

CHILD SPECIFIC TRAINING GLUCAGON INJECTION



*Delegation can only be done by an RN.
The school RN is responsible for training and providing ongoing supervision of the unlicensed assistive personnel (UAP).

Unlicensed Assistive Personnel (UAP)	Delegating School RN
Student	School Year

CKII I	Training Date /	Return Den	nonstration
SKILL	Initial	Date/ Initial	Date/ Initial
1. Washes hands			
2. Gather supplies (glucagon kit, alcohol wipe, cotton ball, gloves).			
3. Puts gloves on.			
4. Remove flip-off seal from vial of glucagon powder, wipe with alcohol wipe.			
5. Remove needle cover from syringe.			
6. Inject entire contents of syringe into vial of glucagon powder (held upright).			
7. Swirls vial gently until dissolved/ clear.			
8. Holds vial upside down, and withdraw all solution from the vial into the syringe.			
9. Withdraws needle from vial, hold syringe upright, and remove air/bubbles from syringe.			
10. Exposes injection site (upper, out area of thigh, arm).			
11. Holds syringe safely; use other hand to clean injection site with alcohol wipe.			

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SKILL	Training Date /	Return Den	nonstration
SKILL	Initial	Date/ Initial	Date/ Initial
12. For subcutaneous injection only: pinches up skin/tissue.			
13. For subcutaneous and intramuscular injection: inserts needle straight into tissue of injection site and inject glucagon.			
14. Withdraws needle and press gently with alcohol wipe or cotton ball at injection site.			
15. Turns child to the side.			
16. Puts used syringe and vial in sharps container.			
17. Documents procedure.			
Improvement Plan:			
RN Signature In	itials	Date	
RN Signature In	itials	Date	
RN Signature In	itials	Date	
Staff Signature In	itials	Date	
Staff Signature In	itials	Date	
Staff Signature In	itials	Date	

^{*}Initial and date in space beside each skill indicates procedure has been demonstrated in a competent manner.

Hyperglycemia:

Hyperglycemia, or high blood sugar, occurs when the blood sugar level is too high due to too much food, too little insulin, blockage in insulin pump tubing, disconnected insulin pump infusion set, illness or stress. Children with high blood sugar sometimes act lethargic and sleepy, are often very thirsty, have frequent urination, blurry vision, dry mouth and fatigue. High blood sugar is treated by giving additional insulin and sugar-free drinks, such as water or diet (NOT regular) soda. Children with diabetes must be given free access to water and the bathroom whenever they feel the need. Prolonged hyperglycemia due to insufficient insulin can lead to a very serious condition called diabetic ketoacidosis, which can lead to coma and death.

It is the goal of the Clay County School District to identify every child with diabetes in order to administer appropriate health services and maintain school attendance and education.

- All students with diabetes require the completion of a Diabetes Medical Management Plan.
- Obtain parental signatures on appropriate forms for medication administration.
- Provide diabetes education to all teachers and staff who work with the child during the school day.
- Provide a back-up plan for staffing the health room in the event of the nurse's absence to maintain continuity of care.
- Routine and as-needed blood glucose testing is best provided in the school health room. Provisions for independent "in classroom" monitoring may apply in some student situations.
- Promotion of a "504 Plan" for the student is recommended.
- The teacher, front office and health room staff will be informed regarding the student with diabetes and will be given a copy of the diabetic procedures.
- The student will be encouraged to wear a Medic-Alert bracelet at all times.
 The health folder and the Emergency Medical Card will both be conspicuously flagged with the information that the student has diabetes.
- Diabetic children can eat a normal school lunch in most cases. Some restrictions may apply and will be written on their Diabetes Medical Management Plan. Nurses will contact teachers and food services to alert them of diet restrictions. Parties and after-school programs may require that different snacks be provided. Care should be taken to ensure that students receive equal treatment during these situations.
- Diabetic supplies, trained staff and a cell phone to be used in the event of an emergency need to accompany all diabetic students on field trips.



HYPERGLYEMIA

(High Blood Sugar)

Here are some of the symptoms of hyperglycemia:

Causes: Too much food, too little insulin or diabetes

medicine, illness, or stress.

Onset: Gradual, may progress to diabetic coma.

Blood Sugar: Above 200 mg/dL Acceptable Range: 115-200 mg/dL



EXTREME THIRST



FREQUENT URINATION



DRY SKIN



HUNGER



BLURRED VISION



DROWSINESS



DECREASED HEALING





TEST BLOOD GLUCOSE



If over 200 mg/dL for several tests or for 2 days, CALL YOUR DOCTOR

School:

URINE KETONE MONITORING SKILLS CHECKLIST

Name:





SKILL		Performs skill in accordance to written guidelines	Requires further instruction & supervision
		Date	Date
States name and purpose of procedure			
2. Identifies where procedure is done			
3. Identifies supplies Gloves Testing Strips Cup of Urine Protected testing area (waterproof disposable pad) Watch or clock with second hand			
4. Washes hands			
5. Assembles supplies.			
6. Puts gloves on.			
7. Places cup of urine on protected area (waterproof dispos	able pad).		
8. Dips ketone testing strip in urine, taps off excess			
9. Times appropriately.			
10. Removes gloves and disposes.			
11. Washes hands.			
12. Records results.			
RN Signature	Initials _	Date _	
Staff Signature	Initials _	Date _	



11. Follows MMP for action plan.

CHILD SPECIFIC TRAINING URINE KETONE MONITORING



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	Urine ketone strip expiration date:			<u> </u>	
	Unlicensed Assistive Personnel (UAP)	Delegating School	RN		
	Student	School Year			
	SKILL		Training	Ret Demon	urn stration
			Date / Initial	Date	Date
1.	. Washes hands				
2	. Assembles supplies.				
3	. Puts gloves on.				
4	. Places cup of urine on protected area (waterp	proof disposable pad).			
5	. Dips ketone testing strip in urine, taps off exc	eess			
6	. Times appropriately.				
7	. Compares strip to bottle, accurately reads res	sults.			
8	. Disposes of all supplies appropriately.				
9	. Removes gloves and disposes.				
1	0. Washes hands.				
				·	

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Improvement Plan:		
RN Signature	Initials	Date
RN Signature	Initials	Date
RN Signature	Initials	Date
Staff Signature	Initials	Date
Staff Signature	Initials	Date
Staff Signature	Initials	Date

^{*}Initial and date in space beside each skill indicates procedure has been demonstrated in a competent manner.

DIABETES MEDICAL MANAGEM	ENT PLAN (School Year
Student's Name: Date of Birth	:Dlabetes
School Name: Grade	
CONTACT INFORMATION Parent/Guardian #1:	hone Numbers: HomeWorkCell/Pager
	hone Numbers: Home Work Cell/Pager
Diabetes Healthcare Provider P	
	elationship: Phone Number: Home Work/Cel/Pager
	ng conditions (if unable to reach parents, call Diabetes Healthcare Provider listed above) y after Glucagon given and 911 called.
MEALS/SNACKS: Student can: Determine correct portion	ons and number of carbohydrate serving □ Calculate carbohydrate grams accurately
Time/Location Food Content and An	nount Time/Location Food Content and Amount
□ Breakfast	☐ Mid-afternoon
□ Midmorning	
Lunch	After PE/Activity
If outside food for party or food sampling provided to class:	
BLOOD GLUCOSE MONITORING AT SCHOOL: Yes N	
If yes, can student ordinarily perform own blood glucose checks	? O'Yes O No; Interpret results O'Yes ONo; Needs supervision? O'Yes ONo
☐ Before lunch ☐ Dismissal	☐ Before PE/Activity Time ☐ After PE/Activity Time ☐ Mid-afternoon ☐ As needed for signs/symptoms of low/high blood glucose
Place to be performed: Classroom	
OPTIONAL: Target Range for blood glucose:m	g/dl tomg/dl (Completed by Diabetes Healthcare Provider).
If yes, can student: Determine correct dose? ☐Yes ☐No Give own injection? ☐Yes ☐No	No □ Parent/Guardian elects to give insulin needed at school) Draw up correct dose? □Yes □No Needs supervision? □Yes □No worn, use "Supplemental information Sheet for Student Wearing an insulin Pump")
Standard daily Insulin at school:	Correction Dose of Insulin for High Blood Glucose: □Yes □No
Type: Dose: Time to be given:	If yes: □Regular □Humaiog □Novolog Time to be given:
	□ Determine dose per sliding scale below (in units): □ Use formula:
Calculate Insulin dose for carbohydrate Intake: □Yes □No	Blood sugar; Insulin Dose: (Blood glucose –
If yes, use: Requiar Humalog Novolog	Blood sogal
#unit(s) per grams Carbohydrate	Blood sugarInsulin Dose:
☐ Add carbohydrate dose to correction dose	Blood sugar: Insulin Dose: units of insulin
	Broad deglar.
OTHER ROUTINE DIABETES MEDICATIONS AT SCHOOL: 1	
Name of Medication Dose	Time Route Possible Side Effects
EXERCISE, SPORTS, AND FIELD TRIPS	o sugar-free liquids, fast-acting carbohydrates, snacks, and monitoring equipment.
A fast-acting carbohydrate such assi	
Child should not exercise if blood glucose level is below	mg/di OR if
SUPPLIES TO BE FURNISHED/RESTOCKED BY PARENT/G	UARDIAN: (Agreed-upon locations noted on emergency card/nursing care plan)
☐ Blood glucose meter/strips/lancets/lancing device ☐ F	ast-acting carbohydrate 🗆 Insuin vials/syringe
	carbohydrate-confaining snacks Insulin pen/pen needles/cartridges carbohydrate free beverage/snack Glucagon Emergency Kit

MANAGEMENT OF HIGH BLOOD GLUCOSE (over	mg/dl)
✓ Usual signs/symptoms for this student:	Indicate treatment choices:
☐ Increased thirst, urination, appetite	☐ Sugar-free fluids as tolerated
☐ Tiredness/sleepiness	☐ Check urine ketones if blood glucose overmg/dl
□ Blurred vision	□ Notify parent if urine ketones positive.
☐ Warm, dry, or flushed skin	☐ May not need snack: call parent
□ Other	☐ See "Insulin Injections: Correction Dose of Insulin for High Blood Glucose" ☐ Other
MANAGEMENT OF VERY HIGH BLOOD GLUCOSE (ove	
✓ Usual signs/symptoms for this student	Indicate treatment choices:
□ Nausea/vomiting	□ Carbohydrate-free fluids if tolerated
□ Abdominal pain	☐ Chcck urine for ketones
□ Rapid, shallow breathing	□ Notify parents per "Emergency Notification" section
Extreme thirst	☐ If unable to reach parents, call diabetes care provider
☐ Weakness/muscle aches	☐ Frequent bathroom privileges
☐ Fruity breath odor ☐ Other	□ Stay with student and document changes in status □ Delay exercise.
	☐ Other
MANAGEMENT OF LOW BLOOD GLUCOSE (below	mg/dl)
✓ Usual signs/symptoms for this child	Indicate treatment choices:
☐ Hunger	
☐ Change in personality/behavior	If student is awake and able to swallow,
☐ Paleness	givegrams fast-acting carbohydrate such as:
☐ Weakness/shakiness☐ Tiredness/sleepiness	□ 4oz. Fruit juice or non-diet soda or □ 3-4 glucose tablets or
☐ Dizziness/staggering	☐ Concentrated gel or tube frosting or
☐ Headache	□ 8 oz. Milk or
□ Rapid heartbeat	□ Other
□ Nausea/loss of appetite	
☐ Clamminess/sweating	Retest BG 10-15minutes after treatment
☐ Blurred vision	Repeat treatment until blood glucose over 80mg/dl
☐ Inattention/confusion	Follow treatment with snack of if more than 1 hour till next meal/snack or if going to activity
☐ Slurred speech ☐ Loss of consciousness	□ Other
☐ Seizure	2 Other
□ Other	
	IMPORTANT!!
If student is unconscious or having a seizure, pr	esume the student is having a low blood glucose and:
Call 911 immediately and notify parents.	
☐ Glucagon ½ mg or 1 mg (circle desi	ired dose) should be given by trained personnel.
	nside cheek and massaged from outside while awaiting or during
administration of Glucagon by staff memb	
☐ Glucagon/Glucose gel could be used if str swallow.	udent has documented low blood sugar and is vomiting or unable to
Student should be turned on his/her side and ma	aintained in this "recovery" position till fully awake".
SIGNATURES	
EMS in the event of loss of consciousness or seizure. I als	performed by the student and/or trained unlicensed assistive personnel within the school or by o understand that the school is not responsible for damage, loss of equipment, or expenses ed this information sheet and agree with the indicated instructions. This form will assist the
Parent's Signature:	Date:
Physician's Signature	Date:
School Nurse's Signature:	Date:
This document follows the g	guiding principles outlined by the American Diabetes Association
	Revised December 5, 2003

DIABETES MEDICAL MANAGEMEN Sc	T PLAN SUP	PLEMENT FO	R STUDEN	T WEARING INS	SULIN PUMP
Student Name:		Date of Birth:	Pu	ump Brand/Model:	:
Pump Resource Person:					eles plan for parent phone#)
Child-Lock On? ☐ Yes ☐ No How long has stude				_	
Blood Glucose Target Range: -	Pump Ins	sulin: 🗆 Hur	malog	□ Novolog	□ Regular
Insulin:Carbohydrate Ratios:					
(Student to receive carbohydrate bolus immediately before	e /minut	tes before eating	3)		
Lunch/Snack Boluses Pre-programmed? □Yes □ No	Times				
Insulin Correction Formula for Blood Glucose Over Target					
Extra pump supplies furnished by parent/quardian: 🗆 infu	ision sets 🗆 n	eservairs 🗆 b	atteries 🗆 d	iressings/tape 🗆	Insulin 🗆 syringes/Insulin pen
STUDENT PUMP SKILLS	NEEDS HEL	LP? IF YE	S, TO BE A	SSISTED BY AND	D COMMENTS:
Independently count carbohydrates	□Yes	□ No			
Give correct bolus for carbohydrates consumed.	□ Yes	□ No			
Calculate and administer correction bolus.	□ Yes	□ No			
Recognize signs/symptoms of site infection.	□ Үев	□ No			
Calculate and set a temporary basal rate.	□ Yes	□ No			
Disconnect pump if needed.	□ Yes	□ No			
7. Reconnect pump at infusion set.	□Yes	□No			
Prepare reservoir and tubing.	□ Yes	□No			
9. Insert new Infusion set.	□ Yes	□No			
10. Give injection with syringe or pen, if needed.	□ Yes	□No			
11. Troubleshoot alarms and malfunctions.	□ Yes	□No			
Re-program basal profiles if needed.	□ Yes				
MANAGEMENT OF HIGH BLOOD GLUCOSE Follow I	nerruerione is	hacie diahere	c modical m	ananoment nian	hur in addition-
If blood glucose over target range hours after las	t bolus or carb	ohydrate Intake			
If blood glucose over 250, check urine ketones					
If no ketones, give bolus by pump and recheck in 2 if ketones present or, give cor, give cor		ac an Injection	Immediately	and contact parce	of booth care provider
If two consecutive blood glucose readings over 250 (2 hrs				and contact paren	is treatif care provider
Check urine ketones	or more uner	mor bondo given	,		
Give correction bolus as an injection Change infusion set.					
4. Call parent					
MANAGEMENT OF LOW BLOOD GLUCOSE Follow ins	structions in B	asic Diabetes C	are Plan, but	In addition:	
If low blood glucose recurs without explanation, notify	parent/diabete	es provider for p	otential instru	uctions to suspend	d pump.
If seizure or unresponsiveness occurs:					
Call 911 (or designate another individual to do so). Treat with Giucagon (See basic Diabetes Medical Ma	nagomoni Dia	m\			
Stop insulin pump by:	nagement Pia	11)			
□ Placing in "suspend" or stop mode (See attached or Disconnecting at pigtall or clip (Send pump with E			tions)		
☐ Cutting tubing	.mo iu nuopiia	11.)			
Notify parent If pump was removed, send with EMS to hospital.					
ADDITIONAL TIMES TO CONTACT PARENT					
□ Soreness or redness at infusion site		Insulin Injection			
□ Detachment of dressing/infusion set out of place □ Leakage of insulin		Other			
Li Leakaye of Illouilli					
Effective Date(s) of Pump plan:					
Parent's Signature:				Date:	
School Nurse's Signature:				Date:	
Diabetes Care Provider Signature:				_ Date:	

Revised February 3, 2003/Florida Governor's Diabetes Council



DIABETES CARE PLAN

CLAY COUNTY HEALTH DEPARTME CLAY COUNTY SCHOOL DISTRICT SCHOOL HEALTH SERVICES

Clay County	()	Public Health
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Casy County	0	Public Health

SCHOOL YEAR

Work

-8 8

School:

Contact #'s: Home

DOB:

Fax

Contact #: Phone

Contact #'s: Contact #'s:

Other Emergency Contacts:

Physician:

Parent / Guardian: Student Name:

Parent Signature	Date	Nurse Signature	Date
Nursing Diagnosis / Concern	Goals	Plan of Action	By Whom / When
 Knowledge deficit related to balance of insulin, 	Student will increase under-	 Instruct student (age appropriate) in the pathophysiology of 	School Nurse, Physician,
diet and exercise; insulin administration,	standing of pathophysiology of	Diabetes.	Diabetes Educator, Parents,
dietary regimen; blood sugar monitoring and	diabetes and develop or improve	Monitor blood glucose levels at school.	Teaching Staff – as necessary
exercise requirements.	the skills necessary to manage	 Arrange space and time for student to perform blood 	
	diabetes.	glucose levels, insulin injection, and carbohydrate counting	
		and snack consumption.	
		 Maintain blood glucose record 	
		 Send blood glucose record home to parent/guardian 	
		□ weekly	
		□ monthly	
		3. Parent/guardian will provide BG testing equipment, insulin	
		Supplies, glucagon, fast acting glucose supply and snacks.	
2. Alteration in self-care due to difficulty accepting	Student will improve self-care	 Provide teachers/other staff with information related to Diabetes 	School nurse, healthcare
lifestyle change; knowledge deficit;	management skills.	through formal/informal inservices.	provider, diabetes educator -
insufficient resources; dysfunctional grieving		 NDEP Level 1 Training* - All School Personnel 	as needed.
		 NDEP Level 2 Training* - School Personnel who have 	
		responsibility for students with diabetes, but who do not	
		perform diabetes care tasks	
		 NDEP Level 3 Training* - For Unlicensed Assistive Personnel 	
		who have been delegated to treat hypoglycemia	
		Name of UAP Diabetes Care Task	

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*National Diabetes Education Program's Helping the Student with Diabetes Succeed: A Guide for School Personnel

Nursing Diagnosis / Concern	Goals	Plan of Action	By Whom / When
		Provide classroom presentation on diabetes when indicated (age- appropriate.	
 Potential for change in medical management of diabetes. 	Student will maintain normal blood glucose range.	Student will independently monitoring blood glucose in agreed upon location in the school or will come to the Health Room for supervised blood glucose checks and administration of insulin according to Medical Management Plan. Target range for Blood Glucose mg/dl to mg/dl Correction formula: Blood Glucose + = units of Insulin Carbohydrate ratio 1:	Student / School Nurse - ongoing
		2. Parent will be notified if there are any concerns regarding the diabetes management which might require medical follow-up. 3. Student will be reminded to come to the Health Room for Diabetes management if the student does not report at scheduled time.	School Nurse – ongoing Teacher/Staff/School Nurse – as needed.
		 Monitor diet adherence, reinforce and instruct as appropriate. This plan of care also covers Field Trips and/or any after school sponsored activities. These events will be discussed with the parent in advance so student's medical needs can be accommodated. 	School Nurse – ongoing School Nurse, Staff, Parent/Guardian – ongoing
		Trained school personnel will accompany student on bus, field trips, or any other school-sponsored activity off school grounds if needed. 7. Trained school personnel:	School Nurse, Staff, Parent/Guardian – ongoing
Physiological injury due to development of acute complications related to hypoglycemia (insulin shock) or hyperglycemia (ketoacidosis).	Student (parent) will recognize and treat early signs of hypoglycemia appropriately and now how to recognize and respond to early signs of ketoacidosis.	Instruct teachers/staff on signs and symptoms of hypoglycemia / insulin reaction (low blood sugar): headache moist skin, sweating Feels "low" or not well spale skin symptoms of coordination and slurred spale skin speech speech confusion, progressing to seizure dizziness or unconsciousness or unconsciousness sudden hunger Weakness droopy eyelids Change in behavior (inability to concentrate, short temper, irritability, out of control crying or laughter, etc) **** Follow Individual Emergency Action Plan for Student**** ***** Follow Individual Emergency Action Plan for Student**** *********** *********** *******	School Nurse

By Whom / When	School Nurse	School Nurse, Staff, Parent/Guardian - ongoing	Parent/Guardian annually or as needed.
Plan of Action	2. Instruct teacher/staff on signs and symptoms of hyperglycemia/ diabetic ketoacidosis (high blood sugar over extended period of time due to lack of insulin):	 Provide praise and reinforcement for self-management skills. Consult physician and provide counseling referral if adjustment is non-progressive or dysfunctional. Clarify misconceptions about diabetes. Provide support for student, family and staff in adaptation to diabetes through referral, listening, teaching and regular communication. Provide opportunities for student to become more self-sufficient in self-care. 	1. Parents/Guardians will provide school nurse with a current Medical Management Plan at the beginning of each school year. 2. Parents/Guardian will provide a written update when a change in status occurs. 3. Parent / Guardian may provide written update to diabetes management if indicated by physician in Medical Management Plan. 4. The school nurse will call the physician to obtain current information verbally when necessary to enable management of the student's condition.
Goals		Student will demonstrate Increased adaptation to and psychological comfort with body changes and lifestyle requirements.	Student/family will collaborate with members of the health team to facilitate optimum health and safety necessary for learning.
Nursing Diagnosis / Concern		 Alteration in self-esteem due to diabetes care requirements; developmental level and needs; dysfunctional grieving, embarrassment; stigma associated with having chronic illness; lifestyle changes created by diabetes and management. 	Fotential for change in medical status.

Parent, School Nurse, appropriate staff members





DIABETES EMERGENCY ACTION PLAN

(To be completed by Registered Nurse)

Name:	D.O.B	Grade:	Teacher:
Parent's Name:		Phone _	
MILD Hunger Irritable Weak Pallor Crying Unable to concentrate Other	SYMPTOMS OF LOW BLOO MODERATE Sleepiness Behavior Change Confusion Slurred Speech Other	SEVERE Unable to Combative Unconscio	swallow PLACE
MANAGEMENT OF "MIL □ Provide 15 grams of fast a □ 3-4 glucose tabs □ 4 oz. juice □ 6 oz. REGULAR s □ Wait 10-15 minutes □ Recheck blood sugar □ If blood sugar is < 80 mg/c □ If sugar is >80, give studer □ Notify school nurse at ext.	soda II, repeat sugar source nt 15 gram snack	OOD SUGAR (less	than mg/dl):
□ CALL 911 IMMEDIAT □ Call school nurse at ext. □ □ Call Administration at ext. □ Stay with student. □ Call parents. □ Glucagon mg as could be used in the control of the control o	·		
NOTES:			
RN Signature		D:	ate
□ PE□Library□Computer□Cafeteria	er □ Coach □ Other	_	

Rev. 4/10





Glucose L	og for	Date	
Time	Blood Sugar	Action	



CLAY COUNTY DISTRICT SCHOOLS and CLAY COUNTY HEALTH DEPARTMENT SCHOOL HEALTH SERVICES



		Date		
Dear Parent,				
Your child			needs	diabetes supplies
replaced. Please send in:	insulin	strips	lanc	ets alcohol
syringes pen needles	15 carb juices	low carb s	nacks	no carb snacks
regular snacks.				
Please plan on replacing y	our child's supplies	s as soon as	possible.	
Thank you.				
School Nurse				



Glucose and Insulin Log

Student's Name:	Name:				Grade	Age	Teacher	
Signafure and	Initials of P	Person Authoriz	Signature and initials of Person Authorized to Test Blood Gluoces: (1)	Nuoces: (1)		(2)		
Date of Cur	rent Phy	Date of Current Physician Order	Į.	Targe	Target range for blood sugar	sugar	mg/dl to mg/dl	
Insulin Type	e: 🗆 Hun	nalog 🗆 No	Insulin Type: Humalog Novolog Lantus Other	□ Other		1		
Insulin: Car	bohydra	Insulin: Carbohydrate (Carb) Ratio:		# unit(s) insulin per	grai	grams of carbohydrates eaten	tes eaten	
Correction	Dose for	Correction Dose for High Blood Sugars:		Blood Glucose - (Blood s	(Blood sugar goal) (C	Correction factor)	= units of insulin)	
Correction	Dose for	Correction Dose for Low Blood Sugars:		- Blood sugar goal)	Blood Glucose ÷	(Correction factor)	= units of insulin)	
Date	Time	Blood Sugar	# Units Insulin for Correction	# Grams of Carbs Eaten	# Units Insulin for Carbs Eaten	Total Number of Units of Insulin Given	Action Taken	Initials

DIARRHEA

Diarrhea is a condition associated with frequent watery stools and may be accompanied with vomiting and fever. It may be a symptom of infection, which can be caused by many different organisms. Antibiotics may also induce diarrhea due to changes in the normal flora of the intestinal tract.

Transmission:

The organisms are transmitted via the fecal oral route. Transmission of the infection to others can be prevented by thorough hand washing, especially before eating, after using the bathroom and changing diapers.

Intervention:

- Take the students temperature.
- Call Parent/Guardian.
- Disinfect all contaminated surfaces and instruct student to wash hands.
- Recommend the Parent/Guardian contact their licensed health care provider for instructions.
- Further persistent diarrhea, especially if accompanied by a fever or bloody stools, should be evaluated by a medical provider for possible infectious diarrhea (i.e. shigella, giardiasis, salmonella).
- Multiple cases of diarrhea in one classroom should be reported to the Clay County Health Department.

May Return To School: The student should be excluded from school until the diarrhea has stopped for 24 hours.

DRUG OR ALCOHOL USE

If a school administrator asks the nurse to assess a student for intoxication or being under the influence of a controlled, illegal substance, the school nurse can only give general assessments. The only legal way of knowing is through drug testing of the urine or blood.

Marijuana: causes increased blood pressure, pulse and temperature, red eyes, reduced coordination and concentration, dry mouth and laughing.

Cocaine: causes increases temperature, blood pressure and heart rate, dilated pupils, and frequent sniffing.

Hallucinogens (ecstasy, Acid, LSD): causes large dilated pupils, fatigue, difficulty concentrating, nausea, sweating, heart rate, anxiety, panic and aggression

Narcotics (Demerol, Codeine, Morphine): causes pinpoint pupils, slow respirations, nausea, vomiting, drowsiness, euphoria, cold skin and needle tracks on arms and body.

Stimulants (Speed, Crack, Crystal, and Ritalin like Meds): causes dilated pupils, increased heart rate, blood pressure and respirations, blurred vision, dizziness, anxiety, glossy eyes, inability to focus eyes, irritability, and insomnia.

Depressants (Valium, Yellow Jackets): causes slowed breathing and heart rate, pinpoint pupils, mental confusion, drowsiness, droopy eyelids, staggering, slurred speech.

EARACHE

Intervention:

- Take temperature.
- Make student comfortable.
- Call Parent/Guardian.
- Recommend Parent/Guardian seek medical attention if discomfort persists, or if the child has a fever.

EATING DISORDERS

(ANOREXIA AND BULIMIA)

Bulimia is a severe eating disorder. People with bulimia rapidly eat tremendous amounts of food and then purge themselves of the food by vomiting or other means.

Anorexia Nervosa is a compulsion to inflict self-starvation. People of all races can develop bulimia and anorexia, but the vast majority are white. This may reflect social-economic rather than racial, factors. The illnesses are not restricted to females nor to those with certain occupational or educational backgrounds.

Left untreated, either disorder can become chronic and result in severe health damage or even death.

Bulimia: Signs & Symptoms:

- Recurrent episodes of binge eating or the rapid consumption of large amounts of food in a short period of time, usually less than two hours.
- During the eating binges, there is a feeling of total lack of control over the eating behavior.
- The individual regularly engages in either self-induced vomiting, use of laxatives, diuretics or strict dieting or fasting and vigorous exercising in order to prevent weight gain.
- Discoloration or staining of the teeth.
- Overly concerned and disturbed with perception of body weight.

Bulimia usually begins in conjunction with a diet. Once the binge and purge cycle becomes established, it can get out of control. Some bulimics may be somewhat underweight and a few may be obese, but most tend to maintain a nearly normal weight. In many cases the menstrual cycle becomes irregular. Sexual interest may

diminish. Bulimics may exhibit impulsive behaviors such as shoplifting and alcohol and/or drug use. Many appear to be healthy and successful, even a perfectionist in everything they do. Actually, most bulimics have very low self-esteem and are often depressed.

Anorexia Nervosa: Signs & Symptoms:

- Refusal or inability to maintain body weight over a minimum normal weight (Deliberate self-starvation).
- Intense fear of gaining weight or becoming fat, despite being underweight.
- Disturbance in perception of body shape.
- In post-menarcheal females, absence of three (3) consecutive menstrual cycles.

Anorexia causes peculiar behaviors and bodily changes typical of any starvation victim. Some functions are often restored to normal once sufficient weight is regained. Meanwhile, the starving body tries to protect itself (especially the two main organs, the brain and heart) by slowing down or stopping less vital body processes. Menstruation ceases, often before weight loss becomes noticeable. Blood pressure and respiratory rate slow, thyroid function diminishes resulting in brittle hair and nails, dry skin. Slowed pulse rate, cold intolerance and constipation also develop. With depletion of fat, the body temperature is lowered. Soft hair called lanugo forms over the skin. Electrolyte imbalance can become so severe that irregular heart rhythm, heart failure and decreased bone density occur. Other physical signs can include mild anemia, swelling of joints, reduced muscle mass and lightheadedness.

Exactly what causes anorexia nervosa and bulimia is a puzzle for researchers. They are just beginning to uncover clues, and not all experts agree with all theories. One theory about anorexia and bulimia is that many females feel excessive pressure to be as thin as some "ideal" perceived by the media in magazines and on television. Some suggest that a certain biological factor linked to clinical depression may contribute to the development of anorexia and bulimia. In fact 50 - 75% of anorexics and bulimics are prone to depression, as are many of their relatives. Anorexia and bulimia may be triggered by an inability to cope with a life situation, puberty, first sexual contact, ridicule over weight, death of a loved one or separation from family.

Several approaches are usually used to treat both disorders, including motivating the patient, enlisting family support and providing nutritional counseling and psychotherapy. A realistic body-image concept is a pre-condition for recovery from anorexia nervosa. Considering the anorexic's tenacious denial of being too thin or eating too little, convincing them that they need to gain weight is no small task. Bulimics usually cooperate with medical staff and may even seek treatment voluntarily. Behavior modification therapy and drug therapy may be used. Hospitalization may be required for patients who have life threatening complications or extreme psychological problems. If the patient's life is not in danger, treatment for either disorder is usually on an outpatient basis. Treatment may take a year or more. Approximately 80% of patients with bulimia respond to antidepressant drug therapy within three to four weeks. For anorexics, however, it should be noted that the benefits of antidepressants must be regarded as tentative and that precautions should be taken to determine whether the patient's undernourished body can handle the drugs.

Psychotherapy may be in many forms. In individual sessions, the patient explores attitudes about weight, food and body image. Then as she/he becomes aware of the problems in relating to others and dealing with stress, the attention is centered on feelings that they may have about self esteem, guilt, anxiety, depression or helplessness.

Behavior modification therapy focuses on eliminating self-defeating behaviors. Patients may improve their stress management by learning skills in relaxation, biofeedback and assertiveness. Family therapy is designed to improve overall family functioning.

Places to seek help in finding a therapist include the psychiatry department of a nearby medical school, local hospitals, family physician, church leader, county or state mental health or social services departments and private welfare agencies. Self-help or support groups are an adjunct to primary treatment.

EYE INJURIES/EYE INFECTION

Note: **DO NOT** allow student to rub eye. DO NOT stick any solid object (tweezers, finger etc.) in the eye to remove a foreign body. Wash hands before touching the student's face or eye.

Intervention:

- Cuts and Puncture of Eye or Eyelid:
 - a. Loosely bandage eye. Use a paper cup over injured eye if an object is protruding or when pressure on the eye is undesirable.
 - b. DO NOT apply pressure.
- "Speck" in the eye:
 - a. Encourage student to blink and tear.
 - b. Gently pull lashes so that upper lid comes down and away from the eyeball.
 - c. Have student look down. Release lid after 3 5 seconds.
 - d. Gently pull lower lid down and away from eyeball. If object is seen and does NOT appear embedded, gently rinse with tap water or eye wash. If object cannot be removed after one or two attempts of the above methods, follow procedure for notifying parent.
- Chemicals in Eye:
 - a. Tilt head with affected eye down, so that chemical does not trickle into other eye.
 - b. Rinse face, eyelid and eye with cool tap water for at least 15 minutes. Let water run from the inner corner of the eye to the outer edge.
 - c. Notify principal and parent. Call 9-1-1.
 - d. Do not bandage.
 - e. Do not stop irrigation until emergency personnel arrive.

- Trauma to Eye/Hematoma
 - a. Check pupils for reaction to light, size and equality.
 - b. Apply ice pack.
 - c. Call 9-1-1 for any changes in level of consciousness.

STY

A sty is a tiny abscess on the edge of the eyelid that may have a slight redness.

Intervention:

- Call parent/guardian and inquire if they are aware of the problem and if any treatment has been initiated.
- Instruct student not to rub or touch the eyes.
- Teach student in proper hand washing techniques.
- May apply warm compress.
- Send student back to class.
- Call parent/guardian if discomfort persists.

CONJUNCTIVITIS (PINKEYE)

Conjunctivitis is an inflammation of the mucous membranes that line the eyelids. It is most often caused by a virus, but is occasionally caused by bacteria or allergies. With this inflammation, the white part of the eye becomes pink and the eye produces large amounts of tears and discharge. In the morning, discharge may make the eyelids stick together.

Transmission

Organisms that cause conjunctivitis are transmitted by direct contact with discharge from the conjunctivae (mucous membranes that line the eyes) or upper respiratory tracts of infected people. The organisms are also transmitted from contaminated fingers, clothing or other articles (e.g., shared eye makeup, washcloths, towels or paper towels). Children under 5 are most often affected. The incubation period is usually 24 to 72 hours.

Diagnosis

Conjunctivitis is diagnosed by the typical appearance of the eye(s). However, it is often difficult to tell if the cause is bacterial or viral. Occasionally, the doctor will examine the discharge under a microscope or culture it.

Treatment

Parents of students who have symptoms of conjunctivitis and staff who have symptoms of conjunctivitis should be advised to contact their health care provider to decide if medication is needed.

<u>Period of Communicability</u>: Conjunctivitis is transmissible during the course of infection.

May Return To School: when asymptomatic or until antibiotic treatment has been ongoing for 24 hours.

FAINTING

Signs and symptoms: Pale skin, sweating, dizziness, numb or tingling hands and feet, nausea and disturbance of vision.

Intervention:

- Assist student to a lying down position
- Loosen garments
- Maintain open airway
- If the student fell, try to determine if an injury occurred. If no history is available, do not move the child.
- Bathe face with cool wet cloth.
- Notify Parent/Guardian and Principal.
- If recovery or consciousness is not IMMEDIATE (2 3 minutes), notify Principal and call 9-1-1.

FEVER

A child presenting to the health room with a temperature of 100.0° or higher (oral) should be evaluated for further symptoms. If the child is determined to be ill, the parent should be called and the child sent home. The child should not return to school until fever and symptom free (without fever reducing medicines) for 24 hours.

FIFTH DISEASE

Fifth disease is a viral illness which is also called "slapped cheek syndrome." It is generally mild but may cause a mild fever and fatigue until the rash appears. The rash generally involves the flushed appearance of the cheeks and sometimes a lacy rash on arms, legs and/or trunk. It may or may not itch. In adults, the joints may ache for days or months.

It is spread through direct contact with an infected person before that person develops the rash. Hand washing is effective in limiting the spread.

Children may attend school if no fever and feeling well. Pregnant woman who have been exposed to it should contact their obstetrician.

FOREIGN BODY IN EAR

Student complains of "something in my ear" usually no pain.

Intervention:

- DO NOT try to flush out object with water or oil (including earwax).
- DO NOT try to remove a foreign body unless it can be easily seen and grasped with finger. When in doubt, do not attempt to remove.
- Call Parent/Guardian and notify Principal.
- Recommend the Parent/Guardian seek immediate medical care.

HEADACHE

Intervention:

- Give no medication unless child has own supply and written parent permission.
- Check for fever (headaches are commonly associated with fevers).
- Determine contributing factors: lack of water, food or sleep, vision problems, cold/sinus problems or injury to head.
- Drink large glass/cup of water.
- Student may rest with a cool cloth or ice pack on forehead.
- Call the Parent/Guardian if the student is too ill to return to class.
- Refer to physician if child has chronic headaches.

Some indications that a headache may be more serious are: frequent recurrences, loss of consciousness, vomiting (especially in the absence of fever or when associated with a history of injury), bizarre or unusual behavior, neck stiffness, pain and fever. Neck stiffness associated with pain and difficulty in extending head up to the ceiling and down to the chest and fever, may suggest meningitis and requires immediate medical care.

Chronic headaches may also occur with visual changes and eye strain. Nurse should check vision if headaches are chronic.

HEADACHES (MIGRAINES)

Migraines are a neurological condition causing blood flow changes in the brain resulting in a throbbing pain in the head. Triggers such as foods, environment and hormones can cause overreaction of the blood vessels in the brain. Migraine headaches are often accompanied by extreme sensitivity to light and sound causing nausea, vomiting, fatigue dizziness and vision problems. Sinus problems, dental problems, heat trauma, hypertension, eye strain and brain tumors can also be predisposing factors in causing migraines. Drug therapy, biofeedback and removal of triggers are the most common methods of preventing and controlling migraines.

HEAD INJURY

Intervention:

- Determine the cause of the injury and whether or not there might be a neck injury.
- If there is a suspected neck injury:
 - a. DO NOT move the student.
 - b. Arrange rolled up blankets or clothing on both sides of trunk, head and neck for immobilization.
 - c. Call 9-1-1.
 - d. If CPR is necessary, the lower jaw should be pulled forward gently to open airway. The head tilt should be minimal and CPR MUST be performed by a TRAINED individual.
- Determine the level of consciousness: awake and alert, dazed, semiconscious or unconscious.

- Observe unconscious student for breathing and any other body injuries. If choking is a concern, gently roll the student onto one side, turning all body parts at one time while supporting the student's neck and head.
- For bleeding, gently hold gauze over wound. Apply ice packs to bruises.
- Notify Parent/Guardian and Principal. Advise immediate medical attention or call 9-1-1 for any student who has:
 - a. Lost consciousness, even if consciousness is regained.
 - b. Vomiting following a blow to the head.
 - c. Inability to move a limb or limbs.
 - d. Oozing of blood or watery fluid from ears or nose.
 - e. Severe headache lasting longer than one hour.
 - f. Sleepiness or dazed demeanor following a blow to the head.
 - g. Unequal pupils.
 - h. Pale skin color that does not return to normal in a short time.

HEALTH CONDITIONS (GENERIC)

Use these forms for any health condition that does not have a specific Medical Management Plan or Parent Questionnaire.





GENERIC HEALTH CONDITION QUESTIONNAIRE

(MUST be FILLED OUT COMPLETELY by PARENT)

Name:	D.O.B	School Yr	PLACE
Parent:	Primary	Phone #	I.D. PHOTO
Physician	Office Location	Phone	HERE
Condition(s):			
Brief Description of condition(s) and date of diagnosis:		
When was the last time your o	hild was seen by a physician for this	s condition(s)?	
How many times has this stud	ent been seen in the emergency roo	om in the past year for this cond	lition(s)?
How many times has this stud	ent been hospitalized in the past ye	ar for this condition(s)?	
Has this student ever been ad	mitted to an intensive care unit for the	nis condition(s)?	
How many days would you es	timate that this student missed from	school or daycare last year for	this condition(s)?
Medications taken at home an	d medications to be taken at school	: (No IV Medications will be g	iven by school personnel.
Equipment Needed (to be supp	lied by parent):		
Restrictions: (If your child may	not participate in physical education	n activities, a doctor's note is re	quired.)
Field Trip Plan:			
Does your child participate in	any school sponsored programs, eit	her before school or after school	ol? If yes, please list
Please add any additional info	rmation you feel is needed to safely	care for your child:	
I authorize my child's school nurse to asset	Provider and School Nurse to Share In ss my child in regards to his/her special health care purpose of generating a health care plan for my ch	needs and to discuss these needs with my o	
Parent/Guardian Signature			_ Date
Signature below indicates that	the plan is reviewed and appropriate documentation	n is complete.	
School Nurse Signature			_ Date





GENERIC MEDICAL MANAGEMENT PLAN

(MUST be FILLED OUT COMPLETELY by PHYSICIAN/ HEALTHCARE PROVIDER)

Name:	D.O.B	School Yr	
Parent:	Primar	y Phone #	PLACE I.D.
Physician		Phone	DUOTO
Diagnosis/ Condition:			HERE
Symptoms student may exhibit: _			
Medications taken at home:			
Medications Needed at School:	□ Yes □ No (No IV Medicatio	ns will be given by schoo	l personnel.)
When medications should be	given:		
(Parent	t School □ Yes □ No must provide any special equip	ment needed while child	
Activity restrictions (excuse from	physical education program will require	re a doctor's note):	
Other modifications needed (i.e.	frequent bathroom breaks):		
If medication given: □ Call pa	rent □ Call 9-1-1 □ Other		
I authorize my child's school nurse to asse	Provider and School Nurse to Share as my child as regards his/her special health care purpose of generating a health care plan for my	e needs and to discuss these needs w	
Parent/Guardian Signature			Date
Doctor's Signature	D (Required)	ate	
	e plan is reviewed and appropriate documentation	on is complete.	
School Nurse Signature	D:	ate	
Rev. 07/2012			Office Stamp

SCHOOL YEAR	Work		Date	By Whom / When	By Whom / When	
CLAY COUNTY SCHOOL DISTRICT CLAY COUNTY HEALTH DEPARTMENT HEALTH SERVICES Public Mentits SCH	School: Cell Cell	4	Nurse Signature	Plan of Action	Plan of Action	
CLAY COUNTY SO CLAY COUNTY HEA HEALTH S	DOB: Contact #'s: Home	Contact #'s: Contact #'s:		Goals	Goals	
CARE PLAN	udent Name:rent / Guardian:	her Emergency Contacts:	rent Signature	Nursing Diagnosis / Concern	Nursing Diagnosis / Concern	

Generic Health Care Plan

Nursing Diagnosis / Concern	Goals	Plan of Action	By Whom / When
Knowledge deficit and loss of self-esteem related tocondition	Student will increase / maintain self-esteem and effective cardiac management at school.	Student will be given information and health counseling related to condition and management appropriate to level of understanding.	School nurse – ongoing
		Classroom presentations will be given on condition as appropriate and when requested.	
		 Student's medical condition will be discussed with him/her as needed to assure that appropriate level of knowledge is being maintained. 	
		 The classroom teacher will be provided information, support, consultation regarding management of student's health needs. 	
		A copy of emergency action plan will be included in substitute teacher folder.	Classroom teacher.
4. Potential for change in medical status	The student will, if age appropriate, collaborate with the facilitation of his/her	 Parents/Guardians will provide school nurse with a current Health condition questionnaire at the beginning of each school year and as change in status occurs. 	School nurse—as needed
	optimum health and safety necessary for learning.	 The school nurse will call the student's doctor to obtain current medical information verbally when this is necessary to manage the student's condition at school. 	
		Physician or PCP Name:	
		Phone number:	School Nurse, Parent, Student
		4. This plan of care also covers Field Trips and/or any after school sponsored activities. These events will be discussed with the parent in advance so student's medical needs can be accommodated.	Teachers
		 Trained school personnel will accompany student on bus, field trips, or any other school-sponsored activity off school grounds if needed. 	Trained personnel

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Generic Health Care Plan

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Nursing Diagnosis / Concern	Goals	Plan of Action	By Whom / When
5. The Individual Health Plan (IHP) will be	The IHP will be updated/revised	Review Date:	Parent/Guardian, School Nurse,
reviewed annually with the parent/guardian as	annually to meet the health	RN Initials:	appropriate staff members.
well as appropriate staff members. This plan	needs of the student.	Parent Initials:	
may be revised/updated as appropriate to			
ensure the most current treatment modalities		Review Date:	
for the student. The school nurse, in		RN Initials:	
collaboration with parent/guardian, will train		Parent Initials:	
(or arrange for training) and supervise all non-			
medically licensed school personnel who are		Review Date:	
delegated responsibility for implementing any		RN Initials:	
portion of this plan as appropriate.		Parent Initials:	





EMERGENCY ACTION PLAN

(To be completed by Registered Nurse)

Name:	D.O.B	Grade:	Teacher:	
Parent's Name:		Phone		
SYMPTOMS:				
				PLACE
				I.D.
				PHOTO
				HERE
			·	
TREATMENT:				
□ CALL 911 IMMEDIATELY. □ Call school nurse at ext □ Call Administration at ext □ Stay with student. □ Call parents. NOTES:				
RN Signature			_ Date	
Copies given to: Parent Teacher 1 st 2 nd 3 rd 4 th PE Cafeteria Library Computer Music Art Bus Driver Co				

HEAT EXHAUSTION/STROKE

Heat exhaustion usually results from exercising in a warm environment. Individuals with a chronic illness (diabetes, cystic fibrosis, severe asthma, etc.), obese individuals and the very young or elderly are especially susceptible.

Prevention involves increased intake of fluids on hot days, especially if heavy exercise is planned; gradual acclimatization (such as slowly working up to a full exercise schedule over a period of days during hot weather); and short "rest periods" in an air-conditioned atmosphere when discomfort is obvious.

Signs and symptoms: perspiration, dizziness, nausea, faintness, headache, cool and pale skin, rapid pulse and breathing.

Intervention:

- Have student lie down in cool or shaded area or move to air-conditioned environment it available.
- Loosen clothing. Give plenty of fluids if student can drink and is not vomiting or dazed. Cool (not cold) liquids
- Take student's temperature (never take an oral temperature if the student is not fully alert). If the temperature is greater than 101°F, cool the student with a sponge or cloth soaked with cool water. Observe him/her closely and seek medical attention.
- Call 9-1-1 or seek other IMMEDIATE medical help if ANY of the following occur (signs of a HEAT STROKE):
 - a. Rapid rise in body temperature, with hot and dry skin
 - b. Loss of consciousness/shock
 - c. Seizure
- AS SOON AS POSSIBLE, notify the principal and parent

HYPERVENTILATION

Abnormally prolonged and rapid breathing often associated with acute anxiety or emotional tension.

The student may complain of one or more of the following:

- Pounding heart
- Dizziness
- Tingling sensation in lips and extremities
- Stomach discomfort
- Sensation of smothering

Health room personnel may notice an unsteadiness, decreased alertness and/or fainting.

Intervention:

- Allow the student to sit in a quiet place.
- Reassure student. Make direct eye contact and speak clearly and slowly. Stay with the student.

- Have the student focus on slowing his/her breathing. Have student do the following exercise:
 - a. Take slow deep breaths through the nose counting to four while inhaling.
 - b. Exhale slowly through closed lips (like blowing through a straw) to a count of four.
- If the breathing exercise does not help, it may be helpful to have the student breathe into cupped hands over face or into a paper bag.
- If symptoms continue for more than several minutes or student passes out, call 9-1-1.
- Notify the Parent/Guardian and the Principal.

HYPERTENSION

Hypertension in children (and adults) has risen significantly over the past two decades. The increase is thought to be linked to increased weights, diets high in fat and cholesterol and sedentary lifestyles. Hypertension increases the risk of developing type-2 diabetes, stroke and heart disease. Two types of hypertension exist: essential (no identifiable cause) and secondary (due to another disorder). Most causes in children are due to other diseases, but essential hypertension is on the rise. Few symptoms are apparent but over time the elevated blood pressure may cause frequent headaches, dizziness, visual disturbances and even seizures. Treatment may include pharmacologic and non-pharmacologic treatments including dietary management and an exercise program.

Remember, when checking a student's blood pressure, using the correct size BP cuff is very important.

New Blood Pressure Guidelines

In 2003, the National Heart, Lung and Blood Institute revised the blood pressure guidelines.

The following guidelines are observed for adults:

Category	Systolic (mm Hg)		Diastolic (mm Hg)
Normal blood pressure	: < 120	AND	< 80
Pre-hypertension:	120-139	OR	80-89
Stage 1 hypertension:	140-159	OR	90-99
Stage 2 hypertension:	> 160	OR	>100

Adults whose readings fall in the "pre-hypertensive" range are instructed to make appropriate lifestyle changes. In addition, many doctors recommend conducting a sleep history due to the association of high blood pressure and "sleep apnea." Adults with stage 1 and stage 2 hypertension frequently are treated with medications AND lifestyle modifications.





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SUN	MON	TUES	WED	THURS	FRI	SAT

The following guidelines are observed for children:

<u>Pre-hypertension</u>: blood pressures between the 90th and 95th percentiles for age/sex/height.

Hypertension: blood pressures beyond the 95th percentile for age/sex/height.

Children whose BP readings consistently fall in the "pre-hypertensive" range are encouraged to make lifestyle changes – like adults with pre-hypertension. In children, medication is reserved for those whose blood pressure remains elevated despite modifications in lifestyle. In *children*, BP guidelines are based on sex, age and height.

Blood pressure normally rises with age in childhood. A child's sex, age and height are used to determine age-, sex- and height-specific systolic and diastolic blood pressure percentiles. This approach provides information that lets researchers consider different levels of growth in evaluating blood pressure. It also demonstrates the blood pressure standards that are based on sex, age and height and allows a more precise classification of blood pressure according to body size. More importantly, the approach avoids misclassifying children at the extremes of normal growth.

To use the tables, the height percentile is determined from the standard growth charts. The child's measured systolic and diastolic blood pressure (BP) is compared with the numbers provided in the table (boys or girls) for age and height percentile. The child is normotensive if the BP is below the 90th percentile. If the child's BP (systolic or diastolic) is at or above the 95th percentile, the child may be hypertensive. BP measurements between the 90th and 95th percentiles are prehypertensive. In general, the goal of antihypertensive maintenance therapy is blood pressure below the 95th percentile for otherwise healthy children and below the 90th percentile for children with any other organ involvement.

Blood Pressure Levels for Boys by Age and Height Percentile

	ВР			Systo	lic BP (mmHg)		Diastolic BP (mmHg)							
Age	Percentile		+	Perce	ntile of	Height	>	← Percentile of Height →							
(Year)	4	5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	80	81	83	85	87	88	89	34	35	36	37	38	39	39
	90th	94	95	97	99	100	102	103	49	50	51	52	53	53	54
	95th	98	99	101	103	104	106	106	54	54	55	56	57	58	58
	99th	105	106	108	110	112	113	114	61	62	63	64	65	66	66
2	50th	84	85	87	88	90	92	92	39	40	41	42	43	44	44
	90th	97	99	100	102	104	105	106	54	55	56	57	58	58	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
	99th	109	110	111	113	115	117	117	66	67	68	69	70	71	71
3	50th	86	87	89	91	93	94	95	44	44	45	46	47	48	48
	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	110	112	113	63	63	64	65	66	67	67
	99th	111	112	114	116	118	119	120	71	71	72	73	74	75	75
4	50th	88	89	91	93	95	96	97	47	48	49	50	51	51	52
	90th	102	103	105	107	109	110	111	62	63	64	65	66	66	67
	95th	106	107	109	111	112	114	115	66	67	68	69	70	71	71
	99th	113	114	116	118	120	121	122	74	75	76	77	78	78	79
5	50th	90	91	93	95	96	98	98	50	51	52	53	54	55	55
5	90th	104	105	106	108	110	111	112	65	66	67	68	69	69	70
	95th	108	109	110	112	114	115	116	69	70	71	72	73	74	74
	99th	115	116	118	120	121	123	123	77	78	79	80	81	81	82
6	50th	91	92	94	96	98	99	100	53	53	54	55	56	57	57
	90th	105	106	108	110	111	113	113	68	68	69	70	71	72	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
	99th	116	117	119	121	123	124	125	80	80	81	82	83	84	84
7	50th	92	94	95	97	99	100	101	55	55	56	57	58	59	59
	90th	106	107	109	111	113	114	115	70	70	71	72	73	74	74
	95th	110	111	113	115	117	118	119	74	74	75	76	77	78	78
	99th	117	118	120	122	124	125	126	82	82	83	84	85	86	86
8	50th	94	95	97	99	100	102	102	56	57	58	59	60	60	61
	90th	107	109	110	112	114	115	116	71	72	72	73	74	75	76
	95th	111	112	114	116	118	119	120	75	76	77	78	79	79	80
	99th	119	120	122	123	125	127	127	83	84	85	86	87	87	88
9	50th	95	96	98	100	102	103	104	57	58	59	60	61	61	62
	90th	109	110	112	114	115	117	118	72	73	74	75	76	76	77
9	95th	113	114	116	118	119	121	121	76	77	78	79	80	81	81
	99th	120	121	123	125	127	128	129	84	85	86	87	88	88	89
10	50th	97	98	100	102	103	105	106	58	59	60	61	61	62	63
	90th	111	112	114	115	117	119	119	73	73	74	75	76	77	78
	95th	115	116	117	119	121	122	123	77	78	79	80	81	81	82
	99th	122	123	125	127	128	130	130	85	86	86	88	88	89	90

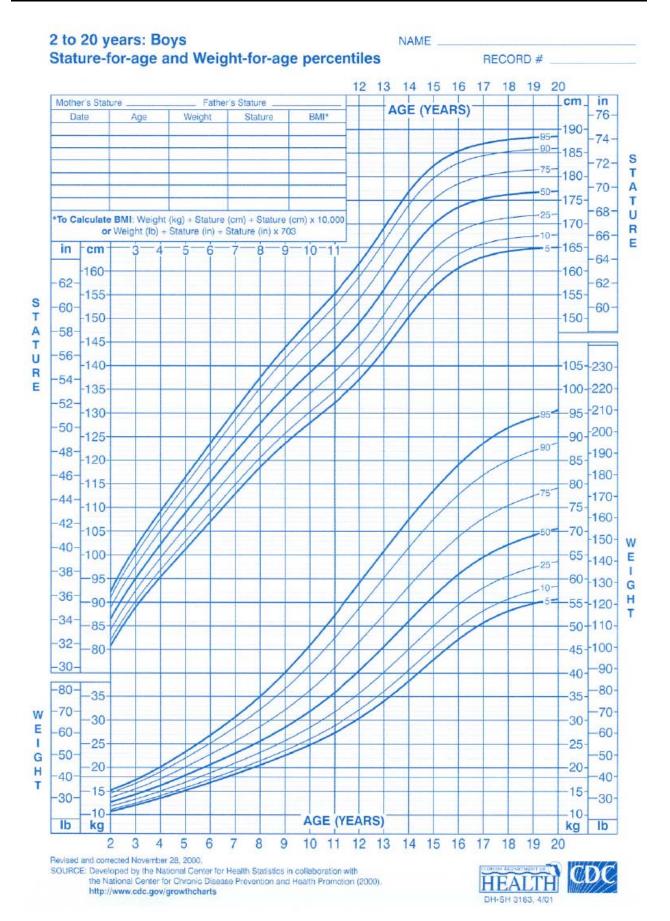
Blood Pressure Levels for Boys by Age and Height Percentile (Continued)

	BP			Systo	lic BP (mmHg)					Diasto	lic BP	(mmHg)	
Age	Percentile		+	Perce	ntile of	Height	>			+	Perce	ntile of	Height	>	
(Year)	Ψ.	5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
11	50th	99	100	102	104	105	107	107	59	59	60	61	62	63	63
	90th	113	114	115	117	119	120	121	74	74	75	76	77	78	78
	95th	117	118	119	121	123	124	125	78	78	79	80	81	82	82
	99th	124	125	127	129	130	132	132	86	86	87	88	89	90	90
12	50th	101	102	104	106	108	109	110	59	60	61	62	63	63	64
	90th	115	116	118	120	121	123	123	74	75	75	76	77	78	79
	95th	119	120	122	123	125	127	127	78	79	80	81	82	82	83
	99th	126	127	129	131	133	134	135	86	87	88	89	90	90	91
13	50th	104	105	106	108	110	111	112	60	60	61	62	63	64	64
	90th	117	118	120	122	124	125	126	75	75	76	77	78	79	79
	95th	121	122	124	126	128	129	130	79	79	80	81	82	83	83
	99th	128	130	131	133	135	136	137	87	87	88	89	90	91	91
14	50th	106	107	109	111	113	114	115	60	61	62	63	64	65	65
	90th	120	121	123	125	126	128	128	75	76	77	78	79	79	80
	95th	124	125	127	128	130	132	132	80	80	81	82	83	84	84
	99th	131	132	134	136	138	139	140	87	88	89	90	91	92	92
15	50th	109	110	112	113	115	117	117	61	62	63	64	65	66	66
	90th	122	124	125	127	129	130	131	76	77	78	79	80	80	81
	95th	126	127	129	131	133	134	135	81	81	82	83	84	85	85
	99th	134	135	136	138	140	142	142	88	89	90	91	92	93	93
16	50th	111	112	114	116	118	119	120	63	63	64	65	66	67	67
	90th	125	126	128	130	131	133	134	78	78	79	80	81	82	82
	95th	129	130	132	134	135	137	137	82	83	83	84	85	86	87
	99th	136	137	139	141	143	144	145	90	90	91	92	93	94	94
17	50th	114	115	116	118	120	121	122	65	66	66	67	68	69	70
	90th	127	128	130	132	134	135	136	80	80	81	82	83	84	84
	95th	131	132	134	136	138	139	140	84	85	86	87	87	88	89
	99th	139	140	141	143	145	146	147	92	93	93	94	95	96	97

BP, blood pressure

For research purposes, the standard deviations in Appendix Table B–1 allow one to compute BP Z-scores and percentiles for boys with height percentiles given in Table 3 (i.e., the 5th,10th, 25th, 50th, 75th, 90th, and 95th percentiles). These height percentiles must be converted to height Z-scores given by (5% = -1.645; 10% = -1.28; 25% = -0.68; 50% = 0; 75% = 0.68; 90% = 1.28%; 95% = 1.645) and then computed according to the methodology in steps 2–4 described in Appendix B. For children with height percentiles other than these, follow steps 1–4 as described in Appendix B.

^{*} The 90th percentile is 1.28 SD, 95th percentile is 1.645 SD, and the 99th percentile is 2.326 SD over the mean.



Blood Pressure Levels for Girls by Age and Height Percentile

	BP			Systo	lic BP (mmHg)		Diastolic BP (mmHg)							
Age	Percentile		+	Perce	ntile of	Height	→		← Percentile of Height →						
(Year)	4	5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	83	84	85	86	88	89	90	38	39	39	40	41	41	42
	90th	97	97	98	100	101	102	103	52	53	53	54	55	55	50
	95th	100	101	102	104	105	106	107	56	57	57	58	59	59	6
	99th	108	108	109	111	112	113	114	64	64	65	65	66	67	6
2	50th	85	85	87	88	89	91	91	43	44	44	45	46	46	4
	90th	98	99	100	101	103	104	105	57	58	58	59	60	61	6
	95th	102	103	104	105	107	108	109	61	62	62	63	64	65	6
	99th	109	110	111	112	114	115	116	69	69	70	70	71	72	73
3	50th	86	87	88	89	91	92	93	47	48	48	49	50	50	5
	90th	100	100	102	103	104	106	106	61	62	62	63	64	64	65
	95th	104	104	105	107	108	109	110	65	66	66	67	68	68	69
	99th	111	111	113	114	115	116	117	73	73	74	74	75	76	76
4	50th	88	88	90	91	92	94	94	50	50	51	52	52	53	54
	90th	101	102	103	104	106	107	108	64	64	65	66	67	67	6
	95th	105	106	107	108	110	111	112	68	68	69	70	71	71	7:
	99th	112	113	114	115	117	118	119	76	76	76	77	78	79	7
5	50th	89	90	91	93	94	95	96	52	53	53	54	55	55	5
5	90th	103	103	105	106	107	109	109	66	67	67	68	69	69	7
	95th	107	107	108	110	111	112	113	70	71	71	72	73	73	7
	99th	114	114	116	117	118	120	120	78	78	79	79	80	81	8
6	50th	91	92	93	94	96	97	98	54	54	55	56	56	57	.58
	90th	104	105	106	108	109	110	111	68	68	69	70	70	71	7:
	95th	108	109	110	111	113	114	115	72	72	73	74	74	75	7
	99th	115	116	117	119	120	121	122	80	80	80	81	82	83	8
7	50th	93	93	95	96	97	99	99	55	56	56	57	58	58	59
	90th	106	107	108	109	111	112	113	69	70	70	71	72	72	73
	95th	110	111	112	113	115	116	116	73	74	74	75	76	76	7
	99th	117	118	119	120	122	123	124	81	81	82	82	83	84	84
8	50th	95	95	96	98	99	100	101	57	57	57	58	59	60	60
	90th	108	109	110	111	113	114	114	71	71	71	72	73	74	7
	95th	112	112	114	115	116	118	118	75	75	75	76	77	78	7
	99th	119	120	121	122	123	125	125	82	82	83	83	84	85	8
9	50th	96	97	98	100	101	102	103	58	58	58	59	60	61	6
	90th	110	110	112	113	114	116	116	72	72	72	73	74	75	7
	95th	114	114	115	117	118	119	120	76	76	76	77	78	79	7
	99th	121	121	123	124	125	127	127	83	83	84	84	85	86	8
10	50th	98	99	100	102	103	104	105	59	59	59	60	61	62	6
	90th	112	112	114	115	116	118	118	73	73	73	74	75	76	7
	95th	116	116	117	119	120	121	122	77	77	77	78	79	80	8
	99th	123	123	125	126	127	129	129	84	84	85	86	86	87	8

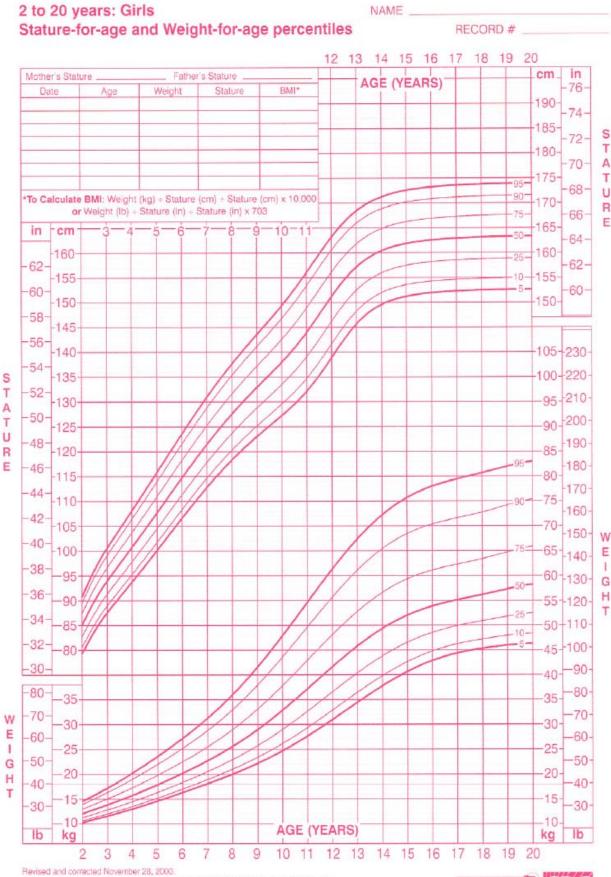
Blood Pressure Levels for Girls by Age and Height Percentile (Continued)

	ВР	Secretary Secretary		Systo	lic BP (mmHg)					Diasto	lic BP	(mmHg))	
Age	Percentile		+	Perce	ntile of	Height	>			+	Perce	ntile of	Height	→	
(Year)	4	5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
11	50th	100	101	102	103	105	106	107	60	60	60	61	62	63	63
	90th	114	114	116	117	118	119	120	74	74	74	75	76	77	77
	95th	118	118	119	121	122	123	124	78	78	78	79	80	81	8
	99th	125	125	126	128	129	130	131	85	85	86	87	87	88	89
12	50th	102	103	104	105	107	108	109	61	61	61	62	63	64	64
	90th	116	116	117	119	120	121	122	75	75	75	76	77	78	78
	95th	119	120	121	123	124	125	126	79	79	79	80	81	82	82
	99th	127	127	128	130	131	132	133	86	86	87	88	88	89	90
13	50th	104	105	106	107	109	110	110	62	62	62	63	64	65	65
	90th	117	118	119	121	122	123	124	76	76	76	77	78	79	79
	95th	121	122	123	124	126	127	128	80	80	80	81	82	83	83
	99th	128	129	130	132	133	134	135	87	87	88	89	89	90	9
14	50th	106	106	107	109	110	111	112	63	63	63	64	65	66	66
	90th	119	120	121	122	124	125	125	77	77	77	78	79	80	80
	95th	123	123	125	126	127	129	129	81	81	81	82	83	84	84
	99th	130	131	132	133	135	136	136	88	88	89	90	90	91	92
15	50th	107	108	109	110	111	113	113	64	64	64	65	66	67	67
	90th	120	121	122	123	125	126	127	78	78	78	79	80	81	8
	95th	124	125	126	127	129	130	131	82	82	82	83	84	85	8
	99th	131	132	133	134	136	137	138	89	89	90	91	91	92	93
16	50th	108	108	110	111	112	114	114	64	64	65	66	66	67	68
	90th	121	122	123	124	126	127	128	78	78	79	80	81	81	82
	95th	125	126	127	128	130	131	132	82	82	83	84	85	85	8
	99th	132	133	134	135	137	138	139	90	90	90	91	92	93	93
17	50th	108	109	110	111	113	114	115	64	65	65	66	67	67	6
	90th	122	122	123	125	126	127	128	78	79	79	80	81	81	82
	95th	125	126	127	129	130	131	132	82	83	83	84	85	85	8
	99th	133	133	134	136	137	138	139	90	90	91	91	92	93	93

BP, blood pressure

^{*} The 90th percentile is 1.28 SD, 95th percentile is 1.645 SD, and the 99th percentile is 2.326 SD over the mean.

For research purposes, the standard deviations in Appendix Table B–1 allow one to compute BP Z-scores and percentiles for girls with height percentiles given in Table 4 (i.e., the 5th, 10th, 25th, 50th, 75th, 90th, and 95th percentiles). These height percentiles must be converted to height Z-scores given by (5% = -1.645; 10% = -1.28; 25% = -0.68; 50% = 0; 75% = 0.68; 90% = 1.28%; 95% = 1.645) and then computed according to the methodology in steps 2–4 described in Appendix B. For children with height percentiles other than these, follow steps 1–4 as described in Appendix B.



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000). http://www.cdc.gov/growthcharts

