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Guidelines and Management

Type 2 Diabetes

Version 3

Diabetes Day Centre, Beaumont Hospital

Disclaimer
This publication is intended as a guide for General Practitioners managing type 2 diabetes.
As with all guidelines use clinical judgement.

Foreword

These guidelines were devised by the Diabetes Day Centre in Beaumont Hospital in consultation with a number of primary care practices in the North Dublin Area.

The guidelines have a number of objectives:

Improve delivery and quality care of patients with type 2 diabetes attending both their GP and the specialist diabetes team in Beaumont Hospital

Develop integration of care between primary care and the diabetes service in Beaumont Hospital for patients with type 2 diabetes

As an educational resource for both primary care and Beaumont Hospital

It is hoped that these guidelines are the start of a process to improve communication and consultation between the hospital and primary care and that further initiatives will follow which will continue to develop integrated care for patients with type 2 diabetes

Yours Sincerely

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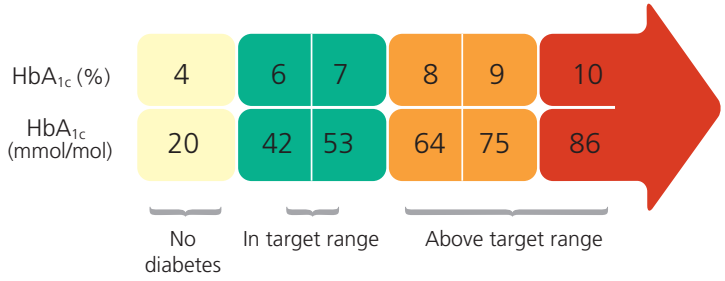
These nurses can assist your practice in setting up diabetes clinics,
support existing clinics or provide training and educational updates on diabetes management

HbA_{1c}

During 2010 a new type of measurement was introduced for measuring the average blood glucose level. This means HbA_{1c} is now recorded in mmol/mol (millimols per mol) instead of percentage. Both readings are shown below.



Guidelines on Management of Type 2 Diabetes

Diagnosis of Diabetes

- FPG ≥ 7.0 mmol/L on two occasions
- OGTT 2hr glucose value ≥ 11.1 mmol/L or
- *Random glucose ≥ 11.1 mmol/L with osmotic symptoms or
- HbA_{1c} ≥ 48 mmol/L on two occassions or
- One FPG ≥ 7.0 mmol/L and HBA1c ≥ 48 mmol/L

Data to be collected at diagnosis

Body weight/ BMI	Smoking status
Blood pressure	Alcohol intake
Waist circumference	
HbA_{1c}	Urine for microalbumin (ACR)
Fasting lipid profile	eGFR
FBC	Ferritin & transferrin saturation
U&E	ECG
LFTs	
TFTs	

*Osmotic symptoms include polyuria,nocturia and polydypsia

Diagnosis of Type 2 Diabetes

- HbA_{1c} ≤ 64 mmol/mol; Consider lifestyle modification for 3 months, especially if intake of refined carbohydrates are high.
- HbA_{1c} ≥ 65 mmol/mol; Commence hypoglycaemic agents.
- Optimise Blood Pressure to < 140/90 mm/Hg
- Consider statin therapy if indicated
- Give information on diabetes, healthy eating and lifestyle. Information leaflets available from Health Promotion Unit. www.healthpromotion.ie/publications and Diabetes Ireland www.diabetes.ie
- Refer to Structured Patient Education in the community DESMOND or Discover Diabetes. If unsuitable can be referred for individual review with Community Dietitian. (Appendix 2)
- Carry out foot assessment and classify foot risk according to National Model of Footcare
- Register for Retinal Screening
- Inform about Long-Term illness entilements and services offered by Diabetes Ireland
- Teach blood glucose monitoring as per national guidelines and inform about maintaining targets of 4.0 - 7.0 mmol/L pre meals. https://www.hse.ie/eng/about/who/cspd/ncps/diabetes/blood-sugar-testing/

Referral to Beaumont Diabetes Service

Routine referrals: via Healthlink

Referrals are triaged based on clinical need. Ensure up to date biochemical data, current medication and BMI is included with referral

Referrals:

- Worsening glycaemic control which may require the commencement of Insulin Therapy
- Young Adults (age < 30 Yrs) with a diagnosis of diabetes.
- Type 1 diabetes who default from Secondary care.

Urgent Referrals:

- Fasting Plasma glucose ≥18.0 mmol/L or the presence of ketones (urine ketone +1 or blood ketone>0.6 mmol/L). Contact Diabetes Centre by Tel: 01 8092744.

Active foot ulceration

Refer to Podiatry Dept Beaumont Hospital via email beaumontpodiatry@beaumont.ie using National Referral Form

https://www.hse.ie/eng/services/list/2/primarycare/east-coast-diabetes-service/management-of-type-2diabetes/foot-care/model-of-care-diabetic-foot.pdf

Moderate or High Risk Foot

Refer to Community Podiatry (Appendix 1).

This is in addition to regular Chiropody

Management of Type 2 diabetes in GP Service 4-6 monthly

- Assess knowledge of self management skills / self monitoring skills and re-educate as required
- Optimise cardiovascular risk factors and glycaemic control
- Carry out foot assessment as per National Model of Footcare. Refer Moderate or High Risk to Community Podiatry (Appendix 1)
- If a change is made to medication, patients should be reviewed in GP practice with repeat bloods after 4 to 6 months

Data to be collected at 4-6 monthly intervals in GP service

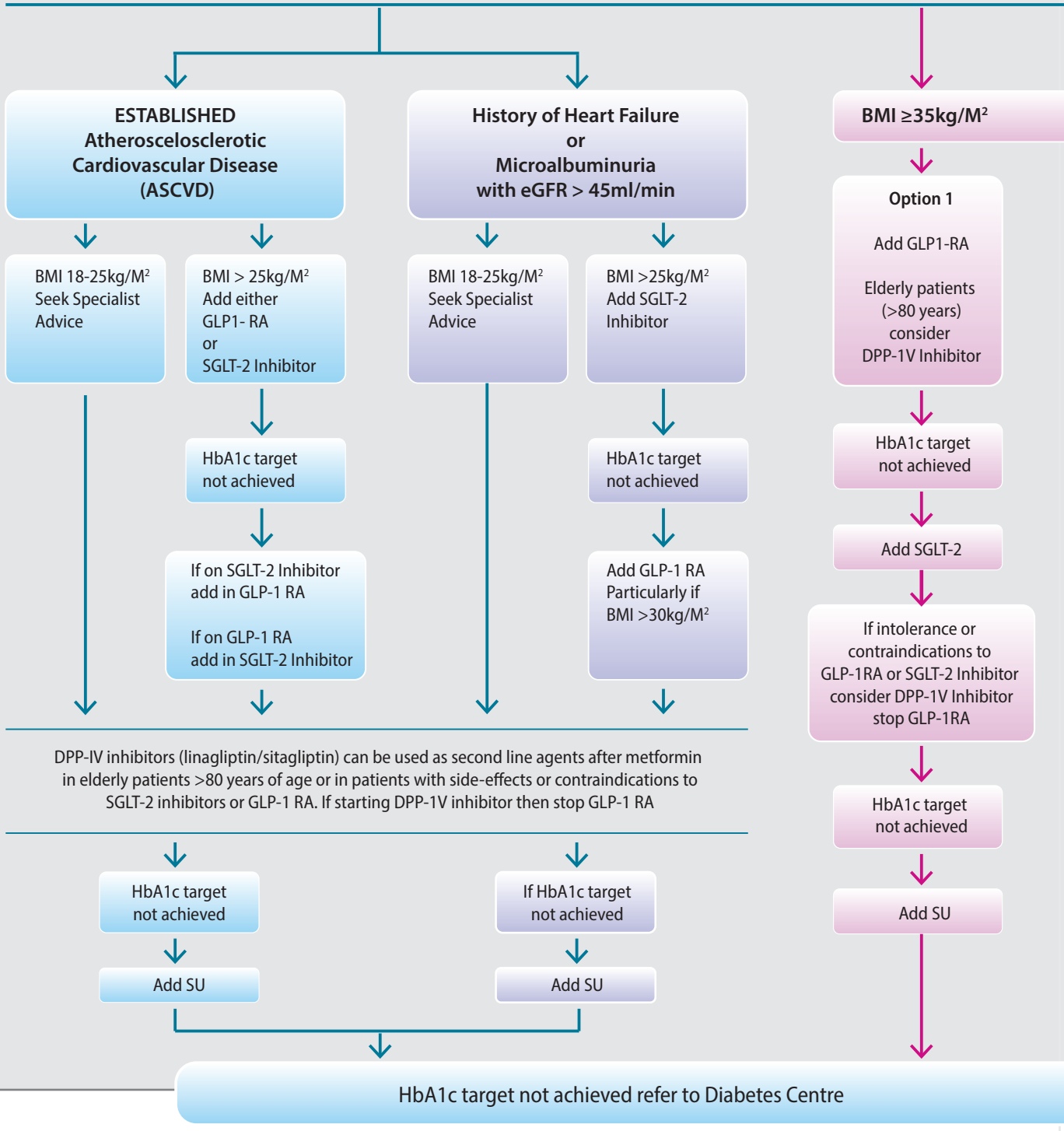
Every visit	Weight BMI Waist Circumference Blood Pressure Smoking status Alcohol intake
Bloods at Annual Review	HbA_{1c} Lipids (Fast if not on insulin) U/E LFTs Urine ACR TFTs and B12 if on metformin
Bloods at review visit	HbA_{1c} Lipids LFTs U/E. Repeat any previous abnormal test

Blood Glucose Testing

- Patients on diabetes medications are encouraged to test their blood glucose. The frequency of testing depends on treatment. Medication which does not cause hypoglycaemia - up to 3 times per week. Medication which can cause hypoglycaemia 1-4 times daily and before driving as per Road Safety Authority Guidelines
- Patients should wash their hands before testing and advise on safe disposal of sharps
- Glucose targets should be individualised but in general are between 4.0 -7.0 mmol/L pre meals without significant hypoglycaemia
- If blood glucose levels are > 9.0 mmol/L consistently for 2/52, patients should be advised to contact GP or PN for advice
- Glucometers should be replaced every 2 - 3 years. Patients should register the meter with manufacturing company
- If health professionals use glucometers in surgery on multiple patients, quality control testing should be carried out on a regular basis. Contact relevant company for information on this

Glucose-lowering medication in Type 2 Diabetes: Overall approach. General HbA1c Target is ≤53 mmol/L

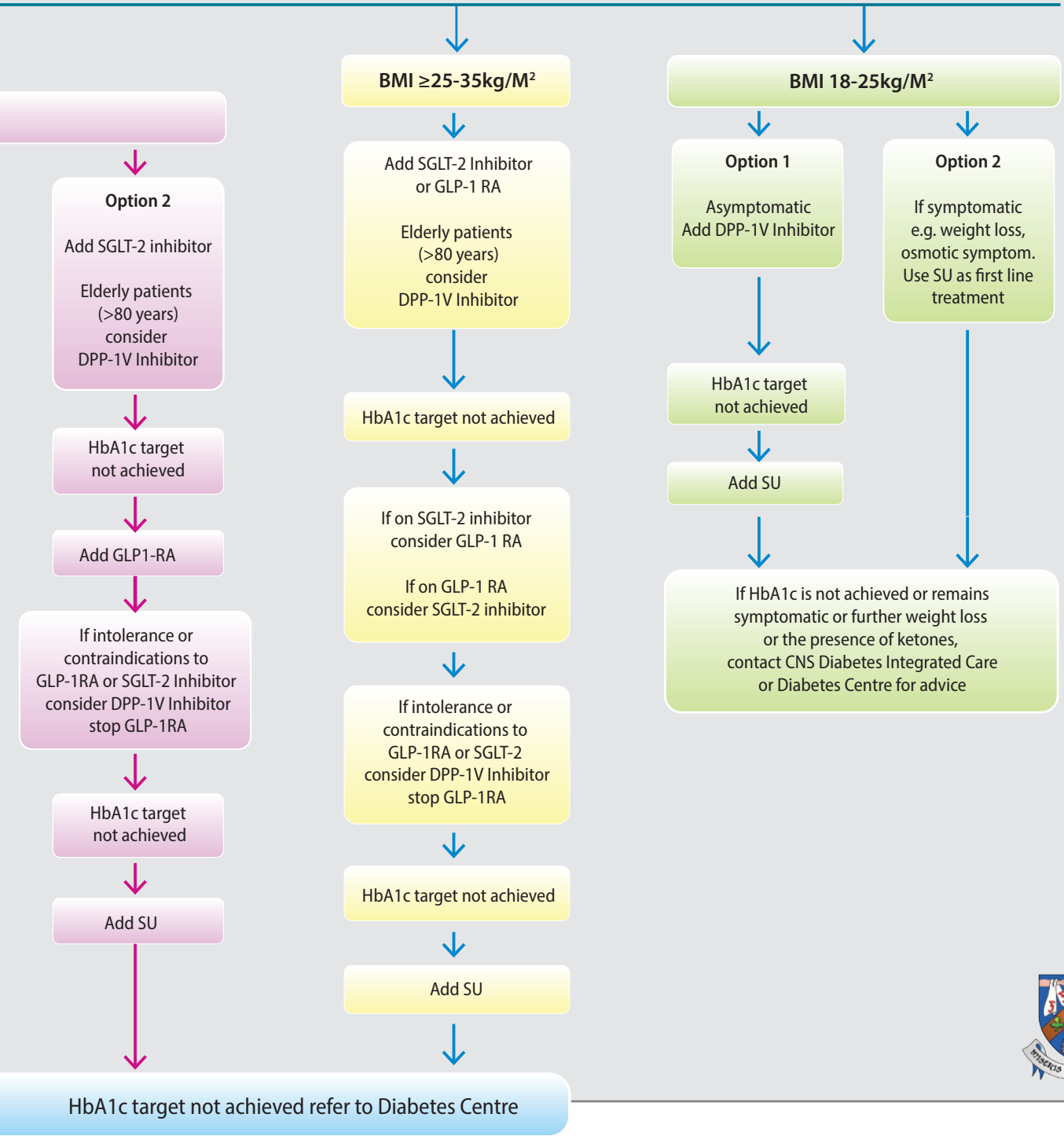
Metformin is generally first line therapy
Titrate to maximum dose
If HbA1c target is not achieved proceed as below



The benefits and side effects of each medication or treatment option must be discussed with the individual patient

Targets and treatment should be individualised. Initiation of medication should be in conjunction with advice on lifestyle changes. This includes dietary advice, weight loss management, increased physical activity and the reduction of cacardiovascular risk factors.

If Ketouria, Ketonaemia (urine ketone+1 or Blood ketone >0.6 mmol/L)
or Fasting Plasma Glucose ≥18.0 mmol/L
Seek specialist advice



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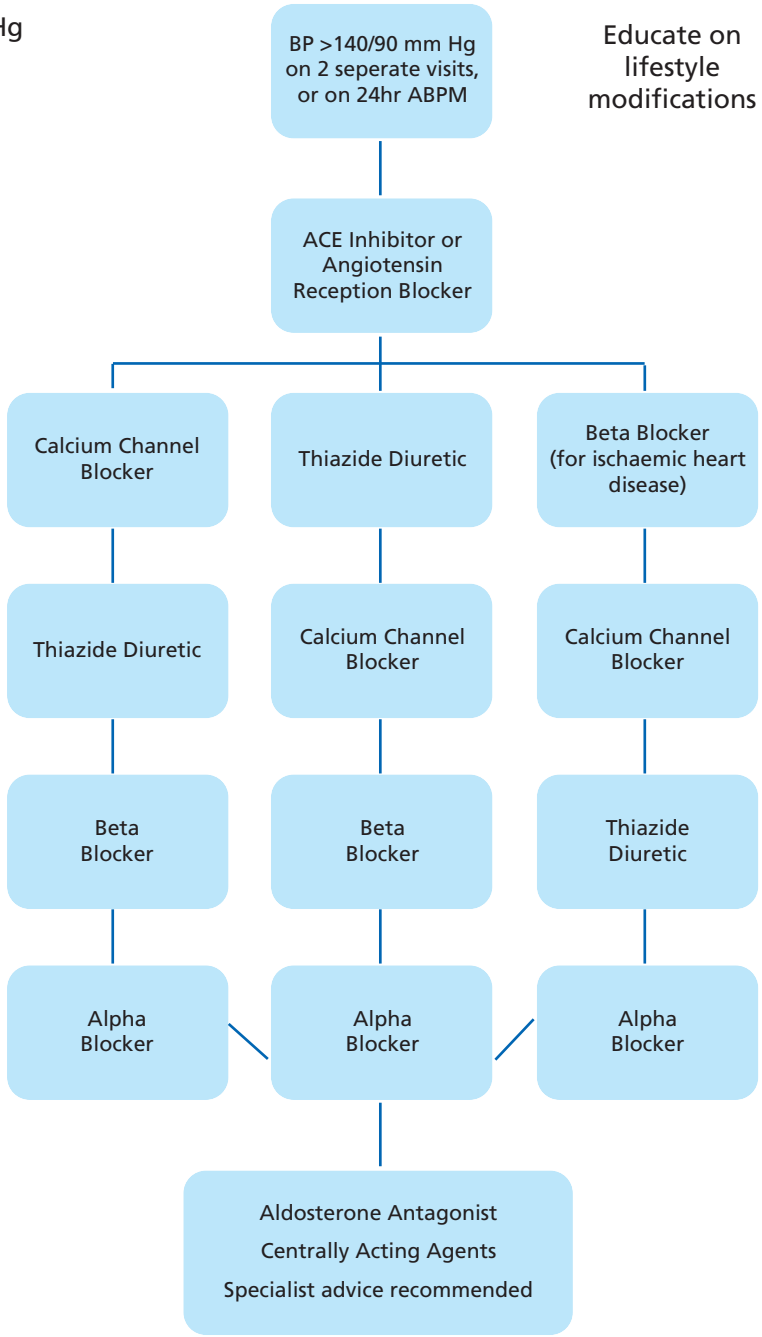
HYPOGLYCAEMIC AGENTS

	Name of Drug	Dosage	Time of Administration	Side Effects	Precautions
Biguanide	Metformin (Glucophage)	500 mg 850 mg 1000 mg Start 500mg po OD for 2 weeks, increase to BD and titrate slowly if clinically indicated. Typical dose 1000 mg BD	Once, twice or three times daily with food.	GI upset B12 deficiency Metalic taste	Renal impairment : -avoid if eGFR <30ml/min) -eGFR 30-45ml/min maximum dose 500mg BD -caution if patient undergoing contrast study Cirrhotic liver disease Acute CCF Metabolic acidosis : Lactic acidosis Check B12 annually
Sulphonylurea (SU)	Gliclazide MR (Diamicron MR, Diaglyc)	30mg – 120mg OD	Once daily - with breakfast	Weight gain Hypoglycaemia GI upset	Renal impairment Liver impairment Patients require education on blood glucose monitoring, the management of hypoglycaemia and RSA driving guidelines. Caution in the elderly
	Gliclazide (Diaclide, Diabrezide)	1 mg – 6mg OD	Once / twice daily, with food		
	Glimepiride (Amaryl)	80mg -160mg OD	Once daily - with breakfast		
	Glipizide (Glibenese)	5 mg – 20mg OD	Once / twice daily, with food		
GLP-1 Receptor Agonist (RA) (S/C injection)	Dulaglutide (Trulicity)	0.75mg (monotherapy) 1.5mg (Add-on therapy)	Once weekly	GI upset Nausea Vomiting Diarrhoea Pancreatitis Cholecystitis Can induce weight loss Cachexia	Liver failure Renal impairment (eGFR <30ml/min), Severe GI disease Pancreatitis Avoid in patients with history of Pancreatitis or Medullary thyroid cancer Avoid in combination with DPP-1V Inhibitors May need to reduce the dose of sulphonurea to avoid hypoglycaemia
	Semaglutide (Ozempic) Caution in patients with retinopathy	0.25 mg / 0.5 mg / 1mg – Start 0.25mg once weekly x 4 weeks Increase to 0.5mg once weekly x 4 weeks Increase to 1.0mg once weekly- remain on this dose	Once weekly		
	Liraglutide (Victoza)	0.6 mgs/1.2 mg/1.8mg	Once daily		
DPP-1V Inhibitor	Sitagliptin (Januvia) - Caution with Digoxin	25mg - 100 mg OD Or 25mg – 50mg BD Renal impairment: Moderate -50mg Severe-25mg	Once or twice daily	Nausea Dizziness Headache Pancreatitis Sinusitis	Renal / Liver impairment Pancreatitis Medullary thyroid cancer Do not use with GLP-1 Receptor agonists
	Saxagliptin (Ongylza) - avoid in high C.V risk patients - risk of heart failure	5 mg OD Renal impairment 2.5mg OD	Once daily		
	Vildagliptin (Galvus)	50 mg BD Renal impairment 25mg BD	Twice daily		
	Linagliptin (Trajenta)	5 mg OD No dose reduction in renal impairment	Once daily		
SGLT2 Inhibitor	Dapagliflozin (Forxiga)	10 mg OD — 10 mg	Once daily	UTI Genital infections Balanitis Dehydration Postural hypotension Fourniers gangrene	If eGFR <45ml/min - seek specialist advice Caution in elderly >75yrs, risk of hypotension and dehydration Caution with loop diuretics Caution in patients with recurrent UTIs Caution in patients with amputation risk Stop during intercurrent illness Risk of DKA Patient can present with euglycaemic ketosis If unwell check ketones
	Empagliflozin (Jardiance)	10 mg - 25 mg OD — 25 mg	Once daily		
	Canagliflozin (Invokana)	100 mg - 300 mg OD — 300 mg	Once daily		
	Ertugliflozin (Steglatro)	5 mg - 15 mg OD — 15 mg	Once daily		
Thiazolidinedione (TZD)	Pioglitazone (Actos)	15 mg – 45mg OD Measure LFTs at baseline and then at review	Once daily	Fluid retention Oedema Weight gain Anaemia Fractures Can reduce bone mineral density	Avoid in Heart Failure, History of heart failure Active liver disease Renal impairment Macular oedema Osteoporosis Bladder cancer

Treatment of Hypertension in Type 2 Diabetes Mellitus

Target BP <140/90 mm Hg

If not meeting target, add in next agent in alogrithm



Consider specialist referral (three or more agents)

Principles

Targets should be individualised, e.g.

- a lower target (BP 125/75 mm Hg) may be appropriate in patients with nephropathy
- a lower target BP of <130/80mmHg may be appropriate in patients at high risk of cardiovascular disease if it can be achieved without side effects
- a higher target may be desirable for elderly, frail patients

Frequency of monitoring

- blood pressure should be checked at each clinic/surgery visit.
- (minimum of six monthly)

Lifestyle advice

- smoking cessation - reduce alcohol intake - low-salt diet - weight-loss

Practice Points

Most patients will require two or more antihypertensive agents to achieve target blood pressure

Combination tablets are widely available, particularly for ACE or ARB with thiazide, or with calcium channel blocker, and may improve patient compliance

Lower doses of multiple agents may be more effective than maximum doses of single agents, and may reduce the risk of side effects

Renal function should be checked 1-2 weeks after commencement of ACE, ARB or loop diuretic due to risk of hyperkalaemia (ACE/ARB) or rising urea and creatinine (ACE/ARB/loop diuretic)

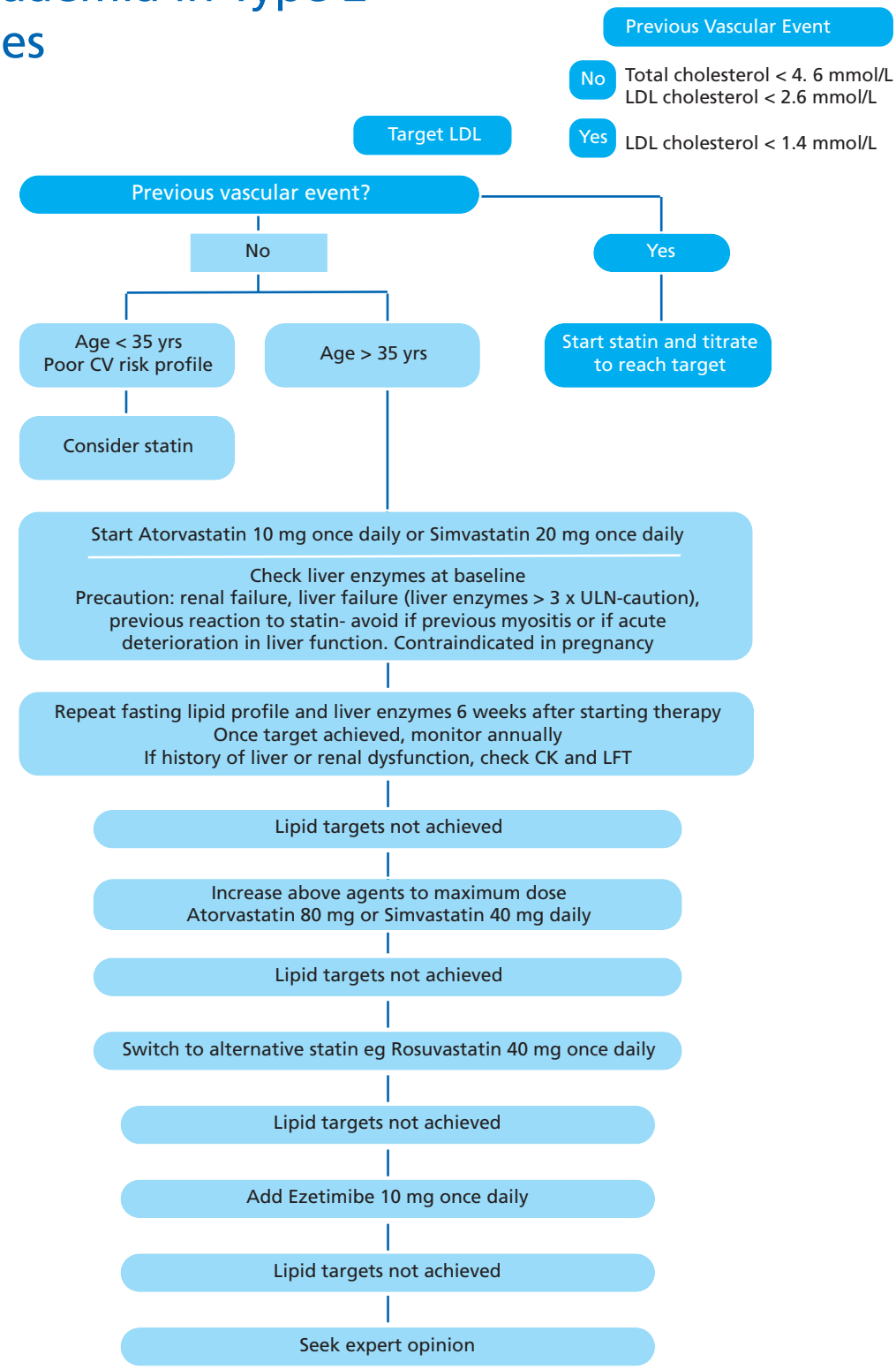
The use of ACE I and ARB combined may increase the risk of adverse outcomes and is not recommended except under specialist supervision

Low dose thiazide diuretics should only be used

Drug Description Table

Drug	Generic names	Indications	Contraindications	Side-effects
Ace Inhibitors	Benzapril, Captopril, Cilazapril, Enalapril, Lisinopril, Perindopril, Quinapril, Ramipril, Trandolapril	Hypertension, Heart Failure, Secondary Prevention, Diabetic Nephropathy	Pregnancy, Renal Artery Stenosis	First Dose Hypotension, Angiodema, Cough, Hyperkalaemia
Angiotensin Receptor Blockers	Candesartan, Eprosartan, Irbesartan, Losartan Olmesartan, Telmisartan, Valsartan	Hypertension, Heart Failure, Secondary Prevention, Diabetic Nephropathy	Pregnancy, Severe Hepatic Impairment, Renal Artery Stenosis	First Dose Hypotension, Angiodema, Cough, Hyperkalaemia
Calcium Channel Blockers	Dihydropyridine-Amlodipine, Felodipine, Lercanidipine Nifedipine Non-Dihydropyridine - Diltiazem, Verapamil	Hypertension, Stable Angina	Aortic Stenosis, Acute Heart Failure	Ankle Oedema
Thiazide and related diuretics	Bendroflumethiazide, Hydrochlorothiazide, Indapamide, Chlortalidone	Hypertension	Severe Renal or Hepatic Failure	Hypokalaemia Hyponatraemia, Gout. Use with caution in elderly patients
Alpha Blockers	Doxazosin, Prazosin	Hypertension, Benign Prostatic Hperplasia	Orthostatic Hypotension	Postural Hypotension
Beta Blockers	Atenolol, Bisoprolol, Carvedilol, Metoprolol, Nebivolol, Sotalol	Hypertension, Angina, Arrhythmias, Secondary Preventation	Bradycardia, Acute Heart Failure, Heart Block, Untreated Phaeochromocytoma	Fatigue, Erectile Dysfunction, Heart Block

Dyslipidaemia in Type 2 Diabetes



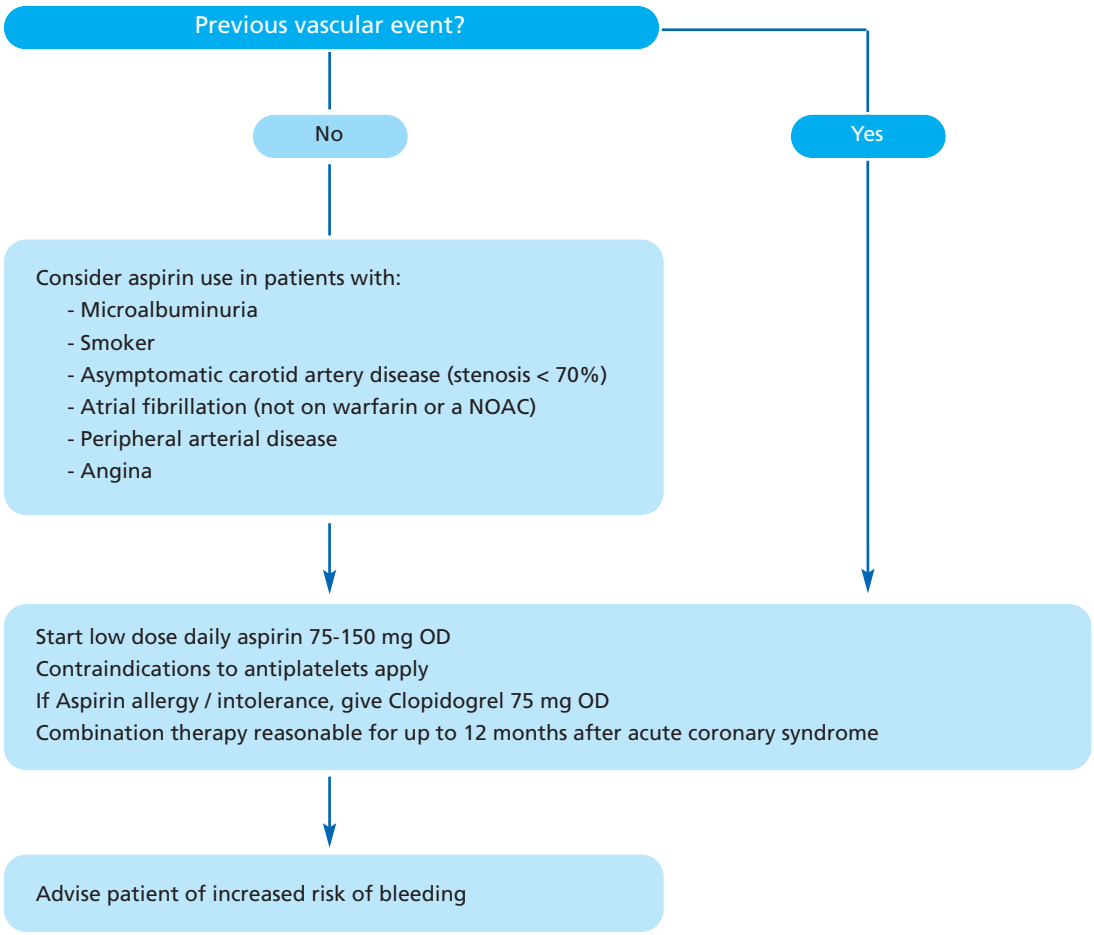
If symptomatic on statin therapy, stop statin and then re-challenge with alternative statin at low dose and titrate slowly.

If intolerant of statin, try alternative lipid lowering agent - seek expert advice.

Patients with target HbA_{1c} and fasting hypertriglyceridaemia > 5.0 mmol/L, consider addition of fibrate, seek specialist opinion.

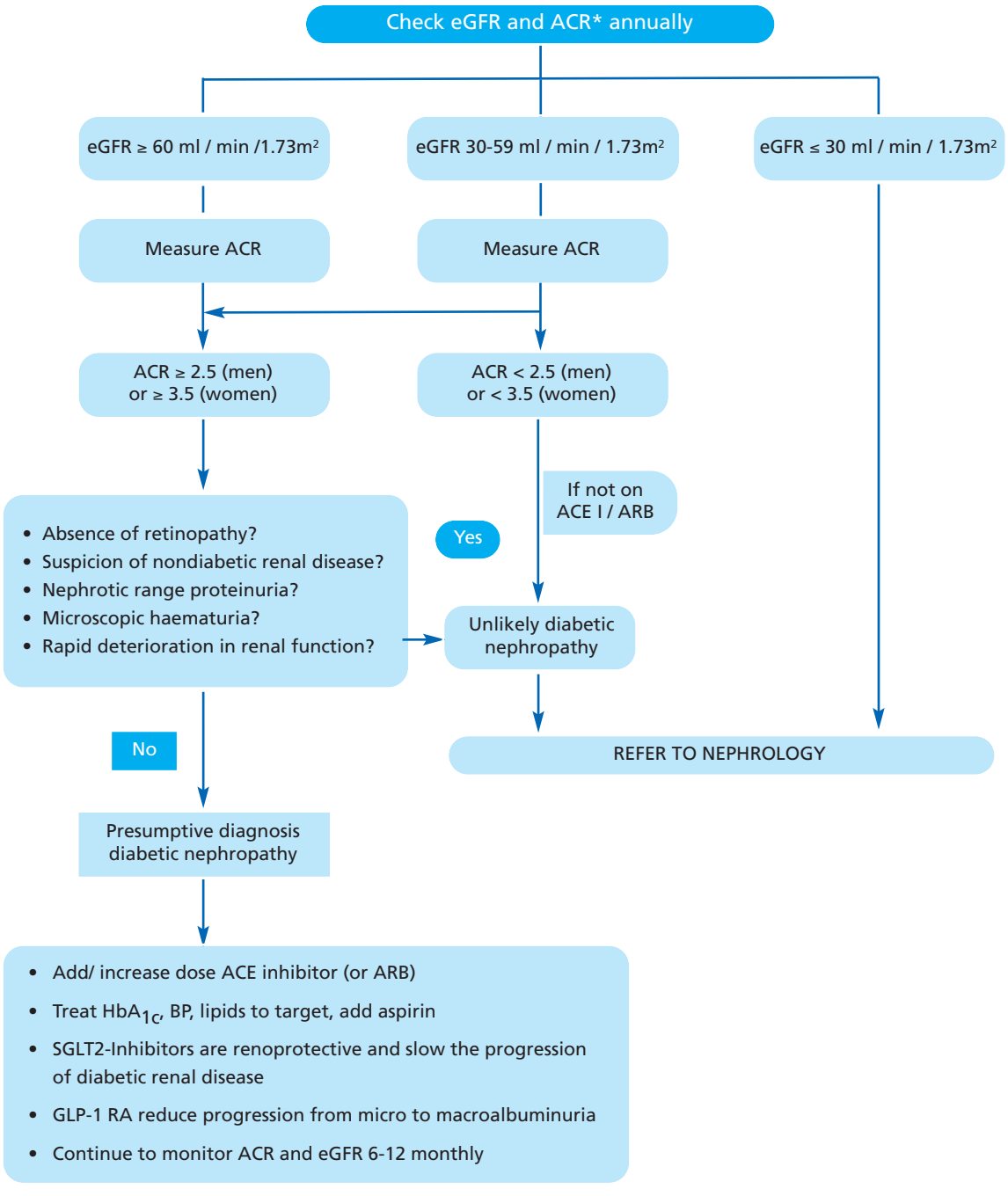
Contraindicated in Pregnancy . If dyslipidaemia present in women of childbearing years - seek specialist advice.

Antiplatelet therapy in Type 2 Diabetes



Microalbuminuria in Type 2 Diabetes

The diagnosis of microalbuminuria is based on 2 positive results within a 6 month period



*ACR should be measured on a first pass specimen.
If abnormal, the measurement should be repeated to confirm diagnosis
ACE I / ARB are contraindicated in pregnancy. Premenopausal women should be counselled appropriately
Check U&E prior to, and within 2 weeks following initiation of ACE I / ARB
Expect up to a 15% decrease in eGFR when commencing ACE I / ARB

Feidhmeannacht na Seirbhíse Sláinte Health Service Executive	**Dublin North City & County** **Community Podiatry Service Referral Form**	Please return form to EMAIL : referrals.nd@hse.ie FAX : 01 8953792 Alternatively post to Community Healthcare Organisation Dublin North City & County Fujitsu House, Unit 100, 1st Floor Lakeshore Drive, Airside Business Park Swords, Co. Dublin, K67 R8X2

For Office Use: Date referral received ___/___/_____	Priority:

Patient Name…… Patient Address…… …… DOB ……Gender M / F Phone No…… Next of Kin/carer contact details…… ……	Medical card ☐ LTI card ☐ Other ☐ None ☐ GP Name…… GP Address…… …… ……

Diabetes								Duration of Diabetes			
Type 1	☐	Type 2	☐	Other				< 5 years	☐	5-10 years	☐	>10 years	☐
Latest HbA1c						Date completed					
Foot Risk Categories	Moderate				☐	High	☐				
Non-Diabetic (Please indicate reason for high risk of ulceration/ amputation)											
Peripheral Vascular Disease	☐	Rheumatoid Arthritis	☐	Other							

Medical History									
Current Medication (Or Attach list)									
Allergies									
Smoker	Yes	☐	No	☐	Units of alcohol Per week				
Anti-coagulation Therapy	Yes	☐	No	☐	Does patient need Wheel Chair access	Yes	☐	No	☐
Reason For referral									
Name				Date					
Signature				Profession					
Contact Number of referrer									
Address of referrer									
Has the client consented to the sharing of Information				**YES**	☐	**NO**	☐		
Has the client consented to this referral				**YES**	☐	**NO**	☐		

Please refer to 'model of care for the diabetic foot' for categorisation via www.hse.ie (Pg 12)
Please provide additional information on the 'diabetes foot screening tool' (Pg. 15)
All active diabetic foot disease must be referred to model 4 hospitals
Incomplete referral forms will be sent back to referrer

CHO 9 Community Diabetes Dietitian Referral Form (Primary Care)
Type 2 Diabetes only

Patient Details	Referrer Details
(**Place Patient Sticker or Complete sections below**) **Name** _____ **Address**_____ _____ _____ **Contact phone number:** _____ **DOB:** _____ **Is an interpreter required** Yes ☐ No ☐ **Language:** _____	**Date of referral**_____ **Referring Professional** _____ **Name of referring professional:**_____ **Contact number/bleep** _____ **GP Name and Address** _____ _____ **If under a diabetes consultant please state name of consultant**:_____

Referral for Structured Group Education		**Tick ONE box below only**	**Email to: referrals.nd@hse.ie**
Structured Group Education	DESMOND - **6 hours** of education in a small group over 1 full day or 2 half days in a community venue - Delivered by the Community Diabetes Dietitian and Clinical Nurse Specialist (Diabetes)		
	OR DISCOVER DIABETES - 2.5 hours of education in a small group, once per week for 4 weeks (**10 hours in total**) in a community venue, follow up group session at 6 months and 12 months - Delivered by the Community Dietitian		

THOSE WHO ARE NOT SUITABLE FOR DESMOND OR DISCOVER DIABETES- Offer 1:1 clinic appointment with Community Diabetes Dietitian. Please fill out the table below

Reason for 1:1 appointment:_____

Newly diagnosed Type 2 Diabetes? **YES** ☐ **NO** ☐
Please tick as appropriate

Past Medical History:

Medications frequency and dosage:

Additional information/ risks:

Biochemistry	Total Cholesterol	HDL	LDL	Triglycerides
HBa1c	ACR	Date:	Weight and BMI (if known): Date:	

CONSENT (Complete for 1:1 clinic appointment referrals only)
Has the patient consented to this referral? **YES** ☐ **NO** ☐
Has this patient consented to his/ her information to be shared? **YES** ☐ **NO** ☐

Community referrals:
Email completed forms to: referrals.nd@hse.ie
Please note incomplete forms will be returned to the referrer.

If any queries, contact:
Orlaith Burkett, Community Diabetes Dietitian
Telephone: 8953744
Email: orlaith.burkett@hse.ie

Diabetes Day Centre, Beaumont Hospital

www.beaumont.ie/diabetescentre

Diabetes Centre
Telephone: (01) 809 2744

Opening Hours
Monday to Thursday 8.00-16.00
Friday 8.00-15.00

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