Type 2 Diabetes – routine OPD management

Key Facts

- Prevalence in Kenya around 3.3%
- Small risk directly from hyperglycaemia (e.g. DKA and HHS)
- Main risk is from associated microvascular and microvascular disease
- **Lifestyle measures and BP control** are the most important interventions

Screening

- **People with symptoms**
- **Those with risk factors for diabetes:**
  - Obesity: BMI>30, waist circumference >94cm (men); >90cm (Asian men); >80cm (all women)
  - Hypertension or cardiovascular disease
  - Frequent infections, particularly skin infections
  - History of gestational diabetes (every 2 years)
  - FH of diabetes - parent, sibling (every 2 years)
  - If taking drugs that can cause high blood glucose (corticosteroids >1m, ARVs, antipsychotics)
  - TB

Diagnosis

If symptomatic: One abnormal result –
HbA1c >6.5 OR Fasting Sugar >7

If asymptomatic: Two abnormal results at two different times -
HbA1c >6.5 OR Fasting sugar >7

Symptoms

- Polydipsia
- Polyuria
- Weight loss
- Recurrent infections
- Lethargy

Associated Complications

- Hyperglycaemia
- Hypoglycaemia (due to medication)
- Cardiovascular disease
- Foot disease
- Renal Failure
- Retinopathy
- Peripheral Neuropathy
- Autonomic neuropathy
- Erectile dysfunction
- Infection
- Depression
- Complications of pregnancy

Management

1. **Patient education** – begin at diagnosis then continue throughout; involve patient and check understanding
   - **lifestyle modification** (diet, weight, exercise, smoking); nutritionist
   - information about the disease and management
   - danger signs (see box)
2. **Blood sugar control** – see chart below
3. **Cardiovascular risk management**
   - **Manage hypertension** as per hypertension guideline (use ACEI/ARB if possible; target <140/90, or <130/80 if proteinuria)
   - Do not *routinely* start statin, but give to all with known CVD
   - Aspirin *only for secondary prevention* of CVD
4. **Prevention, detection and treatment of complications**
   - Start all patients with evidence of renal failure/nephropathy on an ACEI/ARB (see CKD guideline)
   - Check feet at every visit
   - Discuss contraception with women of reproductive age; need for folic acid 5mg OD if could become pregnant

Danger signs

If patient experiences any of the below, they should seek immediate care:

- Drowsiness
- Change in level of consciousness/collapse
- Feeling dizzy or weak
- Rapid breathing
- Weight loss
- Blurred vision
- Concern regarding the patient's health

Investigations

	At diagnosis	Frequency of testing after diagnosis
HbA1c	✓	Every 2-3 months until controlled, then **6 monthly**
FBS	x	Can be used as alternative if HbA1c is not available or if information required before next HbA1c is due
RBS	x	**No benefit** for routine check unless concerns a patient is acutely unwell
Urinalysis (dipstick)	✓	**Annually** – looking for significant proteinuria
Creatinine	✓	**Annually**
Retinal screening	✓	**Annually**
Feet examination	✓	**At each clinical visit**
Dental	✓	**Annually**
TB screening	✓	**At each clinical visit**
Lipids	x	**No real benefit** in checking levels

Protocol for control of blood glucose in Type 2 diabetes

DIAGNOSIS OF TYPE 2 DIABETES
(see above)

NO NEED TO ROUTINELY CHECK RBS!!
BUT if an RBS is taken and found to be very high **only take action if patient is unwell**, otherwise check HbA1c and follow this protocol
NO NEED TO START INSULIN ROUTINELY
IF HBA1C IS VERY HIGH – follow this protocol

HbA1c <7%

LIFESTYLE MODIFICATION
Recheck HbA1c in 6 months

HbA1c >7%

NO SYMPTOMS

LIFESTYLE MODIFICATION & START METFORMIN[1]
1. Start 500mg OD, counsel about side effects
2. Advise to increase to 500mg BD after 1 week
3. Recheck HbA1c in 2-3 months
4. Increase dose every 2-3 months until target reached or maximum tolerated dose

HbA1c at target
1. Continue current medication
2. Recheck HbA1C in 6 months
3. **If HbA1c <7% step down medication**

HbA1c >target
1. Add Gliclazide 80mg OD (or glibenclamide), counsel on hypoglycaemia
2. Recheck HbA1c in 2-3 months
3. Increase dose until target is reached or maximum tolerated dose

HbA1C remains above target
1. Add insulin (especially if HbA1c >10 or symptomatic on maximal oral therapy)
2. Continue metformin but stop gliclazide (or glibenclamide)
3. **Discuss with consultant** before starting insulin or if considering newer diabetic drugs

SYMPTOMS OF HYPERGLYCAEMIA PRESENT

LIFESTYLE MODIFICATION & DISCUSS WITH CONSULTATNT
Consider dual therapy e.g. Metformin 500mg BD and gliclazide 80mg BD

Review in 2 weeks (or sooner if concern) with FBS

IMPROVEMENT
1. Continue treatment
2. Recheck HbA1c 2-3 months
3. Increase doses until target is reached or maximum tolerated doses (metformin has priority over gliclazide)

NO IMPROVEMENT
Discuss with consultant

UNWELL

1. Discuss with consultant
2. Admit to ED if unstable
3. Check ketones

At every review
- Review lifestyle: what changes can still be made?
- Check compliance
- Review danger signs
- Avoid causing hypoglycaemia

TARGET FOR BLOOD GLUCOSE
(will depend on individual)

In most patient	HbA1c 7-8% (FBS 7-8)
If frail, multi-morbidities, recurrent hypoglycaemia	consider a higher target
Once on insulin	HbA1c <9% (FBS <9)

[1] DO NOT use metformin if eGFR<30, caution if eGFR 30-40 (see details in table below)

Prescribing information

Drug	Starting dose	Maximum dose	Additional advice
Metformin	500mg OD, increase to 500mg BD after one week	2.5g daily	• Increase gradually to avoid side effects • Aim to reach 1500-2500mg if tolerated • DO NOT use if eGFR<30; use with caution if eGFR 30-45; discuss with consultant • Caution in conditions that can cause tissue hypoxia; stop if dehydration • Main side effects: nausea, diarrhoea • Can try Metformin XR if significant side effects (but more expensive)
Gliclazide	40-80mg OD	320mg daily	• Doses >160mg daily split to BD • Risk of hypoglycaemia
Glibenclamide	2.5-5mg OD	15mg daily (10mg am, 5mg noon)	• **Only use** if gliclazide not available as higher risk of hypoglycaemia • Care in elderly – start lower dose
Insulin (Glargine)	Commence at 0.1 units/kg/day given once daily at bedtime	Adjust dose by around 10% once or twice a week until the morning FBS <9	• Always discuss with consultant before starting insulin • **Use once daily Glargine if available** in preference to Mixtard (similar price in the long run, only once daily injections and lower risk of hypoglycaemia) • Needs significant patient education including training on self-testing, injection technique and hypoglycaemia recognition and management
Insulin (Mixtard)	Commence at 0.2 units/kg/day total dose Give 2/3 dose with breakfast and 1/3 dose with evening meal	Adjust dose by around 10% once or twice a week until the FBS <9 on waking and before evening meal	
Newer diabetic drugs (pioglitazone, gliptins, gliflozins…)	Do not routinely use the newer diabetic drugs. In most cases the above drugs are the most effective options. If specific reasons to consider an alternative medication, **please discuss with a consultant** first		

Consultant review if any of the following:

- Any patient with Type 1 diabetes
- Systemically unwell
- Concerns regarding HHS or DKA
- Renal impairment
- Previous episodes of hypoglycaemia
- Struggling to get glycaemic control
- Concurrent HIV
- Considering newer drugs

References:

Noncommunicable Diseases (NCD) Country Profiles, WHO, 2014.
http://guidelines.health.go.ke:8000/media/Kenya_National_Diabetes_Strategy.pdf
https://www.nice.org.uk/guidance/ng28/resources/type-2-diabetes-in-adults- management-pdf-1837338615493
2019 Clinical Guide Primary Care International *(adapted for this context and location. PCI have not been involved in, nor hold responsibility for any adaptations. Original can be found at:* https://ncd-training.org/open-source-clinical-guide/
BMJ 2019;367:l5887 https://www.bmj.com/content/367/bmj.l5887