Egyptian Clinical Practice Guidelines

Glycemic Targets

2024

Clinical Practice Guidelines: Glycemic Targets

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Abbreviations

BGM

Blood Glucose Monitoring

CGM

Continuous Glucose Monitoring

GRADE

Grading of Recommendations Assessment, Development and Evaluation

HbA1c

Glycated hemoglobin A1C

RCT

Randomized controlled trial

TAR

Time above Range

TBR

Time below Range

TIR

Time in Range

Glossary

HbA1c

Glycated haemoglobin by non-enzymatic attachment of glucose to haemoglobin. The concentration of HbA1c is the most commonly used measure of chronic glycaemia in clinical trials and diabetes management. It is considered to reflect the integrated mean glucose level over the previous 8–12 weeks.

TAR

% of readings and time that blood glucose level >180 mg/dL

TBR

% of readings and time blood glucose level < 70 mg/dL

TIR

% of readings and time blood glucose level 70 - 180 mg/dL

Executive Summary

This guideline offers evidence-based recommendations on the targeted levels of blood glucose. The recommendations are intended to provide healthcare professionals with practical guidance on monitoring of blood glucose and improving health outcomes for people living with Diabetes.

Recommendations

- Glycemic status should be assessed at least twice a year using HbA1c and/or suitable continuous glucose monitoring (CGM) parameters. Individuals who are not fulfilling treatment objectives, have frequent or severe hypoglycemia or hyperglycemia, have fluctuating health status, or are growing and developing in adolescence should be assessed more regularly (every three months). (**Good practice statement)**
- Glycemic status should be assessed at least quarterly and as needed in people whose therapy has recently changed and/or who are not achieving their glycemic targets. **(Good practice statement)**
- An HbA1c target for many nonpregnant adults of <7% without significant hypoglycemia is recommended. **(strong recommendation)**
- Time in range is associated with the risk of microvascular complications and can be used for assessment of glycemic control. Additionally, time below range and time above range are useful parameters for the evaluation of the treatment plan. **(Conditional recommendation).**
- If using an ambulatory glucose profile/glucose management indicator to assess glycemia, a parallel goal for many nonpregnant adults is TIR >70% with time below range <4% and time <54 mg/dL <1%. For those with frailty or at high risk of hypoglycemia, a goal of >50% TIR with <1% time below range is recommended. **(Conditional recommendation).**
- On the basis of health care professional judgment and patient preference, achievement of lower HbA1c levels than the goal of 7% may be acceptable and even beneficial if it can be achieved safely without significant hypoglycemia or other adverse effects of treatment. **(Strong recommendation)**
- Less stringent HbA1c targets (such as <8% may be appropriate for patients with limited life expectancy or where the harms of treatment are greater than the benefits. **(Strong recommendation)**.
- Healthcare professionals should consider deintensification of therapy if appropriate to reduce the risk of hypoglycemia in patients with inappropriate stringent HbA1c targets. **(Strong recommendation).**

Introduction

Glycemic targets and management should be individualized to the person rather than a one-size-fits-all strategy. To prevent both microvascular and macrovascular complications of diabetes, there is a strong need to overcome therapeutic inertia and treat patients based on individual needs. HbA1c test, continuous glucose monitoring (CGM) with time in range (TIR) and/or glucose management indicator (GMI), and blood glucose monitoring (BGM) are all used to assess glycemic control. HbA1c is the statistic used in clinical studies to demonstrate the advantages of better glycemic management. Individual glucose monitoring is a valuable tool for diabetes self-management, which includes meals, physical activity, and prescription adjustments, especially for insulin users. CGM provides an increasingly essential role in managing the effectiveness and safety of therapy in many patients with type 1 diabetes and certain people with type 2 diabetes. Individuals on various insulin treatment schemes might benefit from CGM by improving glucose control, reducing hypoglycemia, and increasing self-efficacy

Scope and Purpose

The objectives of this guidelines is

- To provide guidance for the proper glycemic targets for optimal glycemic control.
- To provide guidance on various methods for monitoring of glucose levels to be used by individuals with diabetes and health professionals to optimizing blood glucose level for better glucose control, reducing hypoglycemia, and increasing self-efficacy.

Target Audience

This guideline targets; healthcare professionals, policy makers, national diabetes programme managers, as well as non-governmental organizations (NGOs) and other stakeholders to afford the most appropriate tools for individuals with diabetes.

Methodology:

A comprehensive search for guidelines was undertaken to identify the most relevant guidelines to consider for adaptation.

Inclusion/ exclusion criteria followed in the search and retrieval of guidelines to be adapted:

- Selecting only evidence-based guidelines (guideline must include a report on systematic literature searches and explicit links between individual recommendations and their supporting evidence)
- Selecting only national and/or international guidelines
- Specific range of dates for publication (using Guidelines published or updated in 2015 and later)
- Selecting peer reviewed publications only
- Selecting guidelines written in English language
- Excluding guidelines written by a single author, not on behalf of an organization to be valid and comprehensive, a guideline ideally requires multidisciplinary input
- Excluding guidelines published without references as the panel needs to know whether a thorough literature review was conducted and whether current evidence was used in the preparation of the recommendations

The following characteristics of the retrieved guidelines were summarized in:

- Developing organisation/authors
- Date of publication, posting, and release
- Country/language of publication
- Date of posting and/or release
- Dates of the search used by the source guideline developers

All retrieved Guidelines were screened and appraised using AGREE II instrument (www.agreetrust.org) by at least three members. The panel decided on a cut-off point or ranked the guidelines (any guideline scoring above 50% on the rigor dimension was retained). The GDG decided to adapt the American Diabetes Association – Standards of Care in Diabetes – 2024.

Evidence assessment

According to WHO Handbook for Guidelines, we used the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) approach to assess the quality of a body of evidence, develop and report recommendations. GRADE methods are used by WHO because these represent internationally agreed standards for making transparent recommendations. Detailed GRADE information is available on the following sites:

- GRADE working group: http://www.gradeworkingroup.org
- GRADE online training modules: http://cebgrade.mcmaster.ca/
- GRADE profile software: http://ims.cochrane.org/revman/gradepro

Table 1 Quality and Significance of the four levels of evidence in GRADE:

Quality	Definition	Implications
High	The guideline development group is very confident that the true effect lies close to that of the estimate of the effect	Further research is very unlikely to change confidence in the estimate of effect
Moderate	The guideline development group is moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate
Low	Confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the true effect	Further research is very likely to have an important impact on confidence in the estimate of effect and is unlikely to change the estimate
Very low	The group has very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect	Any estimate of effect is very uncertain

Table 2 Factors that determine How to upgrade or downgrade the quality of evidence

Downgrade in presence of	Upgrade in presence of
Study limitations -1 Serious limitations -2 Very serious limitations	Dose-response gradient +1 Evidence of a dose-response gradient
Consistency -1 Important inconsistency	Direction of plausible bias +1 All plausible confounders would have reduced the effect
Directness -1 Some uncertainty -2 Major uncertainty	Magnitude of the effect +1 Strong, no plausible confounders, consistent and direct evidence
Precision -1 Imprecise data	+2 Very strong, no major threats to validity and direct evidence
Reporting bias -1 High probability of reporting bias	

The strength of the recommendation

The strength of a recommendation communicates the importance of adherence to the recommendation.

Strong recommendations

With strong recommendations, the guideline communicates the message that the desirable effects of adherence to the recommendation outweigh the undesirable effects. This means that in most situations the recommendation can be adopted as policy.

Conditional recommendations

These are made when there is greater uncertainty about the four factors above or if local adaptation has to account for a greater variety in values and preferences, or when resource use makes the intervention suitable for some, but not for other locations. This means that there is a need for substantial debate and involvement of stakeholders before this recommendation can be adopted as policy.

When not to make recommendations

When there is lack of evidence on the effectiveness of an intervention, it may be appropriate not to make a recommendation.

Recommendations

Recommendation

- Glycemic status should be assessed at least twice a year using HbA1c. Individuals who are not fulfilling treatment objectives, have frequent or severe hypoglycemia or hyperglycemia, have fluctuating health status, or are growing and developing in adolescence should be assessed more regularly (every three months). **(Good practice statement, low certainty evidence)**
- Glycemic status should be assessed at least quarterly and as needed in people whose therapy has recently changed and/or who are not achieving their glycemic targets. **(Good practice statement, low certainty evidence)**
- An HbA1c goal for nonpregnant adults of <7% without significant hypoglycemia is appropriate. **(strong recommendation, high certainty evidence)**

Remarks

It is reasonable to check postprandial glucose in individuals who have premeal glucose values within target but HbA1c values above target. In addition, when intensifying insulin therapy, measuring postprandial plasma glucose 1–2 h after the start of a meal (using BGM or CGM) and using treatments aimed at reducing postprandial plasma glucose values to <180 mg/dL (10.0 mmol/L) may help to lower HbA1c.

Summary of evidence

The Diabetes Control and Complications Trial (DCCT)[1], a prospective randomized controlled trial of intensive (mean HbA1c about 7% [53 mmol/mol]) versus standard (mean HbA1c about 9% [75 mmol/mol]) glycemic control in people with type 1 diabetes, showed definitively that better glycemic control is associated with 50–76% reductions in rates of development and progression of microvascular (retinopathy, neuropathy, and diabetic kidney disease) complications. Follow-up of the DCCT cohorts in the Epidemiology of Diabetes Interventions and Complications (EDIC) study[2,3] demonstrated persistence of these microvascular benefits over two decades despite the fact that the glycemic separation between the treatment groups diminished and disappeared during follow-up. The Kumamoto Study[4] and UK Prospective Diabetes Study (UKPDS)[5,6] confirmed that intensive glycemic control significantly decreased rates of microvascular complications in people with short-duration type 2 diabetes. Long-term follow-up of the UKPDS cohorts showed enduring effects of early glycemic control on most microvascular complications[7].

Rationale for the recommendation

Achieving HbA1c targets of <7% has been shown to reduce microvascular complications of type 1 and type 2 diabetes when instituted early in the course of disease[8,9].

Recommendation:

- Time in range is associated with the risk of microvascular complications and can be used for assessment of glycemic control. Additionally, time below range and time above range are useful parameters for the evaluation of the treatment plan.

(Conditional recommendation, moderate certainty evidence).

Remarks

Time in Range (TIR) is a useful metric of glycemic control and glucose patterns, and it correlates well with HbA1c in most studies. TIR can be used for assessment of glycemic control. Additionally, time below range (<70 and <54 mg/dL [3.9 and 3.0 mmol/L]) and time above range (>180 mg/dL [10.0 mmol/L]) are useful parameters for insulin dose adjustments and reevaluation of the treatment plan.The international consensus on TIR provides guidance on standardized CGM metrics (Table 3) and considerations for clinical interpretation and care[10].

Table 3. Standardized CGM metrics for clinical care

1. Number of days CGM device is worn (recommend 14 days)	
2. Percentage of time CGM device is active (recommend 70% of data from 14 days)	
3. Mean glucose	
4. Glucose management indicator	
5. Glycemic variability (%CV) target ≤36%*	
6. TAR: % of readings and time >250 mg/dL (>13.9 mmol/L)	Level 2 hyperglycemia
7. TAR: % of readings and time 181–250 mg/dL (10.1–13.9 mmol/L)	Level 1 hyperglycemia
8. TIR: % of readings and time 70–180 mg/dL (3.9–10.0 mmol/L)	In range
9. TBR: % of readings and time 54–69 mg/dL (3.0–3.8 mmol/L)	Level 1 hypoglycemia
10. TBR: % of readings and time <54 mg/dL (<3.0 mmol/L)	Level 2 hypoglycemia

CGM, continuous glucose monitoring; CV, coefficient of variation; TAR, time above range; TBR, time below range; TIR, time in range. *Some studies suggest that lower %CV targets (<33%) provide additional protection against hypoglycemia for those receiving insulin or sulfonylureas. Adapted from Battelino et al. (35).

To make these metrics more actionable, standardized reports with visual cues, such as the ambulatory glucose profile (Fig 1), are recommended[10] and may help the patient and the health care professional better interpret the data to guide treatment decisions[11,12]. BGM and CGM can be useful to guide medical nutrition therapy and physical activity, prevent hypoglycemia, and aid medication management. While HbA1c is currently the primary measure to guide glucose management and a valuable risk marker for developing diabetes complications, the CGM metrics TIR (with time below range and time above range) and GMI provide the insights for a more personalized diabetes management plan. The incorporation of these metrics into clinical practice is in evolution, and remote access to these data can be critical for

telehealth. A rapid optimization and harmonization of CGM terminology and remote access is occurring to meet patient and health care professional needs[13,14,15]. The patient's specific needs and goals should dictate BGM frequency and timing and consideration of CGM use.

Table 4 Summary of recommendations for many nonpregnant adults with diabetes

A1C	<7.0% (53 mmol/mol)*#
Preprandial capillary plasma glucose	80–130 mg/dL* (4.4–7.2 mmol/L)
Peak postprandial capillary plasma glucose†	<180 mg/dL* (10.0 mmol/L)

*More or less stringent glycemic goals may be appropriate for individual patients. #CGM

Summary of evidence

Data support the premise that increased TIR correlates with the risk of complications. Many studies supporting this assertion; they include cross-sectional data and cohort studies[16,17,18] demonstrating TIR as an acceptable end point for clinical trials moving forward and that it can be used for assessment of glycemic control. Additionally, time below range (<70 and <54 mg/dL [3.9 and 3.0 mmol/L]) and time above range (>180 mg/dL [10.0 mmol/L]) are useful parameters for insulin dose adjustments and reevaluation of the treatment plan.

Rationale for the recommendation

Time in range (TIR) is a useful metric of glycemic control and glucose patterns, and it correlates well with HbA1c in most studies[11,19,20,12,21,22].

Recommendation:

- If using ambulatory glucose profile/glucose management indicator to assess glycemia, a parallel goal for many nonpregnant adults is time in range of >70% with time below range <4% and time <54 mg/dL <1%. For those with frailty or at high risk of hypoglycemia, a target of >50% time in range with <1% time below range is recommended. (Table 3) **(Conditional recommendation, moderate certainty evidence)**.

Remarks

With the advent of new technology, CGM has evolved rapidly in both accuracy and affordability. As such, many patients have these data available to assist with self-

management and their health care professionals' assessment of glycemic status. Reports can be generated from CGM that will allow the health care professional and person with diabetes to determine TIR, calculate GMI, and assess hypoglycemia, hyperglycemia, and glycemic variability. As discussed in a recent consensus document, a report formatted as shown in Fig. 6.1 can be generated[10]. Published data from two retrospective studies suggest a strong correlation between TIR and HbA1c, with a goal of 70% TIR aligning with an HbA1c of 7% [20,23]. Note the goals of therapy next to each metric in Fig. 6.1 (e.g., low, <4%; very low, <1%) as values to guide changes in therapy.

Summary of evidence

CGM is rapidly improving diabetes management. As stated in the recommendations, time in range (TIR) is a useful metric of glycemic control and glucose patterns, and it correlates well with HbA1c in most studies[11,24,25,12,26,27]. New data support the premise that increased TIR correlates with the risk of complications. The studies supporting this assertion include crosssectional data and cohort studies [28, 29, 30]. Demonstrating TIR as an acceptable end point for clinical trials moving forward and that it can be used for assessment of glycemic control. Additionally, time below range (<70 and <54 mg/dL [3.9 and 3.0 mmol/L]) and time above range (>180 mg/dL [10.0 mmol/L]) are useful parameters for insulin dose adjustments and reevaluation of the treatment plan.

Rationale for the recommendation

Recommendation

- On the basis of health care professional judgment and patient preference, achievement of lower HbA1c levels than the goal of 7% may be acceptable and even beneficial if it can be achieved safely without significant hypoglycemia or other adverse effects of treatment. **(Strong recommendation, moderate certainty evidence)**.

Remarks

based on clinician judgment and patient preferences, select patients, especially those with little comorbidity and a long life expectancy, may benefit from adopting more

intensive glycemic targets if they can achieve them safely and without hypoglycemia or significant therapeutic burden.

Summary of evidence

Findings from the DCCT[1]. and UKPDS [31] studies demonstrate a curvilinear relationship between HbA1c and microvascular complications. Such analyses suggest that, on a population level, the greatest number of complications will be averted by taking patients from very poor control to fair/good control. These analyses also suggest that further lowering of HbA1c from 7 to 6% (53 mmol/mol to 42 mmol/mol) is associated with further reduction in the risk of microvascular complications, although the absolute risk reductions become much smaller. The implication of these findings is that there is no need to deintensify therapy for an individual with an HbA1c between 6 and 7% in the setting of low hypoglycemia risk with a long life expectancy. There are now newer agents that do not cause hypoglycemia, making it possible to maintain glucose control without the risk of hypoglycemia. Given the substantially increased risk of hypoglycemia in type 1 diabetes and with polypharmacy in type 2 diabetes, the risks of lower glycemic targets may outweigh the potential benefits on microvascular complications. Three landmark trials (Action to Control Cardiovascular Risk in Diabetes [ACCORD], Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluation [ADVANCE], and Veterans Affairs Diabetes Trial [VADT]) were conducted to test the effects of near normalization of blood glucose on cardiovascular outcomes in individuals with long-standing type 2 diabetes and either known cardiovascular disease (CVD) or high cardiovascularA1C levels were associated with risk. These trials showed that lower onset or progression of some micro reducedv.[34,33,32]ascular complication

The concerning mortality findings in the ACCORD trial discussed below and the relatively intense efforts required to achieve near euglycemia should also be considered when setting glycemic targets for individuals with longstanding diabetes, such as those populations studied in ACCORD, ADVANCE, and VADT. Findings from these studies suggest caution is needed in treating diabetes to near-normal HbA1c goals in people with long-standing type 2 diabetes with or at significant risk of CVD.

These landmark studies need to be considered with an important caveat; glucagon-like peptide 1 (GLP-1) receptor agonists and sodium–glucose cotransporter 2 (SGLT2) inhibitors were not approved at the time of these trials. As such, these agents with established cardiovascular and renal benefits appear to be safe and beneficial in this group of individuals at high risk for cardiorenal complications. Randomized clinical trials examining these agents for cardiovascular safety were not designed to test higher versus lower HbA1c; therefore, beyond post hoc analysis of these trials, we do not have evidence that it is the glucose lowering by these agents that confers the CVD and renal benefit[35]. As such, based on clinician judgment and patient preferences, select patients, especially those with little comorbidity and a long life expectancy, may benefit from adopting more intensive glycemic targets if they can achieve them safely and without hypoglycemia or significant therapeutic burden.There is evidence for a cardiovascular benefit of intensive glycemic control after long-term followup of cohorts treated early in the course of type 1 diabetes. In the DCCT, there was a trend toward lower risk of CVD events with intensive control. In the 9-year post-DCCT follow-up of the EDIC cohort, participants previously randomized to the intensive arm had a significant 57% reduction in the risk of nonfatal myocardial infarction (MI), stroke, or cardiovascular death compared with those previously randomized to the standard arm[36]. The benefit of intensive glycemic control in this cohort with type 1 diabetes has been shown to persist for several decades[37] and to be associated with a modest reduction in all-cause mortality[38]. Cardiovascular Disease and Type 2 Diabetes In type 2 diabetes, there is evidence that more intensive treatment of glycemia in newly diagnosed patients may reduce long-term CVD rates. In addition, data from the Swedish National Diabetes Registry[38] and the Joint Asia Diabetes Evaluation (JADE) demonstrate greater proportions of people with diabetes being diagnosed at <40 years of age and a demonstrably increased burden of heart disease and years of life lost in people diagnosed at a younger age[39,40,41,42]. Thus, to prevent both microvascular and macrovascular complications of diabetes, there is a major call to overcome therapeutic inertia and treat to target for an individual patient[42,43]. During the UKPDS, there was a 16% reduction in CVD events (combined fatal or nonfatal MI and sudden death) in the intensive glycemic control arm that did not reach statistical significance (P = 0.052), and there was no suggestion of benefit on other CVD outcomes (e.g., stroke). Similar to the DCCT/EDIC, after 10 years of observational followup, those originally randomized to intensive glycemic control had

significant long-term reductions in MI (15% with sulfonylurea or insulin as initial pharmacotherapy, 33% with metformin as initial pharmacotherapy) and in all-cause mortality (13% and 27%, respectively)[7]. ACCORD, ADVANCE, and VADT suggested no significant reduction in CVD outcomes with intensive glycemic control in participants followed for shorter durations (3.5–5.6 years) and who had more advanced type 2 diabetes and CVD risk than the UKPDS participants. All three trials were conducted in relatively older participants with a longer known duration of diabetes (mean duration 8–11 years) and either CVD or multiple cardiovascular risk factors. The target HbA1c among intensive-control participants was <6% (42 mmol/mol) in ACCORD, <6.5% (48 mmol/mol) in ADVANCE, and a 1.5% reduction in HbA1c compared with control participants in VADT, with achieved HbA1c of 6.4% vs. 7.5% (46 mmol/mol vs. 58 mmol/mol) in ACCORD, 6.5% vs. 7.3% (48 mmol/mol vs. 56 mmol/mol) in ADVANCE, and 6.9% vs. 8.4% (52 mmol/mol vs. 68 mmol/mol) in VADT. Details of these studies are reviewed extensively in the joint ADA position statement "Intensive Glycemic Control and the Prevention of Cardiovascular Events: Implications of the ACCORD, ADVANCE, and VA Diabetes Trials"[43].

Rationale for the recommendation

Achieving HbA1c targets of <7% (53 mmol/mol) has been shown to reduce microvascular complications of type 1 and type 2 diabetes when instituted early in the course of disease[8,9].

Recommendation

- Less stringent HbA1c goals (such as <8% may be appropriate for patients with limited life expectancy or where the harms of treatment are greater than the benefits. **(Strong recommendation, moderate certainty evidence)**
- Healthcare professionals should consider deintensification of therapy if appropriate to reduce the risk of hypoglycemia in patients with inappropriate stringent HbA1c targets. **(Strong recommendation, moderate certainty evidence).**

Remarks

Less stringent targets (HbA1c up to 8%) may be recommended if the patient's life expectancy is such that the benefits of an intensive goal may not be realized, or if the risks and burdens outweigh the potential benefits. Severe or frequent hypoglycemia is an absolute indication for the modification of treatment plans, including setting higher glycemic goals.

Summary of evidence

The glycemic control comparison in ACCORD was halted early due to an increased mortality rate in the intensive compared with the standard treatment arm (1.41% vs. 1.14% per year; hazard ratio 1.22 [95% CI 1.01–1.46]), with a similar increase in cardiovascular deaths. Analysis of the ACCORD data did not identify a clear explanation for the excess mortality in the intensive treatment arm[44]. Mortality findings in ACCORD[45] and subgroup analyses of VADT[46] suggest that the potential risks of intensive glycemic control may outweigh its benefits in higher-risk individuals. In all three trials, severe hypoglycemia was significantly more likely in participants who were randomly assigned to the intensive glycemic control arm. Individuals with a long duration of diabetes, a known history of hypoglycemia, advanced atherosclerosis, or advanced age/frailty may benefit from less aggressive targets[47,48]. Both DCCT/ EDIC and UKPDS demonstrated metabolic memory, or a legacy effect, in which a finite period of intensive control yielded benefits that extended for decades after that control ended. Thus, a finite period of intensive control to near-normal HbA1c may yield enduring benefits even if control is subsequently deintensified as patient characteristics change. Over time, comorbidities may emerge, decreasing life expectancy and thereby decreasing the potential to reap benefits from intensive control. Also, with longer disease duration, diabetes may become more difficult to control, with increasing risks and burdens of therapy. Thus, HbA1c targets should be reevaluated over time to balance the risks and benefits as patient factors change.

Rationale for the recommendation

Severe hypoglycemia is a potent marker of high absolute risk of cardiovascular events and mortality[49]. Therefore, health care professionals should be vigilant in preventing hypoglycemia and should not aggressively attempt to achieve near-normal

HbA1c levels in people in whom such targets cannot be safely and reasonably achieved.

Implementation considerations

Several barriers may hinder the effective implementation and scale-up of the recommendations in this guideline. These factors may be related to the behaviours of patients (or families), the behavior of healthcare professionals, the organization of care, health service delivery or financial arrangements.

Obstacles to effective implementation include:

- Patient engagement
- Collaboration; person centered, team based collaboration between clinician, dietitian, pharmacist and others involved in care delivery
- Behavior changes: information, guidance and support delivered easily and consistently can help assess sustained behavioral changes.

Research needs

- Clinical trials to evaluate the use of other biomarkers such as Fructosamine or glycated albumin to monitor glycemic status in people with diabetes who have conditions where the interpretation of HbA1c cannot be measured.

Monitoring and evaluating the impact of the guideline

Assessment of effectiveness of diabetes services: Measure HbA1C at the recommended times.

Updating of the guidelines:

These guidelines will be updated whenever there is new evidence.

Adapted from ADA "Standards of Care in Diabetes" 2024

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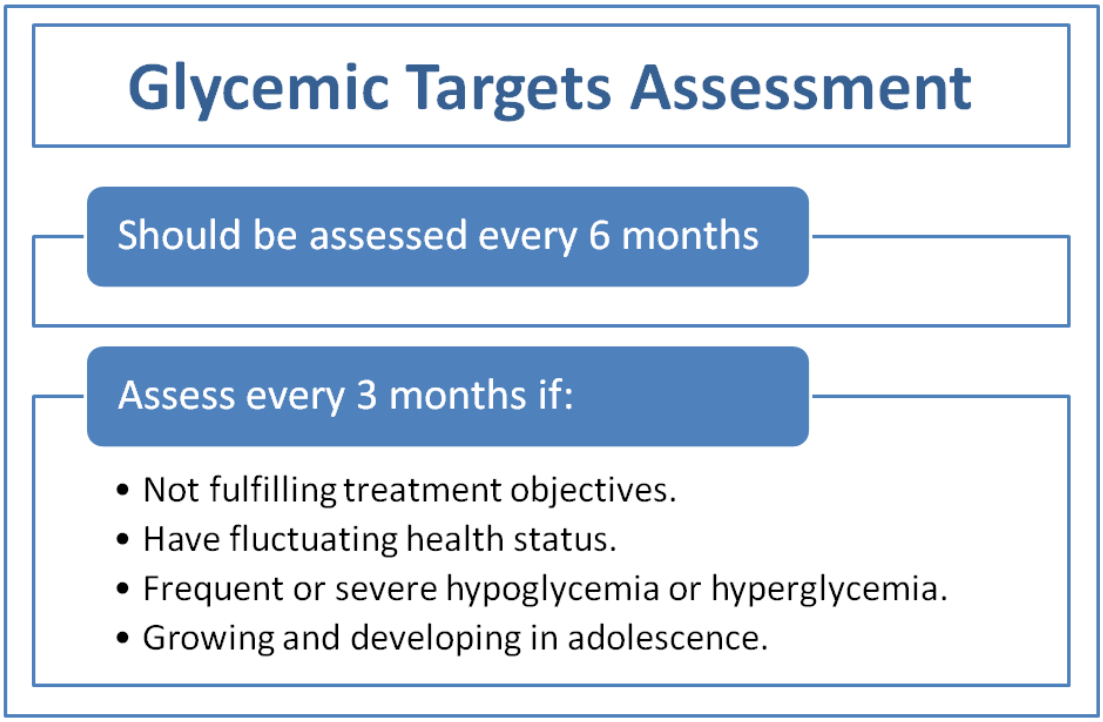
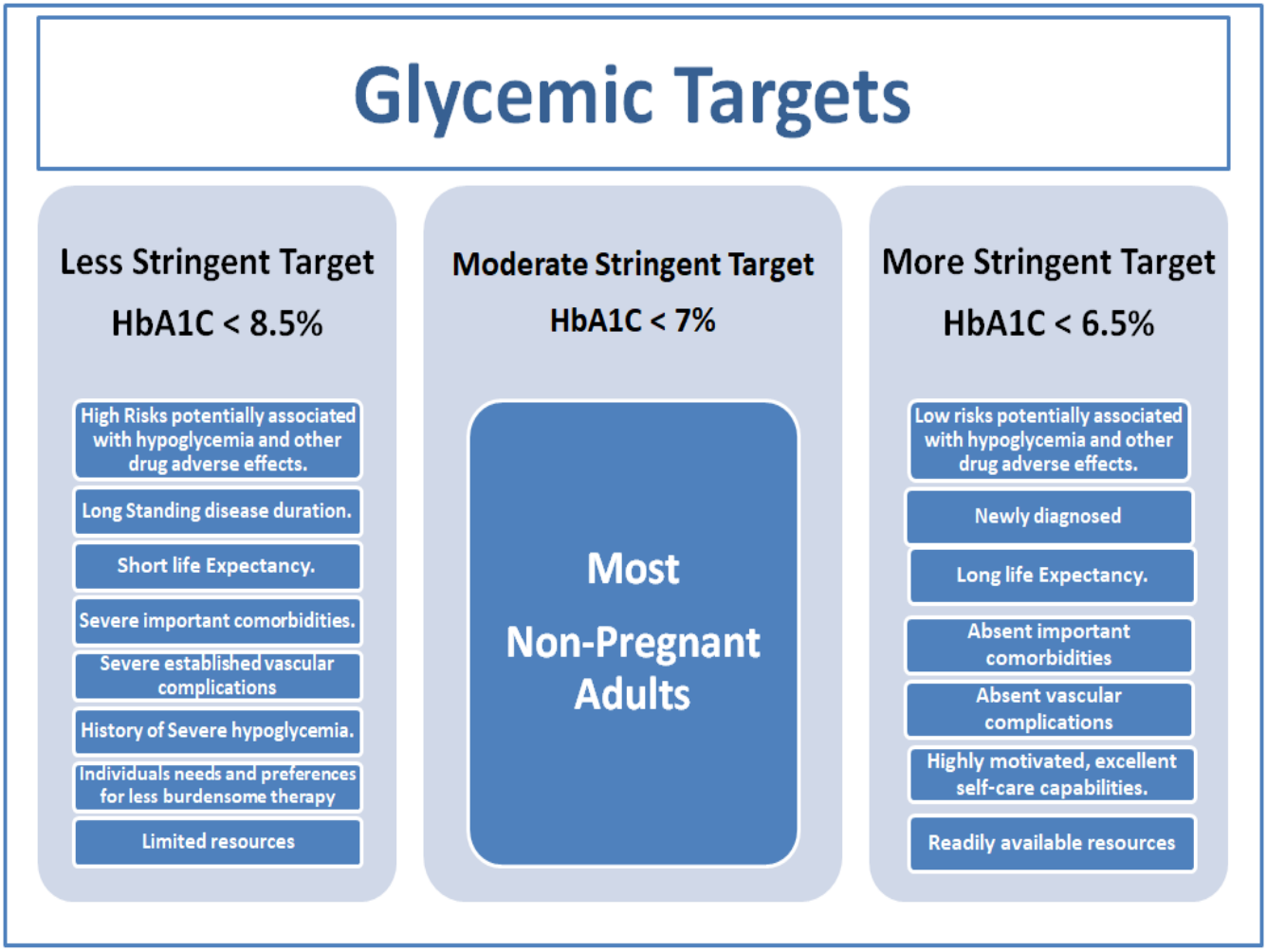
Annexes

Annex 1:



Annex 2:


Glycemic Targets
Less Stringent Target
HbA1C < 8.5%
High Risks potentially associated with hypoglycemia and other drug adverse effects.
Long Standing disease duration.
Short life Expectancy.
Severe important comorbidities.
Severe established vascular complications
History of Severe hypoglycemia.
Individuals needs and preferences for less burdensome therapy
Limited resources
Moderate Stringent Target
HbA1C < 7%
Most
Non-Pregnant
Adults
More Stringent Target
HbA1C < 6.5%
Low risks potentially associated with hypoglycemia and other drug adverse effects.
Newly diagnosed
Long life Expectancy.
Absent important comorbidities
Absent vascular complications
Highly motivated, excellent self-care capabilities.
Readily available resources