



MEDICAL DIRECTIVE

HYPERTENSION THERAPY – DIABETES OR CHRONIC KIDNEY DISEASE (NYFHT-003A)

DEFINITION

Assessment of hypertension control for patients treated with antihypertensive medications (Appendix 1) for the titration and renewal of these therapies in the presence of a diagnosis of diabetes or chronic kidney disease (CKD). Hypertension control is monitored by blood pressure measurements at home and in the physician office. For patients with diabetes or CKD the target blood pressure is less than 130/80 mmHg.

PHYSICIAN'S ORDERS

- Renew or titrate antihypertensive medications (Appendix 1)
- Change to combination therapies once stable doses of individual components have been achieved
- Order regular laboratory monitoring (Appendix 2)

PERSONS AUTHORIZED TO CARRY OUT THIS DIRECTIVE

- Clinical Pharmacist working in the NYFHT

SITUATIONAL CIRCUMSTANCES REQUIRED

- Adult patients (\geq 18 years old)
- Current treatment with antihypertensive medication
- Referral to Clinical Pharmacist by physician (written or verbal)
- Absence of specific medication contraindication (Appendix 3)

RISKS AND PREDICTABLE OUTCOMES

Risk

- Medication related adverse effects (Appendix 4)

Predictable Outcome

- Improved blood pressure control
- Improved patient satisfaction and disease awareness
- Improved medication adherence
- Improved patient access to care

CONTRAINDICATIONS TO THE IMPLEMENTATION OF THE DIRECTIVE

- Evidence of hypotension (blood pressure less than 100/60 mmHg)
- Specific contraindication to antihypertensive medication (Appendix 3)

SCHEDULE FOR REVIEW OF MEDICAL DIRECTIVE

- Every 2 years (minimum) or at the discretion of the members of the NYFHT

REFERENCES

2009 Canadian Hypertension Education Program Recommendations
(www.hypertension.ca)

DEVELOPMENT OF MEDICAL DIRECTIVES

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DATE

June 14, 2010

APPENDIX 1 – ANTIHYPERTENSIVE MEDICATIONS

Drug Name	Usual Starting Dose	Titration Schedule	Maximum Titration	Maximum Dose
Thiazide Diuretics				
Hydrochlorothiazide (Hydrodiuril®)	12.5 mg daily	12.5 mg daily x 28 days 25 mg daily x 28 days 50 mg daily	12.5 mg per dose per 28 days	25 mg daily (50 mg daily maximum dose in consultation with physician)
Indapamide (Lozide®)	1.25 mg daily	1.25 mg daily x 28 days 2.5 mg daily x 28 days 5 mg daily	1.25 mg per dose per 28 days	2.5 mg daily (5 mg daily maximum dose in consultation with physician)
Angiotensin Converting Enzyme Inhibitors (ACE)				
Ramipril (Altace®)	1.25 mg daily	1.25 mg daily x 28 days 2.5 mg daily x 28 days 5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily (or divided BID)	1.25 – 5 mg per dose per 28 days	10 mg daily (20 mg daily maximum in consultation with physician)
Perindopril (Coversyl®)	2 mg daily	2 mg daily x 28 days 4 mg daily x 28 days 8 mg daily x 28 days 16 mg daily	2 – 4 mg per dose per 28 days	8 mg daily (16 mg daily maximum in consultation with physician)
Enalapril (Vasotec®)	5 mg daily	5 mg daily x 28 days 5 mg BID x 28 days 10 mg BID x 28 days 20 mg BID	5 – 10 mg per dose per 28 days	20 mg BID
Lisinopril (Prinivil®, Zestril®)	5 mg daily	5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily x 28 days 40 mg daily	5 – 20 mg per dose per 28 days	40 mg daily
Quinapril (Accupril®)	5 mg daily	5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily x 28 days 40 mg daily	5 – 20 mg per dose per 28 days	40 mg daily
Fosinopril (Monopril®)	5 mg daily	5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily x 28 days 40 mg daily	5 – 20 mg per dose per 28 days	40 mg daily
Angiotensin Receptor Blockers (ARB)				
Candesartan (Artacand®)	4 mg daily	4 mg daily x 28 days 8 mg daily x 28 days 16 mg daily x 28 days 32 mg daily (or divided BID)	4 – 8 mg per dose per 28 days	16 mg daily (32 mg daily maximum in consultation with physician)
Irbesartan (Avapro®)	75 mg daily	75 mg daily x 28 days 150 mg daily x 28 days 300 mg daily	75 – 150 mg per dose per 28 days	300 mg daily

Losartan (Cozaar®)	25 mg daily	25 mg daily x 28 days 50 mg daily x 28 days 100 mg daily	25 – 50 mg per dose per 28 days	100 mg daily
Valsartan (Diovan®)	80 mg daily	80 mg daily x 28 days 160 mg daily x 28 days 320 mg daily (or divided BID)	80 mg per dose per 28 days	160 mg daily (320 mg daily maximum in consultation with physician)
Dihydropyridine Calcium Channel Blockers (DHP-CCB)				
Amlodipine (Norvasc®)	2.5 mg daily	2.5 mg daily x 28 days 5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily (or divided BID)	2.5 – 5 mg per dose per 28 days	10 mg daily (20 mg daily maximum dose in consultation with physician)
Felodipine (Plendil®, Renedil®)	2.5 mg daily	2.5 mg daily x 28 days 5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily (or divided BID)	2.5 – 5 mg per dose per 28 days	10 mg daily (20 mg daily maximum dose in consultation with physician)
Nifedipine XL (Adalat XL®)	20 – 30 mg daily	20 – 30 mg daily x 28 days 60 mg daily x 28 days 90 mg daily x 28 days 120 mg daily	30 mg per dose per 28 days	60 mg daily (90 – 120 mg daily maximum in consultation with physician)
Non-Dihydropyridine Calcium Channel Blockers (Non-DHP-CCB)				
Diltiazem (Tiazac ER®, Tiazac XC®, Cardizem CD®)	120 mg daily	120 mg daily x 28 days 240 mg daily x 28 days 360 mg daily	120 mg per dose per 28 days	360 mg daily (> 360 mg daily in consultation with physician)
Beta-adrenergic Antagonists (Beta-Blockers)				
Bisoprolol (Monacor®)	1.25 mg daily	1.25 mg daily x 28 days 2.5 mg daily x 28 days 5 mg daily x 28 days 10 mg daily x 28 days 20 mg daily (or divided BID)	1.25 – 5 mg per dose per 28 days	10 mg daily (20 mg daily dose maximum in consultation with physician)
Atenolol (Tenormin®)	12.5 mg daily	12.5 mg daily x 28 days 25 mg daily x 28 days 50 mg daily x 28 days 100 mg daily x 28 days 200 mg daily (or divided BID)	12.5 – 50 mg per dose per 28 days	100 mg daily (200 mg daily maximum dose in consultation with physician)
Metoprolol (Lopresor®, Betaloc®)	12.5 mg BID	12.5 mg BID x 28 days 25 mg BID x 28 days 50 mg BID x 28 days 100 mg BID x 28 days 200 mg BID	12.5 – 50 mg per dose per 28 days	100 mg BID (200 mg BID maximum dose in consultation with physician)

APPENDIX 2 – REGULAR LABORATORY MONITORING

Drug Class	Laboratory Monitoring	Frequency
Thiazide Diuretics	Electrolytes Serum Creatinine	Within 14 days of dosage change and every 6 – 12 months once stabilized
ACE	Electrolytes Serum Creatinine	Within 14 days of dosage change and every 6 – 12 months once stabilized
ARB	Electrolytes Serum Creatinine	Within 14 days of dosage change and every 6 – 12 months once stabilized
DHP-CCB	NA	NA
Non-DHP-CCB	NA	NA
Beta-Blockers	NA	NA

APPENDIX 3 – MEDICATION CONTRAINDICATIONS

Drug Class	Contraindication
Thiazide Diuretics	<ul style="list-style-type: none"> • Allergy to thiazide diuretic
ACE	<ul style="list-style-type: none"> • Allergy to ACE including angioedema • Bilateral renal artery stenosis (or unitlateral in presence of solitary kidney)
ARB	<ul style="list-style-type: none"> • Allergy to ARB including angioedema • Bilateral renal artery stenosis (or unitlateral in presence of solitary kidney)
DHP-CCB	<ul style="list-style-type: none"> • Allergy to DHP-CCB
Non-DHP-CCB	<ul style="list-style-type: none"> • Allergy to Non-DHP-CCB • Bradycardia (heart rate < 60 beats per minute)
Beta-Blockers	<ul style="list-style-type: none"> • Allergy to Beta-blocker • History of asthma • Bradycardia (heart rate less than 60 beats per minute)

APPENDIX 4 – MEDICATION ADVERSE EFFECTS

Drug Class	Adverse Effects
Thiazide Diuretics	<ul style="list-style-type: none">• Electrolyte disturbances (primarily potassium depletion)
ACE	<ul style="list-style-type: none">• Cough• Angioedema• Electrolyte disturbances (primarily potassium accumulation)
ARB	<ul style="list-style-type: none">• Cough• Angioedema• Electrolyte disturbances (primarily potassium accumulation)
DHP-CCB	<ul style="list-style-type: none">• Pedal edema
Non-DHP-CCB	<ul style="list-style-type: none">• Bradycardia (heart rate less than 60 beats per minute)
Beta-Blockers	<ul style="list-style-type: none">• Bradycardia (heart rate less than 60 beats per minute)

