

# Health Screening Resources

Tennessee Department of Education | December 2023



© Tennessee Department of Education

Cover image courtesy of Athens City Schools

# Table of Contents

Introduction .....	3
PACER.....	3
Documentation and Notification of Screening Results.....	3
Community & Internal Partners .....	3
Screening Tips and Tricks from School Districts .....	14
Training Tools .....	16
Health Screening Spotlights.....	16
Blood Pressure Screening Tips.....	16
Body Mass Index (BMI) Tips.....	20
Tenn. Code Ann. § 49-6-1401 .....	21
Centers for Disease Control and Prevention (CDC) Safeguards .....	21
Best Practices .....	22
School Based Interventions and Strategies .....	23
Frequently Asked Questions.....	25
Blood Pressure .....	25
Concussion.....	26
Height/Weight (BMI).....	26
Scoliosis .....	26
Vision .....	26
Hearing .....	27
PACER.....	28

# Introduction

Students in grades Pre-K, K, 2, 4, 6, and 8 and one grade of high school are encouraged to receive vision and hearing screenings. Additionally, students in grades K, 2, 4, 6, 8, and one grade of high school are encouraged to receive blood pressure (BP) and height/weight screenings. Oral health screenings and scoliosis screenings for female students in grades 5 and 7 and male students in grade 8 are also encouraged. Baseline concussion screening is also encouraged for students who participate in sports.

This document identifies regional resources that school districts partner with to complete health screenings, training tools and resources, insights from CSH coordinators, and frequently asked questions.

The tools and resources provided are not an exhaustive list but may be used by school districts to ensure alignment with evidence-based resources and may be used when planning, conducting, and evaluating school health screening practices and programs. School districts should conduct screenings according to policy and procedure and in accordance with state law.

## **PACER**

Another tool, the Progressive Aerobic Cardiovascular Endurance Run (PACER), is not a health screening but part of the [FitnessGram](#) assessment that measures aerobic capacity using estimates of maximal oxygen uptake (VO<sup>2</sup> max). Aerobic capacity is the body's ability to efficiently use oxygen and is an important health indicator. [CDC Healthy Schools](#) includes regular student assessment as a component of a [high-quality physical education program](#). CDC Healthy Schools provides multiple resources for best practices in physical education and how to integrate student fitness assessments into the overall program.

# Documentation and Notification of Screening Results

Sharing health screening results with parents/guardians can be accomplished in a number of ways including, electronically or via US mail. School districts are encouraged to consult with their board attorney for guidance on sharing screening results to ensure confidentiality. Screening results should be maintained in the student's health record in accordance with district policy and procedure.

Results can be entered into the health section of the student information system (SIS). Districts that enter health screening results into the SIS are encouraged to work with their SIS vendor to identify how to create reports of screening results. Districts are encouraged to share screening results with the parent/guardian, whether or not the student is referred to their health care provider for follow-up. Districts should have notification, referral, and follow-up protocols and procedures in place. The parent/guardian may have access to the screening results via the SIS.

# Community & Internal Partners

## Vision Screening Community Partners by CORE Region

### East

- Lion's Club
- Local optometrist
- Carson Newman College

Lincoln Memorial University-Debusk College of Osteopathic Medicine  
Mississippi State Nursing Students  
Roane State Community College

#### First TN

Frontier Mental Health  
Local health department  
Lion's Club  
Tennessee College of Applied Technology  
Northeast State Community College  
King University  
Local volunteer nurses  
Ballad Healthcare

#### Mid Cumberland

Austin Peay State University  
Columbia State Community College  
Cumberland University  
Lipscomb University  
Tennessee College of Applied Technology  
South College  
Union University  
Vanderbilt University  
Volunteer State Community College  
Lion's Club  
Freed Hardman University  
Volunteers (e.g., former students, parent/guardian)  
Well Child, Inc.

#### Northwest

Local optometrist  
Local health department  
Le Bonheur  
Tennessee College of Applied Technology  
Lion's Club  
Bethel University  
Camden General Hospital  
Union University Nursing Department  
University of Tennessee at Martin

#### South Central

Columbia State Community College  
Lion's Club  
Volunteer health care professionals  
Tennessee College of Applied Technology  
The University of Tennessee Southern

#### Southeast

Head Start  
Lee University  
Lion's Club  
Vanderbilt University  
Cleveland State Community College  
Tennessee College of Applied Technology  
Lee University

Bryan College  
Chattanooga College

Southwest

Local health department  
Local ophthalmologist  
Lion's Club  
Tennessee College of Applied Technology  
Southern College of Optometry  
Freed Hardeman University  
Well Child, Inc  
Mobile Eyes  
Christ Community Health Services

Upper Cumberland

Tennessee College of Applied Technology  
Lion's Club  
Well Child, Inc.  
Tennessee Tech University

**Vision Screening Internal Partners by CORE Region**

East

HOSA  
Sub/Float Nurses employed with the district  
PTO/PTA  
School nurses  
School staff (e.g., school counselors, teaching assistants, PE teachers, Food Services Director, system wide health educator)

First TN

ACEs Program Director  
Board of Education employees  
School Nurses

Mid Cumberland

HOSA  
School Nurses

Northwest

CTE  
School staff (e.g., social worker, PE teachers)  
Health Science students  
School Nurses  
HOSA

South Central

HOSA  
School Nurses

Southeast

School staff (e.g., educational assistants, Exceptional Education Speech and Hearing Assistants)  
Health Science students  
HOSA

Southwest

School staff (e.g., health technicians)  
Local optometrist/ophthalmologist  
Health Science students

HOSA  
PTO/PTA Volunteers  
School Nurses

#### Upper Cumberland

Health Science students  
HOSA  
Schools Nurses  
School staff (e.g., Special Education Department Assistants, speech therapist)

### Hearing Screen Community Partners by CORE Region

#### East

Carson Newman College  
Pellissippi State Community College  
Tennessee College of Applied Technology  
University of Tennessee  
Lincoln Memorial University

#### First TN

East Tennessee State University  
Tennessee College of Applied Technology  
Volunteers (e.g., nurses)  
Northeast State Community College  
King University  
Ballad Health Care

#### Mid Cumberland

Austin Peay State University  
Hopkinsville Community College  
Tennessee College of Applied Technology  
Belmont University  
Lipscomb University  
South College  
Union University  
Vanderbilt University  
Volunteer State Community College  
Nashville State Community College  
Columbia State Community College  
Well Child, Inc.  
Local health department  
Le Bonheur

#### Northwest

Local health department  
Le Bonheur  
Local audiologist  
Murray State University  
Tennessee College of Applied Technology  
Volunteers (e.g., nurses)  
Bethel College  
Union University

#### South Central

Columbia State Community College  
Tennessee College of Applied Technology  
Volunteers (e.g., health care professionals)  
Tennessee College of Applied Technology

University of Tennessee Southern

Southeast

- Cleveland State Community College
- Lee University
- Chattanooga College
- Local health department
- Tennessee College of Applied Technology
- Bryan College

Southwest

- Thrive Hearing & Learning Solutions
- Christian Brothers University
- Concorde Career Institute
- Local health department
- Tennessee College of Applied Technology
- Freed Hardeman University
- Union University
- Well Child, Inc.
- Christ Community Health Services

Upper Cumberland

- Tennessee College of Applied Technology
- Middle Tennessee State University
- Tennessee Tech University
- Well Child, Inc.

**Hearing Screening Internal Partners by CORE Region**

East

- HOSA
- School staff (e.g., Educational audiologist, speech language pathologist, speech language pathologist assistant)
- PTO/PTA
- School Nurses
- Sub/float nurses employed by district

First TN

- HOSA
- School staff (e.g., school based occupational therapist system-wide health educator)
- School Nurses

Mid Cumberland

- HOSA
- School Nurses
- Health Science students

Northwest

- CTE
- Health Science students
- HOSA
- School staff (e.g., Speech Pathologist, social worker, speech language pathologist,

South Central

- HOSA
- Health Science students
- School Nurses

Southeast

- HOSA
- Health Science students

School staff (e.g., Educational assistants, ESL, speech language pathologist, Exceptional Education Speech and Hearing Assistants)

#### Southwest

School Nurses

School staff (e.g., speech department)

Health Science students

HOSA

#### Upper Cumberland

Health Science students

School staff (e.g., special education department, speech therapist)

School Nurses

### Body Mass Index Community Partners by CORE Region

#### East

Local health department

Carson Newman College

Lincoln Memorial University

Maryville College

Cleveland State Community College

Pellissippi State Community College

Roane State Community College

South College

Tennessee College of Applied Technology

Walter State Community College

#### First TN

Tennessee College of Applied Technology

Carson Newman College

Local health department

Ballad Health

Walters State Community College

Tusculum University

East Tennessee State University

Northeast State Community College

King University

#### Mid Cumberland

Austin Peay State University

Hopkinsville Community College

Tennessee College of Applied Technology

Belmont University

Cumberland University

Lipscomb University

South College

Union University

Vanderbilt University

Volunteer State Community College

Nashville State Community College

Freed Hardman University

#### Northwest

Bethel University

Local health department

Le Bonheur



Tennessee College of Applied Technology  
University of Tennessee at Martin  
Union University

#### South Central

Local health department  
Columbia State Community College  
Tennessee College of Applied Technology

#### Southeast

Cleveland State Community College  
Lee University  
Chattanooga College  
Bryan College  
Tennessee College of Applied Technology

#### Southwest

Christian Brothers University  
Concorde Career Institute  
Local health department  
Tennessee College of Applied Technology  
Freed Hardeman University  
Union University  
Well Child, Inc.  
Christ Community Health Services (School Based Clinics)

#### Upper Cumberland

Tennessee College of Applied Technology  
Cookeville Regional Medical Center Outreach Department  
Tennessee Tech University  
Tennessee College of Applied Technology  
Local health department  
UT Extension  
Well Child, Inc.

### Body Mass Index Internal Partners by CORE Region

#### East

Contract nurses from the school district's nursing department  
HOSA  
School Nurses  
Local health department  
School staff (e.g., PE teachers)  
Health Science students

#### First TN

School staff (e.g., employees from the Board of Education, Food Services Director, School Counselor, ACEs program director, PE teachers, system-wide health educator)  
HOSA  
School Nurses  
PTO/PTA

#### Mid Cumberland

HOSA  
School Nurses  
Health Council Member  
School staff (e.g., Lifetime Wellness Teachers, PE teachers)

Health Science students

Northwest

CTE

Health Science students

School staff (e.g., float nurse, school social worker, PE teachers)

HOSA

School Nurses

South Central

HOSA

Health Science students

School Nurses/sub nurses

Southeast

Health Science students

HOSA

School staff (e.g., teacher assistants)

Southwest

School staff (e.g., health technicians, PE teachers,

Le Bonheur

Health Science students

HOSA

PTO/PTA

School Nurses

Upper Cumberland

Tennessee College of Applied Technology

School Nurses

Health Science students

School staff (e.g., PE teachers, special education assistants)

**Blood Pressure Community Partners by CORE Region**

East

Carson Newman University

Local health department

Volunteers (e.g., ER nurse, parent/guardian)

Lincoln Memorial University

Tennessee College of Applied Technology

Cleveland State Community College

Walter State Community College,

Maryville College

Pellissippi State Community College

Roane State Community College

The University of Tennessee

South College

First TN

Carson Newman University

Local health department

Volunteers (e.g., local nurses)

Walters State Community College Nursing Program

Tusculum University

East Tennessee State University

Tennessee College of Applied Technology

Northeast State Community College

King University

Ballad Health Care

#### Mid Cumberland

Austin Peay State University

Hopkinsville Community College

Tennessee College of Applied Technology

Ascension St. Thomas, Three Rivers Hospital

Belmont University

Cumberland University

Lipscomb University

South College

Union University

Vanderbilt University

Volunteer State Community College

Nashville State Community college

Columbia State Community College

Freed Hardman University

#### Northwest

Bethel University

Local health department

Le Bonheur

Newbern Vocational School

Tennessee College of Applied Technology

Union University

The University of Tennessee at Martin

#### South Central

Columbia State Community College

Tennessee College of Applied Technology

Volunteers (e.g., health care professionals, nurses, fire department, ambulance service)

The University of Tennessee Southern

#### Southeast

Cleveland State Community College

East Tennessee State University

Lee University

Chattanooga College

Cleveland State Community College

Tennessee College of Applied Technology

Volunteers (e.g., nurses)

#### Southwest

Christian Brothers University

Concorde Career Institute

Local health department

Tennessee College of Applied Technology

Volunteers (e.g., nurses)

Freed Hardeman University

Union University

Well Child, Inc.

Christ Community Health Services (School Based Clinics)

#### Upper Cumberland

Tennessee College of Applied Technology  
Cookeville Regional Medical Center Outreach Department  
Cumberland University  
Tennessee Tech University  
Volunteers (e.g., EMS)  
Well Child, Inc.

### Blood Pressure Internal Partners by CORE Region

#### East

Contract nurses from the school district's nursing department  
HOSA  
School Nurses  
School staff

#### First TN

School staff (e.g., Employees from the Board of Education, Food Services Director, School Counselor, ACEs program director, PE teachers)  
HOSA  
School Nurses

#### Mid Cumberland

HOSA  
School Nurses  
Health Science students

#### Northwest

CTE  
Health Science students  
HOSA  
School staff (e.g., school social worker)  
School Nurses/float nurses

#### South Central

HOSA  
School Nurses

#### Southeast

Health Science students  
HOSA  
School staff (e.g., teacher assistants)  
School Nurses

#### Southwest

School staff (e.g., health Technicians, PE teachers)  
Le Bonheur  
Health Science students  
HOSA  
PTO/PTA  
School Nurses

#### Upper Cumberland

HOSA  
School Nurses  
Health Science students

## Oral Health Screening Community Partners by CORE Region<sup>1</sup>

### East

Appalachian Life Quality Improvement Children's Health and Maintenance Plan  
Local health department  
Local dentist  
Tennessee Department of Health School-Based Dental Prevention Program  
Elgin Children's Foundation  
Lincoln Memorial Dental School  
Well Child, Inc.

### First TN

Volunteers (e.g., dental hygienist)  
Local health department

### Mid Cumberland

Tennessee Department of Health School-Based Dental Prevention Program  
Local health Department

### Northwest

Tennessee Department of Health School-Based Dental Prevention Program  
Local health department

### South Central

Delta Dental  
Tennessee Department of Health School-Based Dental Prevention Program  
Local health department  
Local dentist

### Southeast

Local health department  
Tennessee Department of Health School-Based Dental Prevention Program

### Southwest

Local health department  
Tennessee Department of Health School-Based Dental Prevention Program

### Upper Cumberland

Local health department  
Tennessee Department of Health School-Based Dental Prevention Program  
Well Child, Inc.

## Baseline Concussion Screening for Student Athletes Community Partners by CORE Region<sup>2</sup>

### East

Knoxville Orthopedic Clinic  
Elevation Physical and Occupational Therapy  
Local health care providers (e.g., MD)  
Blount Memorial

### First TN

PT Solutions  
Holston Medical Group - Family and Sports Medicine

<sup>1</sup> No Oral Health Screening internal partners were identified.

<sup>2</sup> School Nurses and athletic trainers were identified as baseline concussion screening for student athletes internal partners.

Unicoi County Rehabilitation and Physical Therapy

Local health care providers

Watuaga Orthopedics

Associated Orthopedics

Mid Cumberland

None identified

Northwest

Dynamix Physical Therapist

Sports Plus

Star Physical Therapy

The Sideline Physical Therapy

Local health care providers

South Central

Southern Tennessee Orthopedic And Spine Centers

Local health care providers

Southeast

Blount Memorial

Partridge Medical

Star Regional Hospital

Local health care providers

Southwest

Hub Health and Wellness, LLC

Sports Plus Rehab

STARS Physical Therapy

Local health care providers

Well Child, Inc.

Christ Community Health Services (School Based Clinics)

Upper Cumberland

BenchMark Physical Medicine

OMNI Rehab-Erlanger Hospital

## Screening Tips and Tricks from School Districts

### Planning

- **Plan ahead!** Schedule screening dates well in advance (e.g., one year in advance). Districts have shared this has been helpful for school nurses and volunteers.
- **Enlist school/district buy-in/help** for the master schedule. When you have administration on board with your plan (including appropriate space for screening), you will have a smoother day.
- **Find out what community resources are in your area.** For example, use local nursing schools to assist with screenings. Community resources can be found in the [Community & Internal Partners Section](#). This list is not exhaustive, and you should continue to periodically conduct environmental scans of community resources available to your district.
- **Ensure there are enough screeners to complete screenings**, whether you are a small or large district, or use district employees and/or community partners to complete screenings. Having a sufficient number of volunteers is helpful with the process and flow of screenings (help with noise, provide quick demonstration, etc.).
- Assign someone to gather and alphabetize screening forms in preparation for screening days.

- Preprint address labels and envelopes for schools to send home permission forms.
- Utilize substitute nurses to cover the school nurse's office. Share the screening schedule with substitute nurses who can volunteer on screening days.
- Have volunteers assigned to designated stations beforehand.
- Consider completing hearing and vision screenings on separate days if the schedule permits.

## Process

- **Prefill student demographic data** on screening forms in advance of screening days. Student labels attached to screening forms are a great way to capture demographic information.
- **Use student cards/screening forms** and have students bring them to all screening stations to ensure that all students complete all screenings. The form is turned in at the end, reviewed for completeness, and can be immediately entered in the Department of Education spreadsheet.
- **Try a new screening schedule** to see if the process can be improved. Some districts do hearing screenings by grade level on different days.
- **Consider having additional staff to gather students by grade.** Younger students may need additional volunteers due to needing more assistance.
- Enter screening results as the student finishes health screening to expedite re-screens, referrals, and notification. Consider having checkout stations to ensure all screenings are completed and documented.
- Eliminate as many distractions as possible during the screening process to reduce the number of rescreens needed.
- Consider using CSH funds to pay substitute nurses with a stipend to lead screening teams.
- Nametags for students ensure the correct student is being screened
- A scoliosis information board can be helpful for students to understand why lifting the shirt is needed.
- Consider having PE teachers help with height and weight measurements.

## Documentation

- **Input data into your student information system (SIS).** The parent/guardian can then access results in the SIS. Some districts enter screening results directly into their SIS as they complete screenings and report this as a time saver.
- **Always consider student confidentiality and privacy during the screening process.** Consider screening documentation tools that limit information shared between screeners. For example, Lion's Club cannot view other screening results than what they are performing.
- **Screening results can be emailed to parents/guardians in accordance with district policy and procedure.**
- **Google spreadsheets can be used to record screening results during screenings.**

## Referrals

- **Use internal partners when possible!** School Nurses and speech specialists can aid in rescreens (e.g., nurses for BP rechecks and speech specialists can perform hearing re-screens. Some districts are able to pull nurses to the screening location).
- **Review screening results for failure as soon as possible** (same day or the next day is preferred) and schedule rescreens and send out failed referrals as soon as possible. Share findings to parent/guardian as indicated by district policy and procedure.

- Utilize Family Resource Center (if available) to assist with incomplete referrals and connecting families with health care providers.
- Work in collaboration with school social workers to connect families with resources.
- [VSP Eyes of Hope®](#) operates nationally through NASN and other community partners to provide access to eye care for school-age children in need. Gift certificates cover a comprehensive eye exam and, if prescribed, new glasses at a VSP network doctor's office. NASN members can provide students who qualify with a certificate to receive essential vision care at no cost to the school or student. Coverage is printed on each certificate.
- Screening programs should provide referral sources to assist with facilitation of diagnostic testing, evaluation, and treatment when a student has abnormal screening results. A system to track referrals and services provided and monitor the follow-up plan should be in place.

### Referral Follow ups

- **Create a deadline** for follow-up of referrals (e.g., after two weeks, call the parent/guardian and check the status of the referral). Does the parent/guardian need assistance with locating a health care provider?

## Training Tools

### Health Screening Spotlights

Screening	Guest Speaker	Link
Vision	Lindsay Elkins, OD, FAAO, Southern College of Optometry	<a href="#">Click here to view.</a>
Oral Health	Lauren Weiland, MPH, RDH, Assistant State Dental Director, Tennessee Department of Health	<a href="#">Click here to view.</a>
Blood Pressure	Carolina Clark, MD, MPH, FAAP, Associate Medical Director, Pediatrics, Tennessee Department of Health	<a href="#">Click here to view.</a>
Body Mass Index	Carolina Clark, MD, MPH, FAAP, Associate Medical Director, Pediatrics, Tennessee Department of Health	<a href="#">Click here to view.</a>
Concussion	Wendy Ellmo, MS, CCC-SLP, BCNCDS, Brain Injury Specialist, Brain Links	<a href="#">Click here to view.</a>
Scoliosis	Carolina Clark, MD, MPH, FAAP, Associate Medical Director, Pediatrics, Tennessee Department of Health	<a href="#">Click here to view.</a>
Hearing	Brittany Day, AuD, CCC-A, Pediatric Audiologist and Hilary Davis, AuD. CCC-A, Educational Audiologist, Vanderbilt Bill Wilkerson Center	<a href="#">Click here to view.</a>

### Blood Pressure Screening Tips

**What is Blood Pressure?** Blood pressure (BP) refers to the force of blood against the arterial walls when the heart contracts (systole) and when the heart is at rest (diastole). The standard unit for measuring BP is millimeters of mercury (mm Hg). The measurement indicates the height to which the BP will raise a column of mercury. The systolic pressure is the first reading. The diastolic pressure is the second reading. The blood pressure reading is written in a fraction, with the systolic reading on the top of the line and the diastolic reading on the bottom under the line.

**Importance of Screening** Primary hypertension in children and adolescents occurs primarily in children older than 13 years and has no known cause but is associated with several risk factors, including family history and higher body mass index. Secondary hypertension occurs primarily in younger children and is most commonly caused by genetic disorders, renal disease, endocrine disorders, or cardiovascular



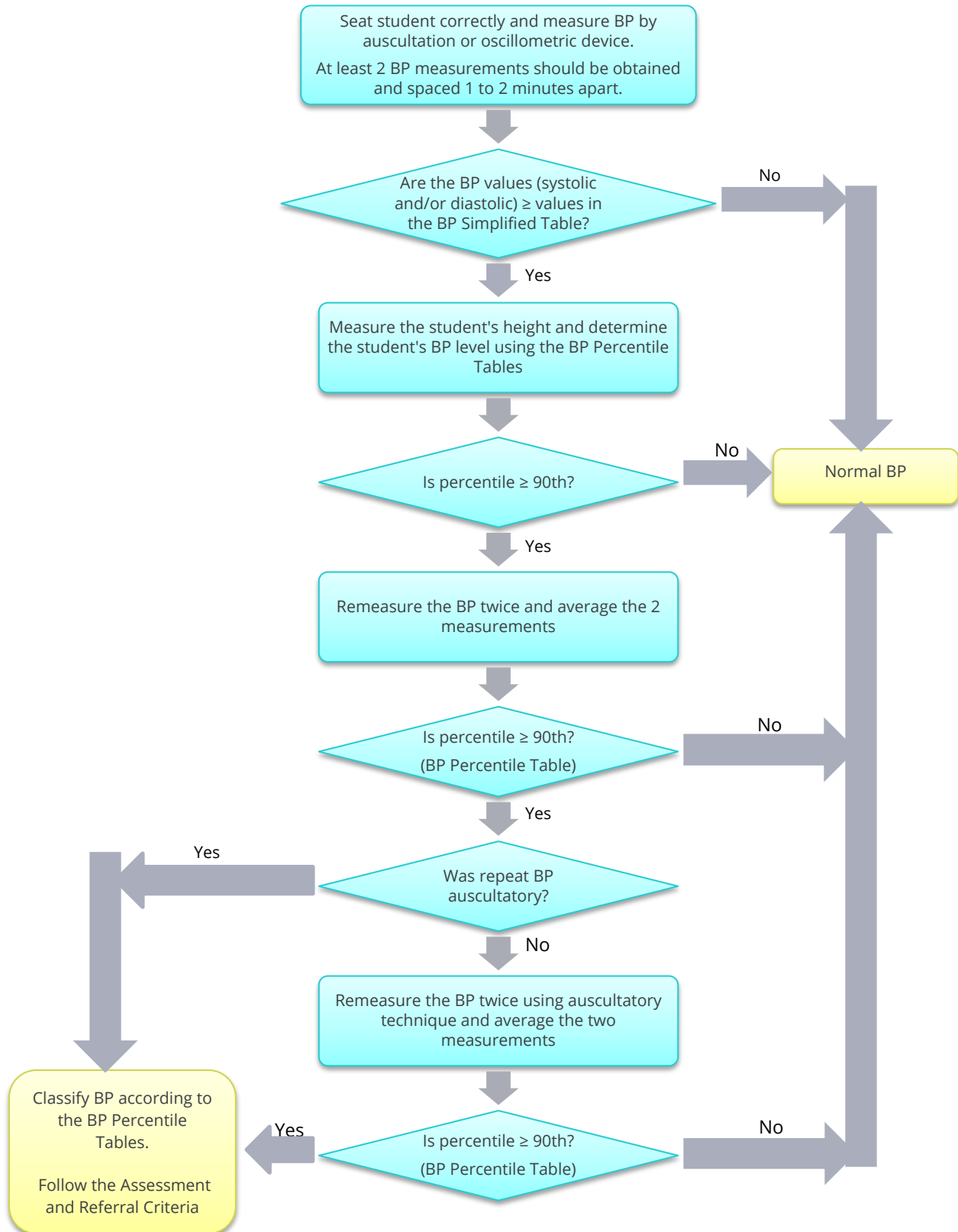
abnormalities. High BP in childhood increases the risk for adult hypertension (HTN) and cardiovascular disease. Even youth with HTN have evidence of accelerated vascular aging.

**BP Classification/Interpretation** BP is classified by systolic BP (SBP) and diastolic BP (DBP) percentiles for age/sex/height.

For Children Aged 1–13 y	For Children Aged ≥13 y
Normal BP: <90th percentile	Normal BP: <120/<80 mm Hg
Elevated BP: ≥90th percentile to <95th percentile or 120/80 mm Hg to <95th percentile (whichever is lower)	Elevated BP: 120/<80 to 129/<80 mm Hg
Stage 1 HTN: ≥95th percentile to <95th percentile + 12 mmHg, or 130/80 to 139/89 mm Hg (whichever is lower)	Stage 1 HTN: 130/80 to 139/89 mm Hg
Stage 2 HTN: ≥95th percentile + 12 mm Hg, or ≥140/90 mm Hg (whichever is lower)	Stage 2 HTN: ≥140/90 mm Hg

**BP Screening in Schools Algorithm**

The following algorithm is based on the modified BP measurement algorithm from the *American Academy of Pediatrics’ Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents*.



### Directions for Use of Simplified Table

If the BP values (systolic and diastolic) are less than the values listed in the Simplified table below, the student's BP does not require further evaluation. If the BP values (systolic and/or diastolic) are  $\geq$  values listed in the table, the student's BP will need further evaluation, including repeat measurements and utilizing the complete BP Percentile tables based on sex, age, and height.

BP, mmHg				
Age	Boys		Girls	
	Systolic	Diastolic	Systolic	Diastolic
1	98	52	98	54
2	100	55	101	58
3	101	58	102	60
4	102	60	103	62
5	103	63	104	64
6	105	66	105	67
7	106	68	106	68
8	107	69	107	69
9	107	70	108	71
10	108	72	109	72
11	110	74	111	74
12	113	75	114	75
$\geq 13$	120	80	120	80

### Directions for use of BP Percentile Tables

1. BP is classified by SBP and DBP percentiles for age, sex, and height.
2. Use the higher percentile if the student's height percentile is between two percentiles.
3. The 50th percentile row represents a normal blood pressure value or a blood pressure that is **normotensive (NT)**. The  $\geq 90$ th percentile row represents **elevated blood pressure**. The  $\geq 95$ th percentile row represents **stage 1 hypertension (Stage 1 HT)**. The  $\geq 95$ th percentile plus 12 mmHg row represents **stage 2 hypertension (Stage 2 HT)**.
4. Compare the student's SBP and DBP measurements with the level provided in the BP Percentile tables to determine if the measurement falls in a normal or abnormal category. If SBP or DBP  $>90$ th percentile, repeat the BP again on the same day.
5. If SBP and or DBP fall into an abnormal category, follow the algorithm above.

### Blood Pressure Measurement Tips and Tricks

#### *During the Reading*

- No talking
- Arm resting at chest height
- Cuff against bare skin
- Back is supported
- Sit with feet flat on floor

#### *Measurement*

- Correct cuff size depends on arm size. Practically speaking, correct cuff size equals the largest cuff that will fit on the upper arm with room below for the stethoscope head.
- BP should be measured in the right arm of a relaxed, seated child.
- BP measurement by auscultation is the Gold Standard.

Factor	Increase in BP (mmHg)
Talking	7-10
Listening	5
Crossed Legs	2-8
No back support	6-10
Arm unsupported	Systolic: 1-7 Diastolic: 5-11
Oscillometric device	Systolic: 100 Diastolic: 5
Distended urinary bladder	10-15
Recent caffeine intake	Systolic: 10: Diastolic: 5
Cuff over clothing	Systolic: 5-50
Cuff too small	Systolic: 10 Diastolic: 2-8

### ***Body Mass Index (BMI) Tips***

BMI is a person’s weight in kilograms divided by the square of height in meters. It is an inexpensive and easy-to-perform method of screening for weight categories that may lead to health problems.

In children, a high amount of body fat can lead to weight-related diseases and other health issues. Being underweight is also a risk factor for health issues.

For children and teens, BMI is age- and sex-specific and is often referred to as BMI-for-age. Height and weight change as children age, as does their relation to body fatness. Consequently, a child’s BMI should be interpreted relative to other children of the same sex and age. These percentiles are calculated from the [CDC growth charts](#).

The Tennessee Department of Education encourages local education agencies to conduct annual BMI screenings for all students in grades K, 2, 4, 6, 8, and one year or class of high school.

BMI screening is used to provide parents/guardians with information about their child’s weight status. Data can be used to identify trends over time and monitor school policy outcomes aimed at improving student health.

**Tenn. Code Ann. § 49-6-1401**

(a) LEAs are authorized to implement a program that identifies public school children who are at risk for obesity. Those school systems that choose to carry out such a program shall:

(1) Have a sufficient number of current school staff or school volunteers trained in taking a body mass index (BMI) to meet the requirements of this part. The department of health shall develop and provide training materials to the LEAs;

(2) Complete a body mass index for age (BMI-for-age), as defined by the centers for disease control and prevention, on every child enrolled for classes in the school system whose parents or guardians have not requested exclusion from the testing; and

**(3) Provide each student's parents or guardians with a confidential health report card that represents the result of the child's BMI-for-age screening, along with basic educational information on what the results mean and what the parents or guardians should do with the information.**

(b) School systems that carry out the program shall transmit the results of the testing for each student to the department of health.

**Centers for Disease Control and Prevention (CDC) Safeguards**

The CDC recommends ten safeguards as an essential part of BMI screening. Safeguards help to ensure respect for student confidentiality and privacy, protect students from potential harm, and increase the likelihood that the BMI screening will have a positive impact on promoting a healthy weight.

<b>Safeguard 1</b>	<i>Introduce the program to parents, guardians, students, and school staff; ensure that there is an appropriate process in place for obtaining parental consent for measuring students' height and weight.</i>
<b>Safeguard 2</b>	<i>Ensure that staff members who measure height and weight have the appropriate expertise and training to obtain accurate and reliable results and minimize the potential for stigmatization.</i>
<b>Safeguard 3</b>	<i>Ensure that the setting for data collection is private.</i>
<b>Safeguard 4</b>	<i>Use equipment that can accurately and reliably measure height and weight.</i>
<b>Safeguard 5</b>	<i>Ensure that the BMI number is calculated and interpreted correctly.</i>
<b>Safeguard 6</b>	<i>Develop efficient data collection procedures.</i>
<b>Safeguard 7</b>	<i>Do not use the actual BMI-for-age percentiles of the students as a basis for evaluating student or teacher performance (e.g., in physical education or health education class).</i>
<b>Safeguard 8</b>	<i>Evaluate the BMI measurement program by assessing the process, intended outcomes, and unintended consequences of the program.</i>
<b>Safeguard 9</b>	<i>Ensure that resources are available for safe and effective follow-up.</i>
<b>Safeguard 10</b>	<i>Provide all parents with a clear and respectful explanation of the BMI results and a list of appropriate follow-up actions.</i>

Additional information on each safeguard can be found in the [Health Screening Guidelines](#) on the [Coordinated School Health webpage](#) and on the [CDC Healthy Schools webpage](#).

## Best Practices

<b>Ensuring Accuracy of BMI Screening</b>	
<i>If screening results aren't accurate and consistent, then the data cannot be relied upon. Accuracy is important in obtaining height and weight measurements because these measurements will be used to calculate the BMI which, in turn, is utilized to assess healthy weight status and/or provide for surveillance data.</i>	
<b>Best Practice</b>	<b>Additional Information</b>
Calibrate equipment.	All equipment should be maintained and calibrated regularly to ensure accuracy and reliability of results. <sup>2</sup>
Train screeners and review screening procedures annually.	Staff who measure height and weight should have appropriate expertise and training to ensure accurate and reliable results.
Monitor screeners for correct techniques.	Quality control checks can be implemented through random visits at measurement sites to oversee the performance of the staff measuring students' height and weight. <sup>2</sup>
<b>Communicating BMI Results</b>	
<i>All parents/guardians of students screened shall be provided with BMI results.<sup>3</sup> Parents/guardians of students categorized as underweight, overweight, or obese should receive a recommendation from the school district for the student to follow up with a health care provider and share their BMI results with the provider (referral).<sup>4</sup></i>	
<b>Best Practice</b>	<b>Additional Information</b>
Use terms such as "healthy weight" instead of "normal weight."	To reduce the risk of stigmatizing students, notification should be consistent to all parents. To avoid giving the impression that a diagnosis has been made, the letters to parents about students who need further evaluation—those classified as underweight, overweight, or obese—should avoid definitive statements about the student's weight category. All communication should strongly encourage parents to consult a health care provider to determine if the student's weight presents a health risk. <sup>2, 5</sup>
Use terms such as "at risk for being overweight" or "might be overweight."	
Avoid using the term "obese."	
Identify the student's height, weight, and BMI-for-age percentile, and include a table defining BMI for-age percentile categories with images.	
Communicate that the student's weight was found to be low/healthy/high for his/her height and age.	
<b>Sharing BMI Results with Parent/Guardian</b>	
<i>The best practices outlined below were shared by school districts that successfully share BMI results with the parent/guardian of all students screened for BMI, regardless of the student's BMI results.</i>	
<b>Best Practice</b>	<b>Additional Information</b>

<sup>3</sup> Tenn. Code Annot. 49-6-1401

<sup>4</sup> [Tennessee Health Screening Guidelines, 2022](#)

<sup>5</sup> Thompson HR, Linchey JK, Madsen KA. Critical Elements of a School Report to Parents on Body Mass Index. *Prev Chronic Dis* 2015;12:150165. DOI: <http://dx.doi.org/10.5888/pcd12.150165>

Auto generate a results letter based on screening result with recommendations for follow up based on the screening result.	BMI results should not be sent as standalone communication. Provide each student with a health report card which includes the results of all screening services provided, along with basic educational information on what the results mean and what the parents or guardians should do with the information. <sup>1</sup> BMI screening programs are not intended to diagnose weight status. School districts should recommend the student be seen by their health care provider and share the BMI results with the provider. A sample model for the health report card <sup>6</sup> to notify parents or guardians of the child's BMI results can be viewed <a href="#">here</a> .
Send screening results through mail addressed to the parent/guardian.	Sending results through the mail instead of directly providing to the student ensures student confidentiality and privacy (ex. lost or misplaced forms). Mailing the results increases the likelihood that the parent/guardian will receive the results.
Avoid giving screening results directly to students.	
Provide education via telephone to parent/guardian by Coordinated School Health/school nurse regarding importance of BMI screening and follow up, if needed.	Educate parent/guardian on what BMI means and importance of screening and refer to the student's health care provider, as needed.
Schedule office hours.	Schedule available office hours for parent/guardian to speak with Coordinated School Health/school nurse to discuss screening results.
Share results online via the student information system (SIS).	Sharing results via the SIS helps to ensure student confidentiality and privacy but does not guarantee the parent/guardian will review results.

### School Based Interventions and Strategies

Schools where aggregate data suggests that high rates of overweight children may be a problem are encouraged to expand existing or implement new school-based nutrition and physical activity programs designed to reduce those rates. The effectiveness of these results could be determined by completing a BMI-for-age on the school's students whose parents or guardians have not requested exclusion from the testing at the end of the school year.<sup>7</sup>

Resource	Additional Information	Link
----------	------------------------	------

<sup>6</sup> Tenn. Code Annot. 49-6-1402

<sup>7</sup> Tenn. Code Annot. 49-6-1404

Community Preventive Services Task Force (CPSTF) - The Community Guide. Evidence-Based Interventions for Your Community	CPSTF released findings on what works in public health to prevent and control obesity. The findings can be used to identify intervention strategies that could be used in your school district.	<a href="#">Click here to view.</a>
One Pager: Behavioral Interventions to Reduce Screen Time Among Children	This one-page handout summarizes the CPSTF recommendation and systematic review evidence for behavioral interventions to reduce recreational sedentary screen time among children aged 13 years and younger.	<a href="#">Click here to view.</a>
One Pager: Digital Health Interventions for Adolescents with Overweight or Obesity	This one-page handout summarizes the CPSTF recommendation for digital health interventions to assist adolescents with overweight or obesity with weight management.	<a href="#">Click here to view.</a>
One Pager: Interventions to Increase Availability of Healthier Foods and Beverages in Schools	This handout summarizes the CPSTF findings and systematic review evidence for four interventions aimed at increasing the availability of healthier foods and beverages in schools.	<a href="#">Click here to view.</a>
One Pager: Interventions to Increase Health Eating and Physical Activity in Schools	This one-page handout summarizes the CPSTF finding of insufficient evidence for three school-based intervention approaches that combine dietary interventions with physical activity interventions. This does NOT mean the intervention approaches are ineffective; it means there is not enough evidence available to understand which of these approaches work.	<a href="#">Click here to view.</a>
One Pager: Meal or Fruit and Vegetable Snack Interventions Combined with Physical Activity Interventions in Schools	This one-page handout summarizes the CPSTF recommendation and systematic review evidence for school-based interventions that combine meal or fruit and vegetable snack interventions with physical activity interventions to improve health among elementary school students through grade six.	<a href="#">Click here to view.</a>



Visit the [Coordinated School Health webpage, Reports and Data](#) to view additional information on BMI in Tennessee.

# Frequently Asked Questions

## **Blood Pressure**

**1. Why were the 2017 Clinical Practice Guidelines for Screening and Management of High Blood Pressure in Children and Adolescents used and adapted for the 2022 Health Screening Guidelines?**

The 2017 Clinical Practice Guideline is a comprehensive, evidence-based guideline intended for use by primary and specialty care providers. It is sponsored by the American Academy of Pediatrics and has been endorsed by the American College of Cardiology and the American Heart Association. System hypertension is one of seven markers of poor cardiovascular health, and high blood pressure in children has been shown to track into adulthood. High blood pressure in adulthood is a leading cause of morbidity and mortality. For these reasons, appropriate screening, diagnostic, management, and treatment strategies should be used in children. The prevalence of childhood high blood pressure is higher among children who are overweight or obese, and children and adolescents with specific chronic diseases (e.g., chronic kidney disease) have an increased prevalence of elevated blood pressure.

**2. If a high blood pressure measurement is obtained by an oscillometric device, should auscultation also be done?**

Confirmation of high blood pressure by auscultation should also be done for accuracy.

**3. What are some possible causes of isolated elevated blood pressure?**

There are many potential etiologies for isolated elevated blood pressure, including factors such as anxiety, recent caffeine intake, and common pharmacologic agents.

**4. For students that are a larger stature, and their blood pressure is greater than the values in the blood pressure screening tables, should these students still be referred?**

If a student's blood pressure is outside the range listed in the simplified and/or blood pressure percentile tables, then the blood pressure should be retaken and parents notified in accordance with the blood pressure screening guidance outlined in this document and in the Health Screening Guidelines available on the Coordinated School Health website.

**5. After referring a student to their health care provider for out-of-range blood pressure identified during a screening, the student's health care provider states that the blood pressure is in normal range. What should we do?**

There are various reasons a student's blood pressure may be elevated during a school screening that does not lead to a health condition/medical diagnosis or result in a diagnosis and/or intervention by the health care provider. Screenings are a tool that can identify potential health problems. It is important to note that health care providers who see children and adolescents should follow the American Academy of Pediatrics' elevated blood pressure guidance. This would include pediatricians, family medicine providers, and other health care providers who see children and adolescents. School nurses can provide education by explaining how blood pressure is

measured differently, the importance of monitoring elevated blood pressure early, and what chronic diseases elevated blood pressure can lead to.

## **Concussion**

### **6. Is the concussion baseline for student-athletes required?**

The TDOE encourages LEAs to provide baseline concussion screenings for all students who participate in sports.

## **Height/Weight (BMI)**

### **7. Should shoes and jackets be taken off during height and weight screenings?**

This is best practice to ensure accurate height and weight are obtained and recorded, and districts are encouraged to have students remove shoes, heavy jackets, etc., during height/weight screenings.

## **Scoliosis**

### **8. Can a student leave their shirt on during scoliosis screening?**

Having the shirt removed is the best way to see the entire curvature of the spine. Students and parents/guardians can be notified in advance to prepare for the screening and ask questions. Bras or swimsuit tops can be worn during the screening.

### **9. Why are girls recommended to be screened earlier than boys and twice?**

As a result of rapid growth during puberty, screening girls earlier and twice catch changes in the curvature of the spine. The goal of screening earlier is so that, if indicated, treatment can begin earlier and hopefully avoid surgery.

### **10. Is the forward bend test the gold standard for mass scoliosis screenings?**

Scoliosis screenings can include the visual inspection and the forward bend test or visual inspection and the forward bend test + the scoliometer. Districts are encouraged to work with their scoliosis screening partner to determine which tests are appropriate and align with evidence-based practice.

## **Vision**

### **11. Why is it recommended to retest with the vision charts if a mechanical vision tester is used for the first vision screening?**

Retest using a different format is encouraged to ensure that abnormal careening result is accurate and reduce the number of false-positive referrals.

### **12. What grades should the functional/muscle balance tests be completed on?**

Since the muscle balance can change as a student grows, if a district is going to conduct the muscle balance, it should be done for all screening grades.

### **13. Can the Sloan chart also be used for near acuity screening?**

Sloan charts absolutely can be used at near vision screening as well.

### **14. A student has a 10/16 result in one eye using the Sloan Chart. This would be a failed reading, correct? How does the equivalency work for Sloan vs Snellen?**

Any chart with a notation for 10 feet, which is denoted by the 10 being the first number in the acuity setup, would need to be doubled for a 20 feet notation. So for 10/16 = 20/32. If this is the line that

the screening institution has that is closest to 20/30, then I would allow this as ~ 20/30 and include it as a pass as long as other passing factors are met. Sloan is really just an optotype/font that can be used. There are many different chart formulations using those letter types. Districts are encouraged to consider their testing distance when selecting which chart to use. Depending on how a chart is calibrated and the testing distance actually used, there may be some math involved to calculate pass/fail.

**15. What if my district is using a Snellen chart that is calibrated for testing at 20 feet, but we test at 10 feet? How do we calculate acuity?**

Double the acuity you achieved: 20/20 would then be 20/40. Most charts that have a 10-foot acuity notation will also have a 20-foot conversion on the other side of the chart. Districts are encouraged to consider this when selecting screening charts and provide appropriate notes/training to screening volunteers when orienting them to provide the screenings.

**16. Is it appropriate for us to make our own color vision screening booklet by printing off the Ishihara plates ourselves and laminating them?**

This is not appropriate.

## **Hearing**

**17. Should a student with tubes in their ears and hearing issues be referred to their health care provider?** Yes, tubes are the treatment for middle ear dysfunction, and if a tube is working properly like it should be, the student should be hearing well.

**18. Some audiometers were ordered for our district. They will test the decibels but do not have the frequencies. Can this still be used for hearing screenings?**

If you can change the volume (decibels), then the audiometer has to be testing at least one frequency (e.g., you can change the volume for that one pitch). If the audiometer truly can't change frequencies, this would not be appropriate for school screenings.

**19. Should screenings be conducted in a quiet environment?**

Yes, we need to have no air conditioning units, away from the gym, doors closed, as quiet as you can make it. Additional time, staffing, and repeat screenings can result if screenings are not conducted in a noise-free environment.

**20. Should OAE screenings be done in a quiet place?**

Yes, OAE is testing the functioning of the cochlea. It's not telling how the information travels from the organ to the brain or how the brain processes that sound, so there are other types of hearing loss that a student can have where the organ is functioning like it is supposed to but the information is getting jumbled or lost. OAE is a great tool for students that can't be screened the traditional way, but OAE is not meant to be used independently as a diagnostic or screening tool.

**21. Is it ok to test at 15 dB or 25 dB, instead of the recommended 20 dB?**

25dB shouldn't be used since it's louder than the guidelines, but 15dB definitely could cause over-referrals due to the ambient noise levels in the screening environment, and we don't want students referred when it isn't necessary. When a child fails a hearing screening and is referred to an audiologist, they should receive diagnostic testing, which would test down to the lowest level they

can hear, be it 15dB or 0dB. The difference, however, is that this testing is being conducted in a sound-treated booth, so the ambient noise variable is eliminated.

## **PACER**

### **22. Do we have to know a student's height and weight for PACER?**

Teachers can identify if a student's aerobic capacity is in a healthy fitness zone without height and weight. A chart from Cooper Institute shows the minimum number of laps to achieve a healthy fitness zone in the 20-meter PACER. If teachers need to use the 15-meter distance, they should reference [this conversion chart first](#).

*Permission is granted to use and copy these materials for non-commercial educational purposes with attribution credit to the "Tennessee Department of Education". If you wish to use the materials for reasons other than non-commercial educational purposes, please submit a completed request to Joanna Collins ([Joanna.Collins@tn.gov](mailto:Joanna.Collins@tn.gov)).*



[Click here to access the \*\*Copyright/Trademark Permissions Request Form\*\*](#)