

Target HbA1c level as a glycemic goal

인제대학교 의과대학 일산백병원 내과
김동준

Target HbA1c as a glycemic goal in Korea

- **General HbA1c goal**
- **Individualization of HbA1c goal**

ACCORD *vs.* ADVANCE

	ACCORD	ADVANCE
Achieved HbA1c (%)	6.4 <i>vs.</i> 7.5	6.3 <i>vs.</i> 7.0
Insulin at baseline (%)	35	1.5
Insulin at study end (%)	77 <i>vs.</i> 55	40 <i>vs.</i> 24
Weight change (kg)	+3.5 <i>vs.</i> +0.4	-0.1 <i>vs.</i> -1.0
Severe hypoglycemia (%)	16.2 <i>vs.</i> 5.1	2.7 <i>vs.</i> 1.5

ADA

- **General glycemc goal: HbA1c < 7%**
- DCCT, UKPDS, Kumamoto study, VADT:
reduction of microvascular complications
- DCCT-EDIC, UKPDS:
long-term reduction of macrovascular disease

ADA

- **Glycemic goal for selected individuals :**
lower than HbA1c < 7%
- DCCT, UKPDS: HbA1c 7% → 6%
further reduction of microvascular complications
- ADVANCE: HbA1c < 6.5% vs. 7.0%
reduction in albuminuria
- ACCORD: higher mortality in intensive arm

Selected individuals:

no significant hypoglycemia, no other adverse effects of treatment,
short duration of diabetes, long life expectancy,
no significant CVD

ADA

- **Glycemic goal for selected individuals :
higher than HbA1c < 7%**
- DCCT, UKPDS: HbA1c 7% → 6%
much smaller risk reduction of
microvascular complications
- ACCORD: higher mortality in intensive arm

Selected individuals:

severe hypoglycemia, limited life expectancy,
advanced microvascular or macrovascular complications,
extensive comorbidity,
longstanding diabetes in whom general goal is difficult to attain

ADA, 2010

Table 11 —Summary of glycemic recommendations for non-pregnant adults with diabetes

A1C	<7.0%*
Preprandial capillary plasma glucose	70–130 mg/dl (3.9–7.2 mmol/l)
Peak postprandial capillary plasma glucose†	<180 mg/dl (<10.0 mmol/l)

Key concepts in setting glycemic goals:

- A1C is the primary target for glycemic control
- Goals should be individualized based on:
 - duration of diabetes
 - age/life expectancy
 - comorbid conditions
 - known CVD or advanced microvascular complications
 - hypoglycemia unawareness
 - individual patient considerations
- More or less stringent glycemic goals may be appropriate for individual patients

Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals

*Referenced to a nondiabetic range of 4.0–6.0% using a DCCT-based assay. †Postprandial glucose measurements should be made 1–2 h after the beginning of the meal, generally peak levels in patients with diabetes.

IDF

- **General glycemc goal : HbA1c < 6.5%**
- In persons with the risk of hypoglycemia, other physical or mental impairment: higher than < 6.5%

NICE

- **General glycemc goal : HbA1c < 6.5%**
- Single target figure is unhelpful
- Target HbA1c may vary in individuals depending on the
 - (1) Quality of life
 - (2) Side effects
 - (3) Resources

JDS

- **우수:** 정상의 상한값 <5.8%
- **양호:** 합병증의 발생을 최소화 할 수 있는 값
5.8-6.5%
- **불충분:** 6.5-7.0%
- **불량:** 7.0-8.0%
- **불가능:** > 8.0%

HbA1c: < 6.5% vs. < 7.0%

< 6.5%

IDF
AACE/ACE
NICE
France
Germany
Ireland
Sweden

vs.

< 7.0%

ADA
ACC/AHA
Canada
Belgium
Italy
Netherlands

Risk-Benefit Ratio

HbA1c < 6.5%

Diabetic Complications

VS.

HbA1c < 7.0%

**Complications of
Diabetes Treatment**

Ideal HbA1c: normal value
without any side effect of treatment
no limit of resources

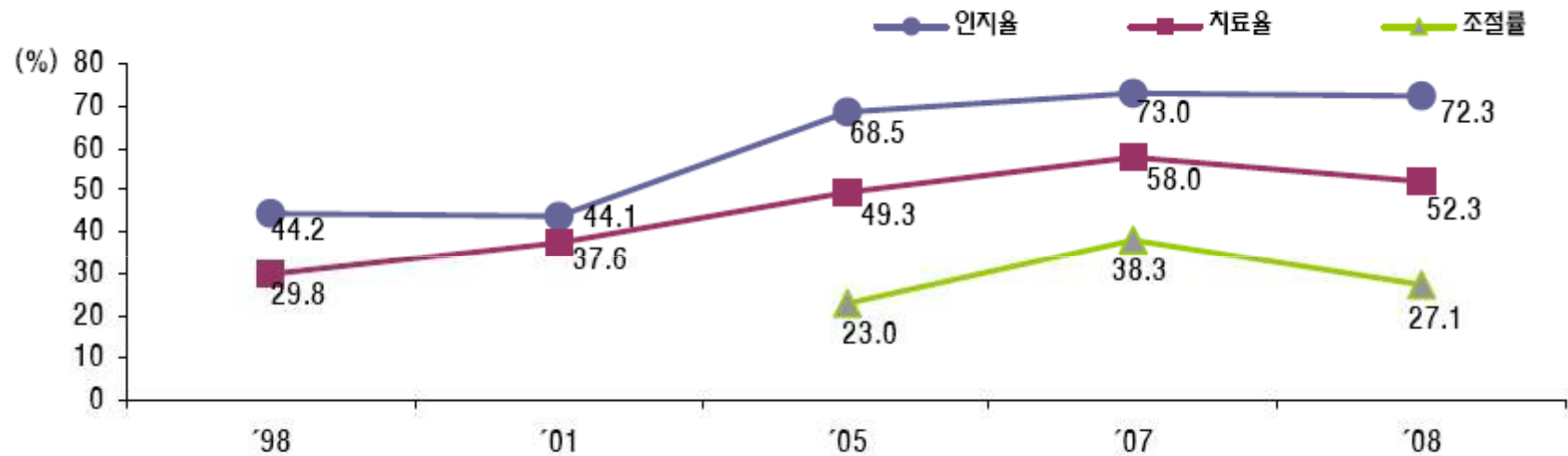
Determinants for target HbA1c in Korea

- **Clinical characteristics of diabetes**
 - age, diabetes duration, and comorbidity
- **Current status of glycemic control**
- **Available resources**

국민건강영양조사, 2008

HbA1c 분포

그림 40. 당뇨병 관리현황



※인지율 : 당뇨병 유병자중 의사로부터 당뇨병 진단을 받은 분율, 만30세이상

치료율 : 당뇨병 유병자중 혈당강하제 복용 또는 인슐린 주사를 투여한 분율, 만30세이상

조절률(유병자기준) : 당뇨병 유병자중 당화혈색소가 6.5%미만인 분율, 만30세이상

※2005년 당뇨병추정인구(2005년 추계인구×2005년 당뇨병 유병률)로 연령표준화

※2005년 관리현황 및 2007년 유병자 중 조절률은 30-39세의 자료수가 20미만으로 연령(30-49세, 50-59세, 60-69세, 70세이상)으로 연령표준화

Target HbA1c as a glycemic goal in Korea

- **General HbA1c goal < 7.0%**
- **Reinforcing the need for individualized treatment goals**

감사합니다.

United States

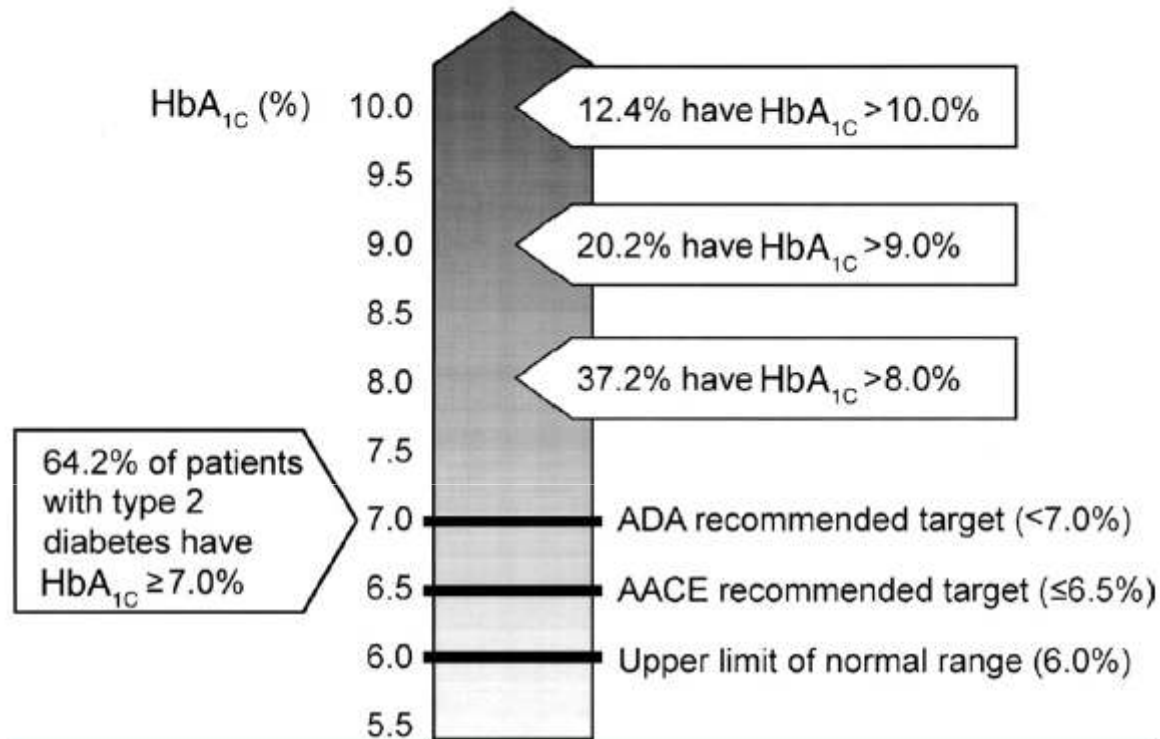


Figure 1 Recommended goals for glycosylated hemoglobin (HbA_{1c}) remain unmet in the majority of patients with type 2 diabetes mellitus. AACE = American Association of Clinical Endocrinologists; ADA = American Diabetes Association. (Adapted from *JAMA*¹³ and *Diabetes Care*.^{14,15})