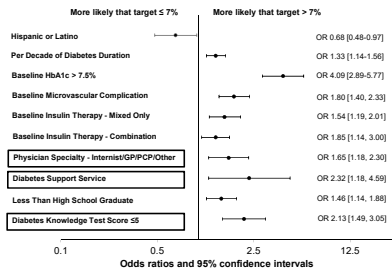
Selected Baseline and Physician-reported Characteristics (cont'd)

Baseline Characteristic	GROUP 1 ≤6.5% (N=760)	GROUP 2 >6.5-7.0% (N=1,204)	GROUP 3 >7.0-7.5% (N=203)	GROUP 4 >7.5% (N=161)
Physician Characteristics				
Physician specialty (endocrinologist; n, %)	290 (59.1%)	583 (71.1%)	81 (60.9%)	44 (56.4%)
Years physician has treated patients with diabetes	15 (10 - 21)	13 (10 - 20)	19 (13 - 26)	13 (10 - 25)
Number of diabetes patients treated in last month	180 (50 - 475)	250 (100 - 400)	250 (50 - 400)	200 (40 - 500)
Minutes physician spends with patients	25 (15 - 40)	20 (15 - 30)	15 (10 - 30)	20 (15 - 50)
Health Care System Characteristic				
Insurance type (public; n, %)	402 (56.8%)	557 (49.4%)	106 (55.2%)	105 (70.0%)
Presence of diabetes support service (yes; n, %)	433 (88.0%)	743 (90.8%)	124 (93.2%)	77 (97.5%)

Cell values are median (interquartile range) unless otherwise indicated. Percentages calculated among patients with non-missing data on the characteristic.

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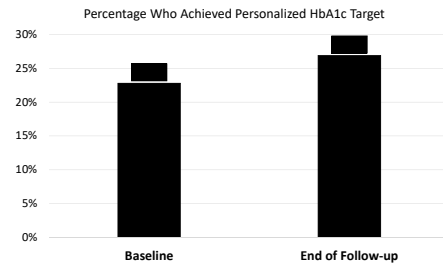
Multiple Factors Were Associated With Individualized Hba1c Targets



Abbreviations: GP = general practitioner; HbA1c = glycated hemoglobin; OR = odds ratio; PCP = primary care provider

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Glycemic Control Data



Abbreviations: HbA1c = glycated hemoglobin; SD = standard deviation. Patients included in this analysis had non-missing data on HbA1c target and on HbA1c levels at baseline and end of follow-up.

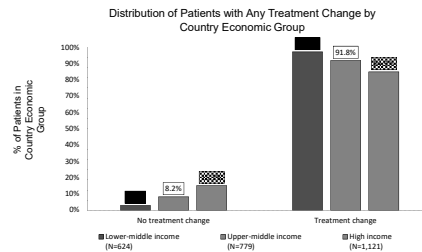
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Objective 2

➤ What types of diabetes treatment changes occur across 2 years of follow-up?

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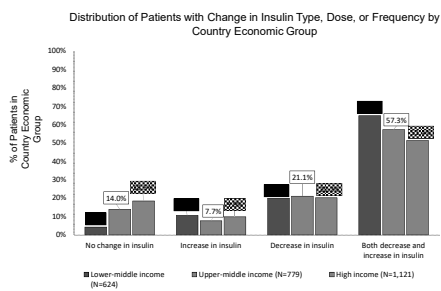
Any Treatment Change



Treatment change includes increase in insulin dose, frequency, or type, decrease in insulin dose, frequency, or type, addition of oral or GLP-1 RA, or discontinuation of oral or GLP-1 RA.

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Change in Insulin-related Treatment



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Summary

Factors associated with selection of individual HbA1c target >7% included:

- Ethnicity (not Hispanic or Latino)
- Below high school education level
- Lower diabetes knowledge
- Longer duration of diabetes
- Higher baseline HbA1c level
- History of microvascular complication
- Baseline insulin type (mixed or combination vs. Basal only)
- Physician specialty (Internist/GP/PCP/Other vs. endocrinologist)
- Presence of diabetes support services in practice

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Conclusions

- Averaged across countries, 10% received no changes to insulin type, dose, or frequency or to non-insulin anti-diabetes treatment in 2 years
 - Treatment changes were slightly less common in higher-income countries
- The majority of patients received multiple adjustments to treatment over time:
 - Increases to treatment (e.g., adding drug or increasing dose)
 - Reductions in treatment (e.g., discontinuing drug or reducing dose)
- Further analyses are ongoing to assess those factors that may allow for more specific intervention in the management of patients with diabetes

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MOSA1c Study Team

- | | |
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