

Poster Number 59

Abstract 0240_0346_000033

Implications of the new 2017 American Academy of Pediatrics (AAP) clinical practice guidelines for the management of elevated blood pressure (BP) in Canadian children aged 6-18 years: A descriptive & case-control study

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Background:

New reference charts and definitions of hypertension were released in 2017, with US studies demonstrating an increase in prevalence of 45% for adults and 20% in children.

Objective:

Assess the impact of the new guidelines on hypertension prevalence in Canadian children, characterize those with high BP, and compare risk factors between cases whose clinical stage worsened ("reclassified upwards") and normotensive controls.

Methods:

Cycles 1-4(2007-2015) of the Canadian Health Measures Survey(CHMS) include demographic, laboratory and examination data from generally healthy children age 6-18 years. Hypertension stages were defined using both the 2017 American Academy of Pediatrics(AAP) and the 2004 National Institute of Health (NIH/NHLBI) guidelines. Stata 15 was used to apply CHMS probability and bootstrap weights to estimate population means and prevalences. An unweighted case-control study compared laboratory and clinical characteristics in reclassified cases and controls.

Results:

High blood pressure(BP) was observed in 6.6% (n=484) of our sample using the 2017 guidelines and 3.5%(n=261) were reclassified to a higher stage, compared to US rates of 14.2% and 5.9% , respectively. Comparing guidelines, AAP bias for systolic BP percentile was + 3.0 with 95% limits of agreement (LOA)(-2 – +12). For diastolic BP percentile, AAP bias was +0.5 (LOA -6 – 6;). When comparing normal versus high BP populations, the latter were more likely to be overweight/obese (39.4 v 30.6%, p=0.02), exposed to household smoking (17.3 vs 10.3% p=0.002), and suffer from hypertriglyceridemia (17.4 vs 10.4%, p = 0.02). They were also younger (-1.8y, p<0.001), but did not differ in birth weight, NICU history, chronic health issues, or other laboratory measures.

Conclusion:

High blood pressure is less common in healthy Canadian children than in the US (<1/2). New guidelines result in a small increase in numbers identified as having high BP, and children with worsening BP stage having additional cardiometabolic risk factors.