**5. Hypertension By Hannah Levavi**

**Overview**

* HTN is the #1 reason for non-pregnant adults to visit a medical office
* Affects ~30% of adults; only 50% of those affected are controlled
* HTN is the most important *modifiable* risk factor for CVD and CVAs

Measuring BP:

* Ambulatory BP
  + Ambulatory BP measurement is a much better predictor of CV events than office readings
  + Threshold for diagnosing HTN in ambulatory readings is >130/80 (lower than in office readings)
  + Should be used in pts with white-coat HTN, resistant HTN, episodic HTN
* Office BP measurement🡪 for diagnosis, must have ≥ 3 values over 2 visits:
  + Seated position, arm at level of the heart
  + Appropriate cuff size, not placed over clothing
  + Patient seated quietly for 5 minutes prior to measurement
  + Limit background noise, stressors

Secondary HTN

* When to worry about *Secondary* HTN:
  + Resistant HTN
  + HTN emergency or Malignant HTN
  + Acute rise in BP after previously stable values
  + HTN in <30yo non-obese patient with no FHx
  + Onset before puberty
* Causes of Secondary HTN

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| **Medications** | NSAIDs, Steroids, OCPs, SSRIs/SNRIs, EPO, HAART, Decongestants | Renovascular Disease | Renal Artery Stenosis Fibromuscular Dysplasia |
| **Drugs** | Caffeine, Amphetamines, Cocaine, MDMA, EtOH | Endocrine Disorders | Pheochromocytoma Cushing’s Disease Hyperaldosteronism Hyperthyroidism Hyperparathyroidism |
| **Renal Disease** | CKD Nephritic Syndrome | OSA |  |
| **Renovascular Disease** | Renal Artery Stenosis  Fibromuscular Dysplasia | Aortic Coarctation |  |

HTN Risk factors:

* Age, obesity, family history, race, high salt diet, excessive alcohol, physical inactivity, stress

BP Targets

* Varies depending on recommending body and target population:

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|  | **Population** | **BP Goal** |
| JNC-8 | Adults <60 | <140/90 |
| Adults >60 | <150/90 |
| Adults >60 with DM or proteinuric kidney disease | <140/90 |
| ACC/AHA | Patients with CAD | <130/80 |
| SPRINT trial | Patients with CAD | <120/80 |
| KDIGO | Non-diabetic, proteinuric CKD (>0.5-1.0g/day proteinuria) | <130/80 |

Workup of Patients with HTN:

* Look for signs of end-organ damage and/or curable causes of secondary HTN, if indicated
  + BMP, hgbA1C, lipid panel, UA, EKG

HTN Treatment:

* Lifestyle modifications:
  + Weight loss
  + Diet
    - Na+ restriction <2400mg/day
    - DASH diet Exercise
    - ↓EtOH

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| **First** **Line** | | | |
| **Class** | **Examples** | **Side** **Effects** | **Contraindications** |
| ACEis | Lisinopril, Enalapril, Captopril, Ramipril, Benzapril | Dry cough Angioedema Hyperkalemia | Angioedema Pregnancy |
| ARBs | Losartan, Candesartan, Valsartan | (same as above, but less common) |  |
| Dihydropyridine CCBs | Nifedipine Amlodipine | LE edema HA, flushing, constipation |  |
| Thiazide Diuretics | Chlorthalidone HCTZ | Hyperglycemia Hyperuricemia Hypokalemia Hyponatremia | Gout Sulfa allergy |

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| **Second** **Line** | |
| Loop Diuretics | Furosemide Bumetanide Torsemide |
| β -blockers | Labetalol Carvedilol |
| Vasodilators | Hydralazine |
| α -blockers | Clonidine Doxazosin |
| Aldosterone Antagonists | Spironolactone Epleronone Amiloride Triamterene |

**HTN AT IMA**

* At IMA If BP is >140/90 (or >other target BP), recheck once your patient is in the room (BP often is taken with clothes on, without adequate rest time, etc., in triage)
* If BP is persistently elevated, do a med rec and make sure your patient is taking all of their home anti-hypertensives (did they run out of refills? Are they taking them correctly?). Also check for any BP-raising meds).
* If concerned for true lack of BP control, optimize current medication dosages before adding other agents. Have patient return for a BP check in 2 weeks (can be an MD-visit or an NP-visit or an RN-visit, depending on need) to see whether your intervention is helping.
  + Use .BPINSTRUCTIONS at bottom of your note to give specific instructions about how to titrate BP medications when they return for follow up