

Glucose and other risk factor control

Summary of treatment targets for managing patients with diabetes mellitus or impaired glucose tolerance and coronary artery disease

Blood pressure (mmHg) In case of nephropathy	<140/85 Systolic <130
Glycaemic control HbA _{1c} % ^a (mmol/mol) ^b	Generally <7.0 (53 mmol/mol) On an individual basis <6.5–6.9% (48–52 mmol/mol)
Lipid profile mmol/l (mg/dL) LDL-cholesterol	Very high risk patients <1.8 mmol/L (<70 mg/dL) or reduced by at least 50% High risk patients <2.5 mmol/L (<100 mg/dL)
Platelet stabilization	Patients with CVD and DM ASA 75–160 mg/day
Smoking	Cessation obligatory; passive smoking - none
Physical activity	Moderate to vigorous ≥150 min/week
Weight	Aim for weight stabilization in the overweight or obese DM patients based on calorie balance, and weight reduction in subjects with IGT to prevent development of T2DM
Dietary habits Fat intake (% of dietary energy)	
Total	<35%
Saturated	<10%
Monounsaturated fatty acids	>10%
Dietary fibre intake	>40 g/day (or 20 g/1000 Kcal/day)

CVD = cardiovascular disease; DM = diabetes mellitus; HbA_{1c} = glycated haemoglobin A_{1c};
IGT = impaired glucose tolerance; LDL = low density lipoprotein; T2DM = type 2 diabetes mellitus.

^a = Diabetes Control and Complication Trial standard.

^b = IFFC

Microvascular complications

- Screening for the presence of retinopathy should be considered on annual basis in patients with T2DM.
- An HbA_{1c} <7% and a blood pressure <140/85 mmHg are recommended for primary prevention of retinopathy related to DM.
- Multifactorial therapy is recommended when retinopathy is progressing rapidly.

Recommendations for patient-centred care in DM and CVD

Patient-centred care is an approach that facilitates shared control and decision-making between patient and provider; it emphasizes a focus on the whole person and his/her experiences of illness within social contexts rather than a single disease or organ system; and develops a therapeutic alliance between patient and provider. Patient-centred care fosters a multifactorial approach, working within the context of patient priorities and goals, and allows for lifestyle changes and treatments to be adapted and implemented within cultural beliefs and behaviours. Providers should take into account age, ethnic and gender differences in DM and CVD including lifestyle, disease prevalence and presentation, response to treatment, and outcomes.

- Patient-centred care is recommended to facilitate shared control and decision-making within the context of patient priorities and goals.
- Patient-centred cognitive behavioural strategies are recommended to help patients achieve lifestyle changes and practise self-management.
- Patient-centred cognitive behavioural strategies combined with simplification of dosing regimens should be considered to improve medication adherence.
- Multidisciplinary teams and nurse-led programmes should be considered to support lifestyle change and self-management.



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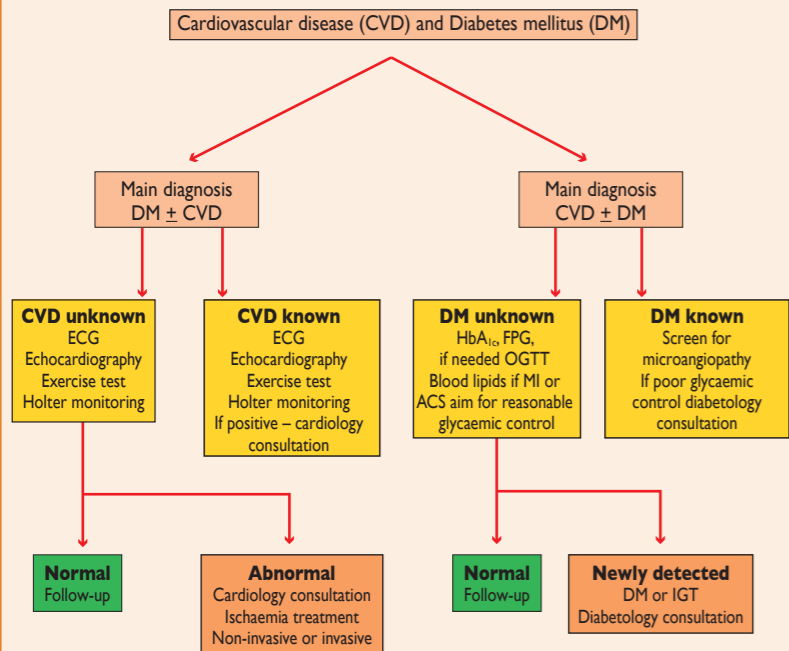
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Approximately 360 million people had diabetes mellitus (DM) in 2011, of whom 95% type 2 DM (T2DM). About half are unaware of their diagnosis. It is estimated that another 300 million individuals are at future risk of developing T2DM, including people with increased fasting glucose (IFG), impaired glucose tolerance (IGT), gestational DM, and euglycaemic insulin resistance (IR). DM and cardiovascular disease (CVD) develop in concert with metabolic abnormalities mirroring and causing changes in the vasculature. More than half the mortality and a vast amount of morbidity in subjects with DM is related to CVD.

Investigational algorithm outlining the principles for the diagnosis and management of cardiovascular disease (CVD) in diabetes mellitus (DM) patients with a primary diagnosis of DM or a primary diagnosis of CVD.

The recommended investigations should be considered according to individual needs and clinical judgement and they are meant as a general recommendation to be undertaken in all patients.



ACS = acute coronary syndrome; ECG = electrocardiogram; HbA_{1c} = glycated haemoglobin A_{1c}; IGT = impaired glucose tolerance; MI = myocardial infarction; OGTT = oral glucose tolerance test.

*From the ESC/EASD Guidelines on Diabetes, pre-diabetes and cardiovascular diseases (European Heart Journal 2013;doi:10.1093/eurheartj/ehs108)
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Identifying patients with diabetes and those at risk for developing DM

- Primary screening for potential T2DM in the general population is recommended to start with a non invasive DM risk score (e.g. the Finnish Diabetes Risk Score or FINDRISC; www.diabetes.fi/english) to identify individuals at high risk of T2DM in whom HbA_{1c} and FPG should be determined. In CVD patients no diabetes risk score is needed, but an OGTT is indicated if HbA_{1c} and/or FPG are normal, since people belonging to these groups may often have DM disclosed only by an elevated two hour post load glucose (2hPG).

Cardiovascular risk assessment in patients with dysglycaemia

- Patients with DM and at least one other cardiovascular (CV) risk factor or target organ damage should be considered as at very high and all other patients with DM as being at high risk.
- Estimate the urinary albumin excretion rate when performing risk stratification in patients with DM.

Recommendations on life style modifications in diabetes

- Smoking cessation guided by structured advice is recommended in all subjects with DM.
- Total fat intake should be <35%, saturated fat <10%, and monounsaturated fatty acids >10% of total energy.
- Dietary fibre intake should be >40 g/day (or 20 g/1000 Kcal/day) in the prevention of T2DM and control of DM.
- Any diet with reduced energy intake can be recommended to lower excessive body weight in DM.
- Vitamin or micronutrient supplementation to reduce the risk of CVD in DM is not recommended.
- Moderate to vigorous physical activity of ≥150 min/week is recommended for the prevention and control of T2DM, and prevention of CVD in DM.
- Aerobic exercise and resistance training are recommended in the prevention and control of T2DM, but best when combined.

Prevention of diabetes in patients with IGT

- Lifestyle counselling, based on modest weight loss and increased physical activity, prevents or delays progression to DM in individuals with IGT, and should be offered such persons.

Recommendations for Patients with DM and CVD

- For patients with DM and stable coronary artery disease (CAD), and angiotensin converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB) are indicated to reduce the risk for CV events.
- Statin therapy is recommended in patients with DM and CAD to reduce the risk for CV events.
- ACE-I (or an ARB if ACE-I not tolerated), and a beta-blocker are recommended in patients with systolic heart failure and T2DM to reduce mortality and hospitalisations.
- A mineralocorticoid receptor antagonist (MRA) is recommended for all patients with persisting symptoms (NYHA class II–IV) and a left ventricular ejection fraction (LVEF) ≤35% despite treatment with an ACE-I (or an ARB if an ACE-I is not tolerated) and a beta-blocker, to reduce the risk of heart failure hospitalization and premature death.
- Thiazolidinediones should not be used in patients with heart failure and T2DM since water retention may worsen or provoke heart failure
- Oral anticoagulation with vitamin K antagonists (VKAs) or a new oral anticoagulant (NOAC; e.g. dabigatran, rivaroxaban or apixaban) is recommended in DM patients with atrial fibrillation (AF; paroxysmal and persistent) if not contraindicated.
- Screening for AF should be considered since it is common in patients with DM and increases morbidity and mortality.
- It is recommended that patients with DM have annual screening to detect peripheral artery disease (PAD) and measurement of the ankle brachial index (ABI) to detect lower extremity artery disease (LEAD).
- It is recommended that patients with PAD and DM have LDL-C lowered to <1.8 mmol/L (<70 mg/dL), that they stop smoking, and have their blood pressure controlled to <140/85 mmHg.