Paediatric Hypertension

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Tumutumu Hospital
Objectives

• How to take a BP
• What is hypertension?
• Approach to
  – Diagnosis
  – Management
How to take a BP

Figure 1. Arm circumference should be measured midway between the olecranon and acromial process.

Figure 2. Blood pressure cuff showing size estimation based on arm circumference.
How to take

• Cuff should cover 2/3 upper arm
• Child needs to be RELAXED for it to be valid
• Hypertension diagnosed after 3 consistent separate readings
• (White coats can cause anxiety)
Hypertension

• BP >95\textsuperscript{th} percentile is defined as hypertension

• BP interpretation is dependent on:
  – Age
  – Height
  – Sex
What’s normal?

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Approach to diagnosis

• Take a FULL paediatric history
• Do a full examination
Things to consider:

• Is my patient obese?
• How old is my patient?
• Is it Renal, is it Cardiac, is it Endocrine?
• Is my patient symptomatic?
• How are the end organs (Kidneys/Retina)?
• Does my patient need ICU?
Primary Hypertension

• A diagnosis of exclusion in children
• Obese
• Older child
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<tr>
<th>Age Group</th>
<th>Cause</th>
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<td>Newborn</td>
<td>Renal: thrombosis, stenosis, anomalies</td>
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<td>Heart: coarctation of the aorta</td>
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<td>Endocrine: pheochromocytoma, Cushing disease</td>
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<td>Preschool/kindergarten (&lt;6 y)</td>
<td>Renal: parenchymal disease, vascular disease</td>
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<td>Heart: coarctation of the aorta</td>
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<td>Endocrine: pheochromocytoma, Cushing disease</td>
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<td>School age (6–10 y)</td>
<td>Renal: parenchymal, vascular</td>
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<td>Endocrine: pheochromocytoma, Cushing disease</td>
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<td>Adolescence</td>
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<td>Renal: parenchymal, vascular</td>
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<td>Endocrine: pheochromocytoma, Cushing disease</td>
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<td>Drugs of abuse</td>
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Renal

- Previous sepsis/UTIs
- Do a urine dip
- Renal serum profile
- Renal USS
- Family Hx
Cardiac

• Do you suspect cardiac cause clinically
  – Heart murmur
  – 4 limb BP
  – Radio femoral delay
  – Known congenital abnormality

• Do an ECG
• Get an Echo
Endocrine

• Does my patient have suggestive symptoms:
  – Tachycardia
  – Sweating
  – Palpitation
  – Cushingoid appearance
  – Virilisation/hyperpigmentation
• Is my patient taking steroids?
• Send urine metanephrines
• Cortisol, TFTs
Is this a hypertensive crisis?

• Neurological signs and symptoms
  – Severe headache
  – Visual disturbance
  – Seizures
  – Focal neurology
  – Impaired GCS

• Rapidly progressing HTN
• Treat with antihypertensive infusion (therefore ICU) e.g. labetolol, hydralazine
When To Treat

- Symptomatic hypertension
- Secondary hypertension
- Target-organ damage
- Poor response to non pharmacologic therapy
- Diabetes mellitus

- Goal is to reduce BP $<95^{th}$ percentile ($<90^{th}$ percentile if concurrent conditions or LVH present)
How to prescribe

• Single drug at lowest dose
• Once highest dose achieved or side effects – add in second drug if BP not controlled
• Aim is to lower BP < 95th Centile
What to prescribe

• Paucity of evidence
• ACEi for renin induced hypertension (ensure no artery stenosis)
• If needed in combination:
  – B-Blocker and Vasodilator
  – Add in loop diuretic if still not controlled
Summary

• >95\textsuperscript{th} Centile
• Diagnosis depends on reliable BP measurement
• Age, Sex and Height required for interpretation
• Primary hypertension is a diagnosis of exclusion in children
• ICU care needed for hypertensive crisis
References

• British National Formulary 2014-2015
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  – Hypertension in Children and Adolescents PPT
• Learn Paediatrics
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  – http://www.rch.org.au/clinicalguide/guideline_index/Hypertension/