

General Questions (Q)

Q1: Define Hypertenstion in Children and adolescents?

Time Taken to Generate Responses for Q1:

Model Name	Time in Seconds
Llama-2	443.17
MedAlpaca	353.15
Meditron	120.27
Mistral	118.00

Llama-2 Score and Responses:

METEOR Score: 0.09483622994652406

CHRF Score: 0.1779714551121801

Reference Text:

the definition of hypertension (HTN) in children and adolescents, stressing the use of modified AAP tables for those up to age 16. For adolescents aged 16 and older, recommended office values of $\geq 130/85$ mmHg align with adult cut-offs for high-normal values. The Consensus Panel suggests echocardiography as an additional diagnostic tool.

Model Generated Text:

Hypertenstion is high blood pressure in children. It is defined as a systolic BP of 95 percentile or greater and a diastolic BP of 90th percentile or greater.

MedAlpaca Score and Responses:

METEOR Score: 0.1740506329113924

CHRF Score: 0.30367266176150054

Reference Text:

The definition of hypertension (HTN) in children and adolescents, stressing the use of modified AAP tables for those up to age 16. For adolescents aged 16 and older, recommended office values of $\geq 130/85$ mmHg align with adult cut-offs for high-normal values. The Consensus Panel suggests echocardiography as an additional diagnostic tool.

Model Generated Text:

Yes, hypertenstion is defined as an abnormally high blood pressure, with or without symptoms, which may require diagnostic evaluation and ong ing treatment. The most common cause of hypertenstion is primary (essential) hypertension, which is the sustained elevation of systemic arterial blood pressure to a level beyond that considered normal for age, sex, and height. Secondary hypertension is defined as persistent elevated blood pressure with clinical symptoms. It is also known as refractory hypertension, when diastolic blood pressure remains elevated following treatment of sustained essential hypertension.

Meditron Score and Responses:

METEOR Score: 0.23114304916507267

CHRF Score: 0.32142835987302903

Reference Text:

The definition of hypertension (HTN) in children and adolescents, stressing the use of modified AAP tables for those up to age 16. For adolescents aged 16 and older, recommended office values of $\geq 130/85$ mmHg align with adult cut-offs for high-normal values. The Consensus Panel suggests echocardiography as an additional diagnostic tool.

Model Generated Text:

The systolic blood pressure (SBP) and diastolic blood pressure (DBP) thresholds used to define hypertension are based on the 4th report of the National High Blood Pressure Education Program Working Group on Hypertension in Children and Adolescents, which was published by the American Academy of Pediatrics (AAP) in 2017. In 2017, AAP released a new guideline for pediatric hypertension with the following changes from their previous guidelines:

- Included children aged 6 years or older and adolescents aged 13 years or older;
- Defined normal blood pressure as <90th percentile for age, sex, height, and BMI;
- Defined elevated blood pressure between the 90th to less than 95th percentile for agebiased normative tables;
- Defined hypertension in children aged 6 years or older as SBP/DBP at or above the 95th percentile, and in adolescents aged 13 years or older as SBP at or above 12

Mistral Score and Responses:

METEOR Score: 0.19580525708735508

CHRF Score: 0.26766258609425503

Reference Text:

The definition of hypertension (HTN) in children and adolescents, stressing the use of modified AAP tables for those up to age 16. For adolescents aged 16 and older, recommended office values of $\geq 130/85$ mmHg align with adult cut-offs for high-normal values. The Consensus Panel suggests echocardiography as an additional diagnostic tool.

Model Generated Text:

Hypertension in children and adolescents is defined as blood pressure measurements at or above the 95th percentile for age, sex, and height, or at or above 140/90 mmHg for individuals aged 18 years or older.

Q2: How has the discontinuation of mercury sphygmomanometers impacted the measurement of blood pressure in children and adolescents, and what alternative devices are currently being utilized?

Time Taken to Generate Responses for Q2:

Model Name	Time in Seconds
Llama-2	425.89
MedAlpaca	406.75
Meditron	248.23
Mistral	210.67

Llama-2 Score and Responses:**METEOR Score: 0.21953718917598125****CHRF Score: 0.30493971845288764****Reference Text:**

The discontinuation of mercury sphygmomanometers due to concerns about mercury toxicity has led to the increased use of automated electronic sphygmomanometers, primarily based on the oscillometric technique. Despite the limited validation of oscillometric devices for pediatric use and their associated cost, recent meta-analyses support their strong measurement validity compared to mercury sphygmomanometers. The Consensus Panel emphasizes the need for global pediatric reference nomograms generated by validated oscillometric devices, prioritizing future studies in this direction. Regional standards have been proposed, and it is crucial to use only validated oscillometric devices in children. Additionally, the confirmation of hypertension diagnosis is recommended through auscultatory methods, utilizing regularly calibrated aneroid sphygmomanometers.

Model Generated Text:

The discontinuation of mercury sphygmomanometers due to concerns about mercury toxicity has led to the use of automated oscillometric devices, which have been validated for use in children and adolescents. These devices are considered more reliable than manual sphygmomanometers for BP measurement in this age group.

MedAlpaca Score and Responses:**METEOR Score: 0.19249598359119327****CHRF Score: 0.32293354659464396****Reference Text:**

The discontinuation of mercury sphygmomanometers due to concerns about mercury toxicity has led to the increased use of automated electronic sphygmomanometers, primarily based on the oscillometric technique. Despite the limited validation of oscillometric devices for pediatric use and their associated cost, recent meta-analyses support their strong measurement validity compared to mercury sphygmomanometers. The Consensus Panel emphasizes the need for global pediatric reference nomograms generated by validated oscillometric devices, prioritizing future studies in this direction. Regional standards have been proposed, and it is crucial to use only validated oscillometric devices in children. Additionally, the confirmation of hypertension diagnosis is recommended through auscultatory methods, utilizing regularly calibrated aneroid sphygmomanometers.

Model Generated Text:

While mercury sphygmomanometers have largely replaced oscillometers, their impact on the diagnosis and treatment of hypertension remains controversial. Blood pressure measurements using cuffless methods continue to be made by automated devices, while manual sphygmomanometers are not without limitations. Adequate 2016; 35:1636. (40) 4017. However, some patients may experience side effects, including orthostatic hypotension and/or bradycardia.

The latter is an integrated approach to detect arrhythmia and/or bradycardia. In addition, some patients will be referred to as having discontinued. (41) 2017; 42:153986.

Meditron Score and Responses:

METEOR Score: 0.24917472050893577

CHRF Score: 0.3744801926274405

Reference Text:

The discontinuation of mercury sphygmomanometers due to concerns about mercury toxicity has led to the increased use of automated electronic sphygmomanometers, primarily based on the oscillometric technique. Despite the limited validation of oscillometric devices for pediatric use and their associated cost, recent meta-analyses support their strong measurement validity compared to mercury sphygmomanometers. The Consensus Panel emphasizes the need for global pediatric reference nomograms generated by validated oscillometric devices, prioritizing future studies in this direction. Regional standards have been proposed, and it is crucial to use only validated oscillometric devices in children. Additionally, the confirmation of hypertension diagnosis is recommended through auscultatory methods, utilizing regularly calibrated aneroid sphygmomanometers.

Model Generated Text:

The measurement of BP by auscultatory methods is not affected by the discontinuation of mercury sphygmomanometers. Mercury sphygmomanometers have been replaced by electronic oscillometric devices (see Chapter 1). Automated oscillometric devices are valid, reliable and easy to use in children and adolescents when used appropriately. They allow the BP measurement to be performed non-invasively with good repeatability and reproducibility, but they should only be used in children/adolescent if validated by a cuff-bladder dimension compatible with the child's arm circumference.

Mistral Score and Responses:

METEOR Score: 0.37591354235769014

CHRF Score: 0.5176922485063531

Reference Text:

The discontinuation of mercury sphygmomanometers due to concerns about mercury toxicity has led to the increased use of automated electronic sphygmomanometers, primarily based on the oscillometric technique. Despite the limited validation of oscillometric devices for pediatric use and their associated cost, recent meta-analyses support their strong measurement validity compared to mercury sphygmomanometers. The Consensus Panel emphasizes the need for global pediatric reference nomograms generated by validated oscillometric devices, prioritizing future studies in this direction. Regional standards have been proposed, and it is crucial to use only validated oscillometric devices in children. Additionally, the confirmation of hypertension diagnosis is recommended through auscultatory methods, utilizing regularly calibrated aneroid sphygmomanometers.

Model Generated Text:

The discontinuation of mercury sphygmomanometers due to concerns about mercury toxicity has opened the way for automated electronic oscillometric devices as alternatives for measuring blood pressure in children and adolescents. However, only a limited number of validated oscillometric devices have been approved for use in paediatric populations, and their cost is not insignificant. Since oscillometric devices do not measure but rather estimate blood pressure values, their accuracy might be considered uncertain. However, recent studies have confirmed the strong measurement validity of oscillometric devices when compared with mercury sphygmomanometers, providing support for their appropriateness also for use in children and adolescents, in clinical and epidemiological studies.

Q3: In the context of blood pressure measurement in pediatric populations, what concerns and considerations arise with the widespread adoption of automated electronic sphygmomanometers, particularly those based on the oscillometric technique?

Time Taken to Generate Responses for Q3:

Model Name	Time in Seconds
Llama-2	491.40
MedAlpaca	300.64
Meditron	172.19
Mistral	260.44

Llama-2 Score and Responses:

METEOR Score: 0.33128469850933434

CHRF Score: 0.5091803087942592

Reference Text:

The widespread adoption of automated electronic sphygmomanometers, especially those using the oscillometric technique, raises concerns about their accuracy in estimating blood pressure in children and adolescents. Despite initial uncertainties, recent meta-analyses have confirmed the strong measurement validity of oscillometric devices compared to the now-discontinued mercury sphygmomanometers. The Consensus Panel underscores the importance of generating global pediatric reference nomograms using validated oscillometric devices, even though a few regional standards have already been proposed. The necessity for confirming hypertension diagnoses using auscultatory methods with regularly calibrated aneroid sphygmomanometers is highlighted, addressing concerns about potential inaccuracies in oscillometric measurements.

Model Generated Text:

The use of automated electronic sphygmomanometers, particularly those based on the oscillometric technique, has become increasingly prevalent in pediatric settings. However, there are certain concerns and considerations that come with this widespread adoption.

One major concern is the accuracy of these devices in measuring blood pressure in children. Traditional mercury sphygmomanometers have been the gold standard for BP measurement for many years but they can be expensive and require special training to use correctly. Automated electronic devices are generally less costly but may not provide as accurate readings compared

with traditional methods. This is especially true in young children or those with irregular heartbeats or other cardiovascular conditions.

Another concern is the potential for false alarms due to incorrect cuff size or placement or other environmental factors like noise or vibration from nearby machinery. Inaccurate readings could lead to misdiagnosis or improper treatment of hypertension in children, which can have serious long-term health implications if left untreated.

Finally, there may be concerns about patient acceptance and compliance with automated electronic sphygmoman

MedAlpaca Score and Responses:

METEOR Score: 0.1369668017070317

CHRF Score: 0.1619948594716881

Reference Text:

The widespread adoption of automated electronic sphygmomanometers, especially those using the oscillometric technique, raises concerns about their accuracy in estimating blood pressure in children and adolescents. Despite initial uncertainties, recent meta-analyses have confirmed the strong measurement validity of oscillometric devices compared to the now-discontinued mercury sphygmomanometers. The Consensus Panel underscores the importance of generating global pediatric reference nomograms using validated oscillometric devices, even though a few regional standards have already been proposed. The necessity for confirming hypertension diagnoses using auscultatory methods with regularly calibrated aneroid sphygmomanometers is highlighted, addressing concerns about potential inaccuracies in oscillometric measurements.

Model Generated Text:

Yes. The recommendation is to use mercury sphygmomanometer s instead of the oscillometric method for measuring blood pressure in children and adolescents (21).

Meditron Score and Responses:

METEOR Score: 0.42669029875174574

CHRF Score: 0.5785100480116047

Reference Text:

The widespread adoption of automated electronic sphygmomanometers, especially those using the oscillometric technique, raises concerns about their accuracy in estimating blood pressure in children and adolescents. Despite initial uncertainties, recent meta-analyses have confirmed the strong measurement validity of oscillometric devices compared to the now-discontinued mercury sphygmomanometers. The Consensus Panel underscores the importance of generating global pediatric reference nomograms using validated oscillometric devices, even though a few regional standards have already been proposed. The necessity for confirming hypertension diagnoses using auscultatory methods with regularly calibrated aneroid sphygmomanometers is highlighted, addressing concerns about potential inaccuracies in oscillometric measurements.

Model Generated Text:

Oscillometric devices do not measure but rather estimate BP. Therefore their accuracy might be considered uncertain. However, a recent meta-analysis has confirmed the strong measurement

validity when compared with mercury sphygmomanometers, supporting their appropriateness also for use in children and adolescents, clinical and epidemiological studies (21). The Consensus Panel agrees that generation of global BP paediatric reference normograms obtained by oscillometric devices is a high priority for future studies (Refer Box 1), though few regional BP standards have already been proposed. Only validated oscillographic devices should be used in children. To confirm diagnosis of HTN, oscillometric BP values should be confirmed with auscultatory method, using calibrated (every 6 months) aneroid sphygmomanometers .

Mistral Score and Responses:

METEOR Score: 0.3092723621117533

CHRF Score: 0.4835486750773846

Reference Text:

The widespread adoption of automated electronic sphygmomanometers, especially those using the oscillometric technique, raises concerns about their accuracy in estimating blood pressure in children and adolescents. Despite initial uncertainties, recent meta-analyses have confirmed the strong measurement validity of oscillometric devices compared to the now-discontinued mercury sphygmomanometers. The Consensus Panel underscores the importance of generating global pediatric reference nomograms using validated oscillometric devices, even though a few regional standards have already been proposed. The necessity for confirming hypertension diagnoses using auscultatory methods with regularly calibrated aneroid sphygmomanometers is highlighted, addressing concerns about potential inaccuracies in oscillometric measurements.

Model Generated Text:

The use of automated electronic sphygmomanometers for blood pressure measurement in pediatric populations has gained popularity due to their convenience, ease of use, and ability to store and transmit data electronically. However, there are concerns and considerations that arise with the widespread adoption of these devices, particularly those based on the oscillometric technique.

One concern is the lack of validation studies in pediatric populations to demonstrate the diagnostic accuracy and clinical utility of automated electronic sphygmomanometers compared to traditional mercury manometers or auscultation methods. Although some studies have been conducted in adult populations, the results may not be directly applicable to pediatric populations due to differences in anatomy, physiology, and developmental stages. Another concern is the potential for measurement errors or inconsistencies due to differences in cuff size, positioning, application pressure, or calibration protocols between different automated electronic sphygmomanometers or between different operators or laboratories. Such measurement errors or inconsistencies could lead to inaccurate or unreliable blood pressure measurements, which could potentially result in misdiagnosis, incorrect treatment, or unnecessary follow-up visits.

Q4: What stance does the Consensus Panel take regarding the routine use of carotid ultrasound in pediatric patients with cardiovascular risk factors, and what methodological suggestions are provided by the Association for European Paediatric Cardiology?

Time Taken to Generate Responses for Q4:

Model Name	Time in Seconds
Llama-2	288.09
MedAlpaca	344.59
Meditron	191.15
Mistral	174.34

Llama-2 Score and Responses:

METEOR Score: 0.261567679558011

CHRF Score: 0.360128403548034

Reference Text:

The Consensus Panel agrees that there is no evidence supporting routine carotid ultrasound in this age range, and the Association for European Paediatric Cardiology offers methodological suggestions without specifying cut points for any parameter.

Model Generated Text:

The Consensus Panel agrees that further research is needed in this area and that indications for neuropsychiatric exam in hypertensive children and adolescents are uncertain, although it might be considered whenever it may influence the clinical management

MedAlpaca Score and Responses:

METEOR Score: 0.20224548626915487

CHRF Score: 0.34562159679144816

Reference Text:

The Consensus Panel agrees that there is no evidence supporting routine carotid ultrasound in this age range, and the Association for European Paediatric Cardiology offers methodological suggestions without specifying cut points for any parameter.

Model Generated Text:

The usefulness of carotid ultrasound in the evaluation of children at risk of cardiovascular disease has not been clearly established. Useful Answer: There is insufficient evidence to recommend routine screening for carotid ultrasound by pediatricians. It is recommended that further studies be performed to determine whether routine screening for carotid ultrasound is useful in pediatric patients at risk of cardiovascular disease.

Meditron Score and Responses:

METEOR Score: 0.3827359617682199

CHRF Score: 0.4183030781330083

Reference Text:

The Consensus Panel agrees that there is no evidence supporting routine carotid ultrasound in this age range, and the Association for European Paediatric Cardiology offers methodological suggestions without specifying cut points for any parameter.

Model Generated Text:

The Consensus Panel agrees that carotid ultrasound is an unreliable method to detect atherosclerotic disease in children. There is no evidence of benefit from screening of children with risk factors and therefore the use of carotid ultrasound should be restricted to clinical trials or research studies.

Mistral Score and Responses:

METEOR Score: 0.4616068411022786

CHRF Score: 0.4505990918609876

Reference Text:

The Consensus Panel agrees that there is no evidence supporting routine carotid ultrasound in this age range, and the Association for European Paediatric Cardiology offers methodological suggestions without specifying cut points for any parameter.

Model Generated Text:

The Consensus Panel agrees that there is no evidence to support the routine use of carotid ultrasound in pediatric patients with cardiovascular risk factors. However, the Consensus Panel also recognizes that carotid ultrasound may be useful in certain situations, such as when there is a strong family history of stroke or when other clinical features suggest an increased risk of stroke. In such cases, the Consensus Panel recommends that carotid ultrasound be considered as part of a comprehensive cardiovascular risk assessment.

The Association for European Paediatric Cardiology provides the following methodological suggestions for the performance and interpretation of carotid ultrasound in pediatric patients:

The ultrasound examination should be performed by a trained sonographer or physician with expertise in pediatric echocardiography and carotid ultrasound. The ultrasound examination should be performed using high-resolution, linear array transducers capable of imaging the carotid artery wall and intima-media thickness (IMT) in detail.