Hypertension Algorithm for Diabetes Mellitus in Adults

Revised 1-26-06

Texas Diabetes Council

Assess Blood Pressure[1] (BP)

BP ≤130/80 mmHg

Follow-up BP each visit
If microalbuminuria or nephropathy present (Table 1)

BP>130/80 mmHg

Start ACE inhibitor (ACEi) therapy[2-5]
If microalbuminuria or nephropathy present (Table 1)
If African-American- Start ACEi in combination with diuretic or CCB
If SBP ≥145mmHg and/or DBP≥90mmHg[6]
Start with combination antihypertensive therapy

Reassess therapy in 4-8 weeks-Titrate to at least ½ max dose
Encourage self-monitoring of blood pressure[1]
(on average ≥ 3 medications will be needed to achieve blood pressure goals)

BP≤130/80 mmHg

BP>130/80 mmHg

Table1
Microalbuminuria/Proteinuria[3]

- In Type 2 patients, an ACEi or angiotensin receptor blocker (ARB) may be used first line.
- In Type 1 patients, an ACEi is recommended to reduce protein excretion
- Consider the use of verapamil or diltiazem in patients with proteinuria unable to tolerate ACEi or ARBs.

Continue Therapy
BP Check Every Visit

Add[6] **Diuretic OR Calcium Channel Blocker (CCB) OR Beta Blocker**

If Diuretic Chosen: (Preferred if no other compelling indications)

Creatinine <1.8 mg/dL	Creatinine ≥1.8 mg/dL
Thiazide diuretic^	Loop Diuretic

(^ Max. dose 25mg Hydrochlorothiazide or equivalent)

If Beta Blocker Chosen: (Strongly recommended if history of MI)
Choose beta blocker without intrinsic sympathomimetic activity[7]

If CCB Chosen:
If Diltiazem or Verapamil Chosen:
Pulse and conduction effects should be considered if combined with β blocker
If Dihydropyridine CCB[8] **Chosen**: **Not** to be used without ACEi or ARB agents

Reassess therapy in 4-8 weeks
Titrate to at least ½ max dose or add additional agent[6]

BP≤130/80 mmHg

BP>130/80 mmHg

Add:
Medication not chosen from above
OR
Go to Alternative Treatment***

BP≤130/80 mmHg

BP>130/80 mmHg

***Alternative treatment
BP >130/80 mmHg despite above agents or if intolerance/contraindications exist:

Refer to Specialist (Endocrinologist or Nephrologist)
OR
ADD: α blocker, hydralazine, clonidine (caution with β blocker)

DBP – Diastolic Blood Pressure
MI – Myocardial Infarction
SBP – Systolic Blood Pressure

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Footnotes

1 Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure: The seventh report of the Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure (JNC 7). *JAMA*. 2003;289(19):2560-72; consider secondary causes as appropriate

2 Maintain non-pharmacological therapy throughout treatment. Medical Nutrition Therapy Algorithm + low sodium diet (<2.4 g/day; if ≥ age 50, ≤ 1.5 g/day) + limit alcohol intake (1 oz./day for men, 0.5 oz./day for women) Weight Loss and Exercise Algorithms.

3 ADA Clinical Practice Guidelines 2004. *Diabetes Care*. 27(suppl 1):S15-S35, S65-S68.

4 Monitor serum K^+ and creatinine periodically

5 If intolerant to ACEi (except angioedema) consider angiotensin receptor blocker (ARB).

6 *Am J Kids Dis*. 2000;36:646-61

7 Metoprolol, carvedilol, bisoprolol, atenolol

8 Amlodipine, felodipine, isradipine, nicardipine, nisoldipine

Bibliography on back

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Proper blood pressure assessment

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ACE inhibitor as 1st line therapy in Diabetes Mellitus

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