### DIAGNOSING DIABETES - Can I use HbA1c as a diagnostic test in this situation?

<table>
<thead>
<tr>
<th><strong>YES</strong></th>
<th><strong>NO</strong></th>
<th><strong>Paediatric guidance age</strong></th>
</tr>
</thead>
</table>
| **Asymptomatic targeted screening** based on risk factors:  
Established cardiovascular disease  
History of gestational diabetes  
BMI > 30 (the higher the BMI the greater the risk)  
Ethnic Asian use BMI > 25  
Family history DM in a first degree relative  
Hypertension  
Polycystic ovarian syndrome  
Non-alcoholic fatty liver changes  
The more risk factors any one person has and/or the older they are the greater the possibility of undiagnosed diabetes  
**OR**  
Mild symptoms of possible diabetes of longer than 2 months duration | Aged < 18 yrs (< 16 yrs follow local paediatric guidance otherwise manage as possible urgent adult)  
Acutely unwell – suspected Type 1 DM, DKA, hyperosmolar coma  
Short (< 2 months) duration DM symptoms On steroid medications  
On antipsychotic medications  
Acute pancreatic disease and/or previous pancreatic surgery or disease  
During pregnancy and up to 3 months post-partum (see separate gestational DM guidance)  
Urine ketones 2+ or more detected | **DO NOT** try to do a venepuncture  
**DO NOT** refer for fasting blood glucose sample at the Children’s Centre.  
**DO** test a urine sample for glucose and ketones  
**DO** refer IMMEDIATELY to HRI if Glycosuria and Ketonuria is present **AND** contact either the Paediatric Diabetes Team or the Emergency Paediatric Team. |

*Common situations to consider where an HbA1c test may be misleading either high or low are:*  
Anaemia of any cause, haemoglobinopathies, rheumatoid arthritis, CKD 5. In CKD 4 the impact is unpredictable but it is likely that HbA1c will be affected in many patients.  
**Traditional glucose based diagnostic criteria which may include the need for OGTT should be used if in doubt.**

**References on advantages and disadvantages of HbA1c as diagnostic test:**  
# Diagnosing Diabetes Guidance – Potential URGENT scenarios

Any clinical suspicion that the patient may require insulin which should include – young person, unwell, short duration symptoms, marked weight loss, steroid or antipsychotic medication, pancreatic disease- either in isolation or combination.

## Check random capillary blood glucose and dipstix urine for ketones

<table>
<thead>
<tr>
<th>&lt;7.0mmol</th>
<th>7.0-11.0mmol</th>
<th>≥11.1mmol *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes very unlikely.</td>
<td>Possible diabetes.</td>
<td>CHECK URINE KETONES without delay</td>
</tr>
</tbody>
</table>

### <7.0mmol
- Diabetes very unlikely.
- Send laboratory venous glucose sample to confirm.
- Re-assess symptoms and consider other potential causes.

### 7.0-11.0mmol
- Send laboratory venous sample.
- In presence of Sx Lab glucose is diagnostic if:
  - Fasting ≥7.0mmol/L
  - Random ≥11.1mmol/L
- Follow traditional diagnostic criteria which may include the need for OGTT.

### ≥11.1mmol *
- **ketones 2+ or more**
  - AND/OR acutely unwell/vomiting
  - Severely unwell – arrange direct admission.
  - Otherwise
    1) Contact Diabetes Team (OOH on-call via switch) same day.
    2) Send urgent lab venous glucose with BCP
  - Do not wait for lab results before contacting diabetes team.

- **Ketones Neg to 1+**
  - Eating and drinking, well
    1) Send lab venous glucose to confirm.
    2) Advise avoid sugar containing drinks including fruit juices.
    3) Lab result ≥11.1 mmol diagnostic in presence of Sx.
    4) If lab result <11.1 arrange fasting glucose and follow traditional diagnostic criteria.
  - Contact Diabetes team if urgent treatment with insulin is likely based on clinical judgement.

### If symptoms persist be prepared to retest

*Any capillary blood glucose reading of >20mmol in previously undiagnosed DM – contact the diabetes team the same day for advice. Unless the person is acutely unwell direct hospital admission is usually avoidable.

**NB** – This guidance is not designed to replace clinical judgement and does not cover rarer presentations of diabetes. If there is concern about a patient further advice should be sought.
Diagnosing Diabetes - NON-URGENT situations in adults over 18 years old

Be aware of confounding conditions that may affect HbA1c (https://www.who.int/diabetes/publications/diagnosis_diabetes2011/en/)

Asymptomatic targeted screening
Mild symptoms possible diabetes for LONGER than 2 months duration

Laboratory venous HbA1c (ensure CPA accredited lab)

HbA1c ≥ 48mmol/mol*

Symptoms Present

HbA1c ≥ 48mmol/mol

Diabetes Diagnosis Confirmed

Symptoms Absent

Rpt HbA1c test Within 2 weeks

≥48mmol/mol

<48mmol/mol

Symptoms develop

Manage as High DM Risk
Rpt HbA1c at 6mths
Earlier if diabetes Symptoms develop

High Diabetes Risk
CVD risk factor management
Lifestyle measures
Rpt HbA1c at a year, earlier if Any diabetes Sx develop.

HbA1c 42-47mmol/mol

Diabetes unlikely
May still be high risk
Lifestyle and CVD management as clinically Indicated.

HbA1c <42mmol/mol

*HbA1c>120mmol/mol should prompt urgent clinical review for severity of symptoms, check for urine ketones and treatment.