

Texas Risk Assessment for Type 2 Diabetes in Children

A Report to the Governor and the
89th Legislature of the State of Texas



The University of Texas
Rio Grande
Valley

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**The University of Texas Rio Grande Valley
College of Health Professions
Border Health Office
Doreen D. Garza, M.P.H., Director
David Salazar, M.S., Associate Director
Robert Puentes, Health Education Coordinator III
Martin Peña, Health Education Coordinator II
Sylvia A. Leal, Program Specialist**

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Texas Education Agency Regional Education Service Center Risk Assessment
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ACKNOWLEDGMENTS

The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program is a legislatively mandated program developed, coordinated, and administrated by The University of Texas Rio Grande Valley College of Health Professions Border Health Office (UTRGV BHO). This school year marks the 24th anniversary of the TRAT2DC program, the state’s only large-scale public health model that identifies at-risk children for the development of type 2 diabetes and other metabolic conditions. Early intervention is crucial to prevent or delay the human suffering associated with diabetes as well as the financial burden that comes with this disease. With great pride, we commend the dedication of the small, but versatile and efficient staff of the Border Health Office, who continue to work hard to fulfill the mission of the TRAT2DC to provide children and their parents with the prospect of a healthier tomorrow.

A healthy Texas begins with our children, and we would like to thank the state leaders who have supported the mission of the TRAT2DC throughout the years. The UTRGV BHO would like to recognize and thank State Senator Jesus “Chuy” Hinojosa, D-District 20 for his continued support and dedication to a healthier Texas. We are grateful for the leadership at UTRGV who believe in the mission of the TRAT2DC program. Our university leaders have been very supportive and have provided additional resources to help the Border Health Office continue this essential public health service throughout the years. We want to thank UTRGV President Dr. Guy Bailey and Dr. Michael Lehker, Dean of the College of Health Professions for their support. We would also like to thank Ms. Veronica Gonzalez, Senior Vice President for Governmental and Community Relations, and Mr. Richard Sanchez, Associate Vice President for Governmental Relations, who continue to advocate for this program and help communicate the impact of the TRAT2DC.

Most importantly, we would like to thank all the school nurses across the state of Texas who have supported the program throughout the years. The wisdom and guidance that they provide to this program as well as their dedication to their profession have had a positive impact on children’s health across the state of Texas. Remember to say “thank you” to a school nurse.

MESSAGE FROM THE DIRECTOR

The public health foundation for The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program is secondary prevention, which is the early detection of disease in asymptomatic, apparently healthy individuals. Diabetes and its risk factors can often go unrecognized and can cause severe morbidity, especially in children - where risk factors can be present but not anticipated. The presumptive identification of unrecognized disease by the application of quick, non-invasive examinations that can be conducted rapidly and conveniently is the cornerstone of the TRAT2DC program. The TRAT2DC program is the first crucial step in helping parents to prevent their children from developing diabetes. It does this by screening for risk factors for the development of type 2 diabetes that might go unnoticed.

The impact of the TRAT2DC program's screenings and diagnosis of type 2 diabetes and other conditions is highlighted in this report. The awareness and education promoted through the TRATDC2 program, as well as physician response to the risk assessment referral, can be seen by utilizing Texas Health and Human Services Commission Medicaid/CHIP claims data on CPT Code 701.2 Acquired Acanthosis Nigricans (AN). Because the TRAT2DC program focuses on the Acanthosis Nigricans marker as the primary screening risk factor, the likelihood is great that the program has contributed to the following diagnosis for the years 2018-2021:

Diagnosis of Children with Type 2 Diabetes: 6,745

Diagnosis of Children with Type 1 Diabetes: 1,421

Diagnosis of Children with Prediabetes: 4,495

Diagnosis of Children with Metabolic Syndrome: 7,220

(Metabolic syndrome is a cluster of conditions that increase your risk of heart disease, stroke, and type 2 diabetes)

This is why the Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program is such a valuable asset to the state of Texas. The risk assessments that are conducted as a part of this program can help families become aware of these risk factors for obesity and diabetes and give them the opportunity to make lifestyle changes that are necessary to reverse the course of these conditions for their children and perhaps even themselves.

In addition, the TRAT2DC program provides schools and researchers with important information to help schools and communities be healthier by making risk assessment data readily available. This report includes a descriptive presentation of risk assessments that were conducted in Texas Education Agency (TEA) Education Service Center (ESC) Regions 1, 2, 3, 4, 10, 11, 13, 15, 18, 19, and 20 for the 2022-2023 and 2023-2024 school years.

The Texas Risk Assessment for Type 2 Diabetes in Children program continues to support the Texas Diabetes Council's state plan for diabetes prevention and control. The risk assessment information is available to school administrators via the UTRGV BHO Risk Factor Electronic System website by state, Regional Education Service Center (ESC), school district, and individual schools. Risk assessment fact sheets by state and Regional ESCs for the 2022-2023 and 2023-2024 reporting periods are included in this report.

Doreen D. Garza, MPH

Director

The University of Texas Rio Grande Valley

College of Health Professions

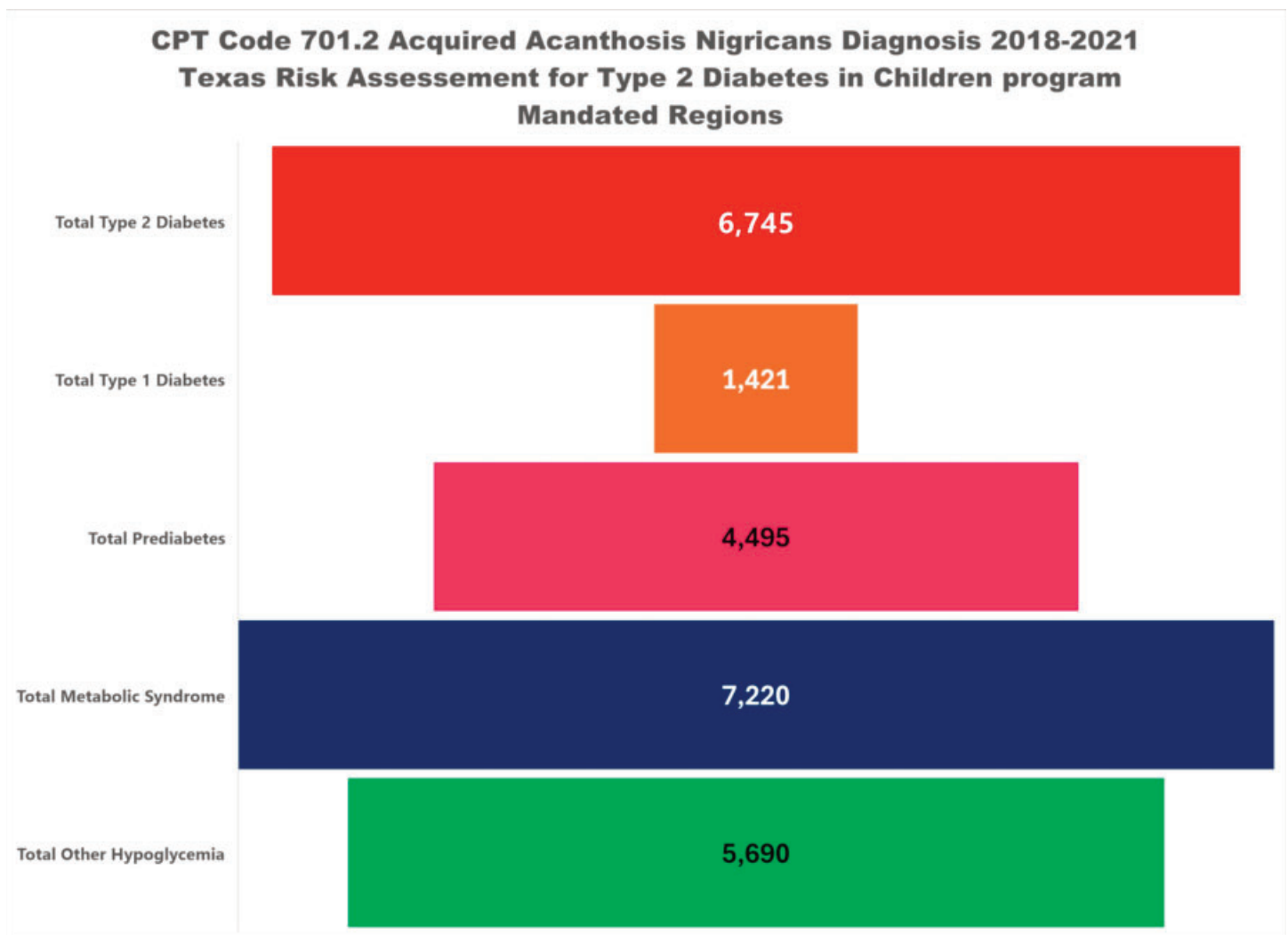
Border Health Office

THE IMPACT OF THE TRAT2DC PROGRAM'S SCREENINGS AND DIAGNOSIS OF TYPE 2 DIABETES

The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program is the only secondary prevention effort in Texas that identifies children in public and private schools for diabetes risk. School nurses, trained by the program, conduct quick, non-invasive examinations for type 2 diabetes risk factors. School nurses issue referrals to the parents of the children who were identified with risk factors, explaining the screening, and encouraging the family to seek a health professional for further evaluation. Through these efforts, families become more aware of the signs and risks for type 2 diabetes. As a result, families then have the potential to provide life-saving care to their children and provide the medical community with opportunities to respond before diabetes and its related conditions develop or progress.

The impact of the TRAT2DC program's screenings and diagnosis of type 2 diabetes and other conditions is seen in the chart below. The awareness and education promoted through the TRATDC2 program, as well as physician response to the risk assessment referral, can be seen by utilizing Texas Health and Human Services Commission Medicaid/CHIP claims data on CPT Code 701.2 Acquired Acanthosis Nigricans (AN).

Because the TRAT2DC program focuses on the Acanthosis Nigricans marker as the primary screening risk factor, the likelihood is great that the program has contributed to the following diagnosis for the years 2018-2021:



Texas Risk Assessment for Type 2 Diabetes in Children Program

The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) is a state mandated program developed, coordinated, and administrated by The University of Texas Rio Grande Valley (UTRGV) College of Health Professions (COHP) Border Health Office (BHO). This program helps assess children who may be at high risk to develop type 2 diabetes. This assessment is conducted in public and private schools during vision/hearing and scoliosis screenings by individuals, mainly school nurses, who have been certified by the BHO to conduct and report the risk assessments.

Every year during vision/hearing and scoliosis screenings, children in 1st, 3rd, 5th, and 7th grades are assessed for the acanthosis nigricans marker - a skin marker that signals high insulin levels. Children who are identified with the marker are also assessed to determine body mass index (BMI) and blood pressure.

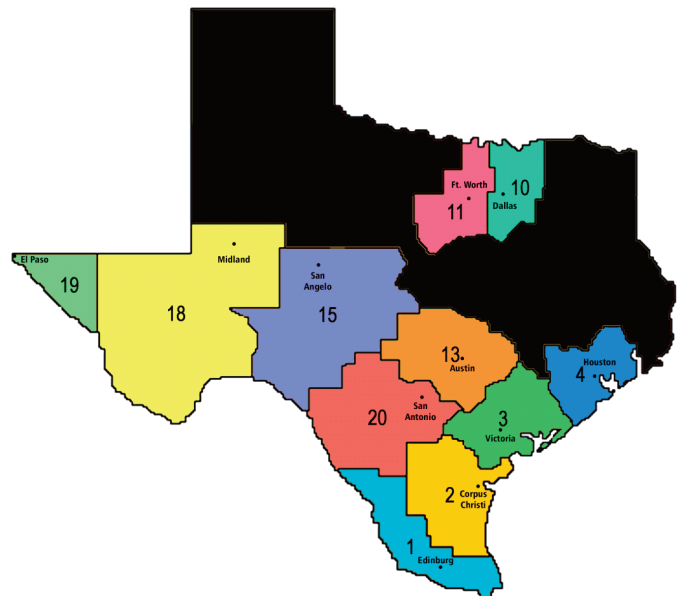
Risk assessment referrals are issued to the parents of these children, alerting parents of the child’s risk factors and encouraging further evaluation from a health professional. The risk assessment referrals have been effective in getting at-risk children to seek appropriate follow-up evaluation/testing from a health care provider to prevent or delay future health problems.

The program assesses children who may be at-risk to develop type 2 diabetes in Texas Education Agency (TEA) Education Service Center (ESC) Regions 1, 2, 3, 4, 10, 11, 13, 15, 18, 19, and 20. The program also encourages and provides support to other TEA ESC Regions who are not identified by the mandate to conduct risk assessments as funding allows.

Total Number of Children Assessed (Grades 1st, 3rd, 5th, and 7th)

ESC	2022-2023	2023-2024
Region 1	102,667	103,551
Region 2	21,767	24,738
Region 3	13,594	13,503
Region 4	289,367	272,470
Region 10	188,529	188,289
Region 11	122,990	127,764
Region 13	90,663	99,469
Region 15	10,813	10,779
Region 18	25,589	22,665
Region 19	33,198	31,054
Region 20	114,430	116,664
Other	5,979	7,910
Total	1,019,586	1,018,856

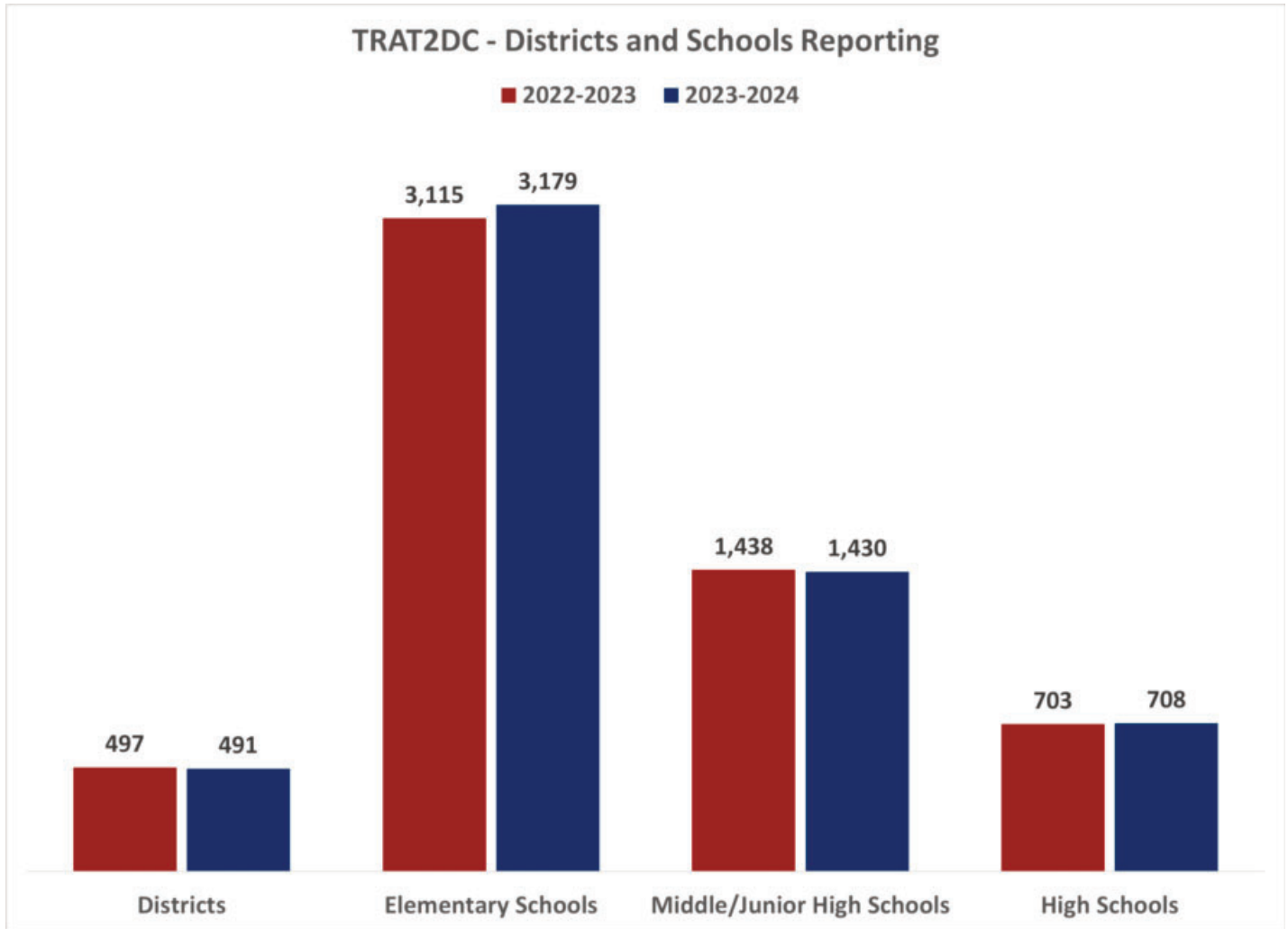
TRAT2DC Risk Assessment Map (11 TEA ESC Regions)



The TRAT2DC program assesses school children in grades 1st, 3rd, 5th, and 7th in public and private schools throughout the state of Texas each year for risk factors associated with type 2 diabetes. The figure above represents the number of children who were assessed during the 2022-2023 and 2023-2024 school years.

Public and Private Schools Reporting

Legislation mandates that the TRAT2DC program conduct risk assessments for children attending 1st, 3rd, 5th, and 7th grades in public and private schools within the required 11 TEA ESC Regions. Most of the risk assessments are conducted by certified individuals in elementary and middle schools, with some districts carrying out the assessments in high school if they choose to conduct the assessment beyond the required grades. Prior to the start of each school year, the UTRGV COHP BHO provides program updates to participating districts and schools by correspondence or via website. BHO health education coordinators also contact participating districts for any changes regarding personnel responsible for conducting the risk assessments and the inclusion or removal of campuses to the TRAT2DC database.



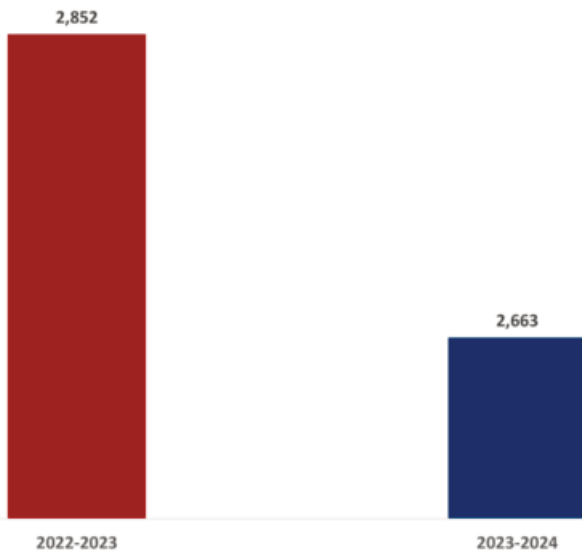
The TRAT2DC program conducts risk assessments for children attending 1st, 3rd, 5th, and 7th grades in public and private schools within the required 11 TEA ESC Regions, with most assessments being conducted in elementary and middle schools.

TRAT2DC Training/Certification and Risk Factor Electronic System

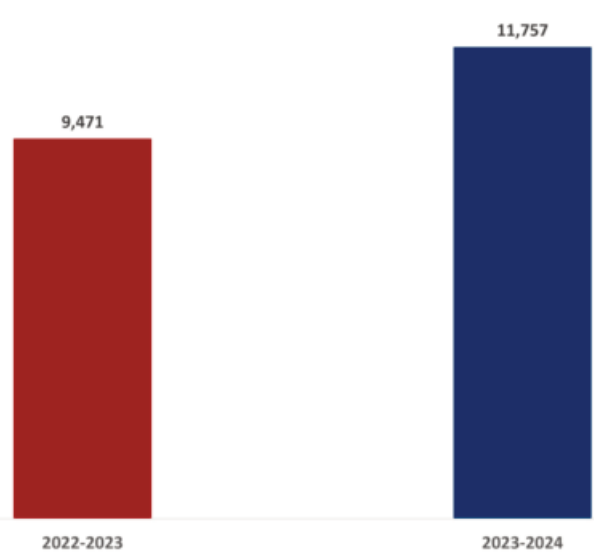
The UTRGV CoHP BHO provides training and certification to school nurses or other designated individuals assigned to conduct risk assessments. Requests for materials, training, and technical support for the Risk Factor Electronic System (RFES) is also provided by the BHO. The TRAT2DC RFES is a unique secure-access, web-based risk assessment software that is mission critical to the UTRGV CoHP BHO in order to fulfill requirements and responsibilities of the TRAT2DC program. The RFES is an indispensable complement to the TRAT2DC program because it eliminates the need for manual calculation and interpretation of the raw information being entered into the system. The RFES is also capable of plotting and printing individual growth charts and providing referral forms with the result and description of each assessment conducted (AN, BMI, and blood pressure).

Risk assessment certification offered through the TRAT2DC RFES is valid for 5 years. New users and users with expired certifications must complete and pass all modules associated with training in order to obtain certification. Risk assessment training and certification is an important on-going activity as new nurses are hired by districts every year due to growth or turnover. The UTRGV COHP BHO estimates that over 95% of individuals needing certification is achieved through the online certification system.

TRAT2DC - Trained and Certified Individuals



TRAT2DC - Risk Factor Electronic System Users



The UTRGV CoHP BHO provides training and certification to school nurses or other designated individuals assigned to conduct risk assessments. Risk assessment certification offered through the TRAT2DC RFES is valid for 5 years. The number of individuals who were trained and certified to conduct risk assessments was 2,852 in 2022-2023 and 2,663 in 2023-2024.

The TRAT2DC RFES is a unique secure-access, web-based risk assessment software that is mission critical to the UTRGV COHP BHO in order to fulfill requirements and responsibilities of the TRAT2DC program. The number of RFES users increased by 2,286 between the 2022-2023 and 2023-2024 reporting periods.

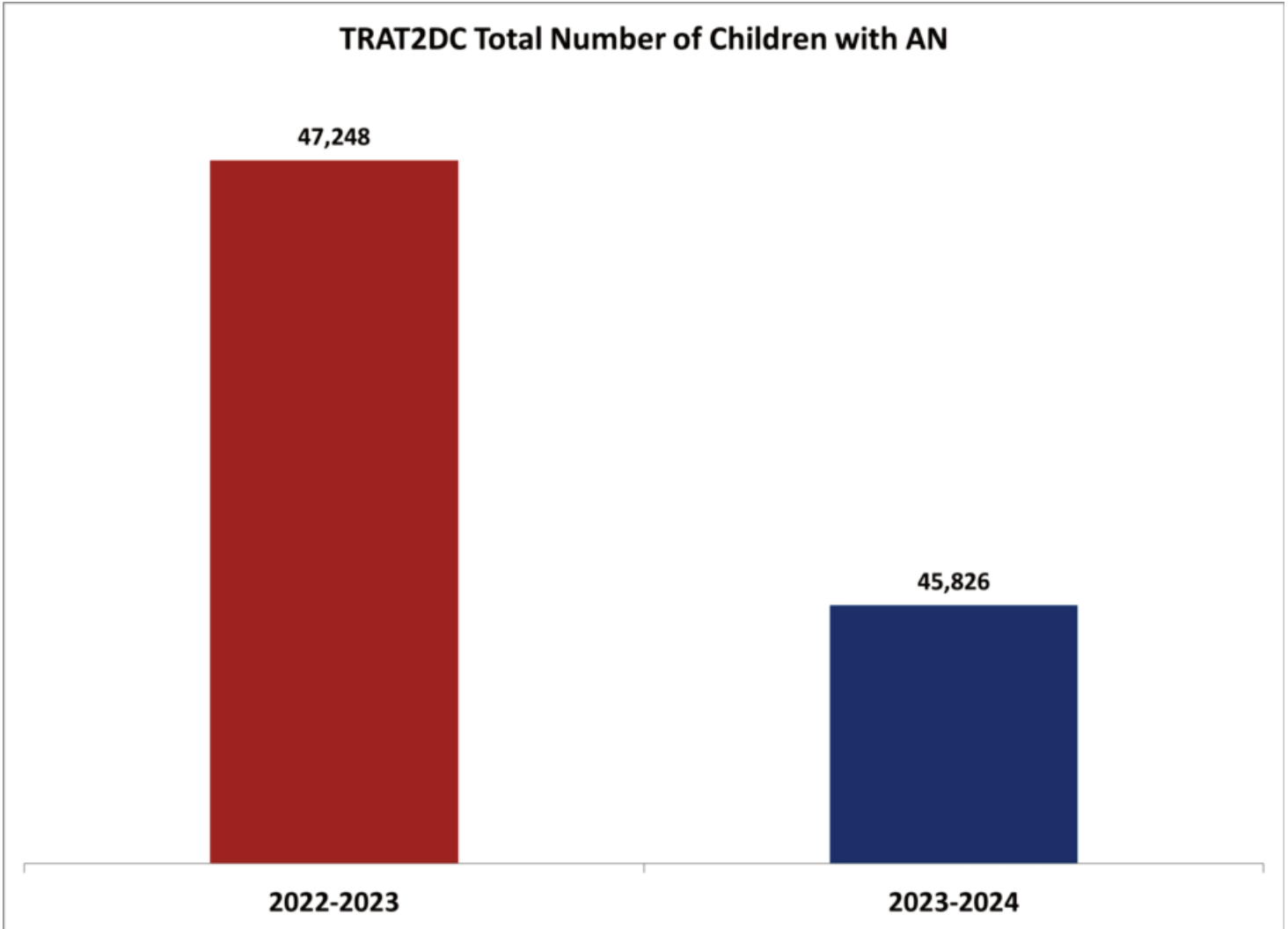
Risk Assessments

Acanthosis Nigricans

Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for type 2 diabetes and other chronic diseases. Because of the increasingly alarming rates of children developing type 2 diabetes, AN assessments are important and can help identify children with high insulin levels who may be at-risk for developing the disease.



Acanthosis Nigricans(AN)

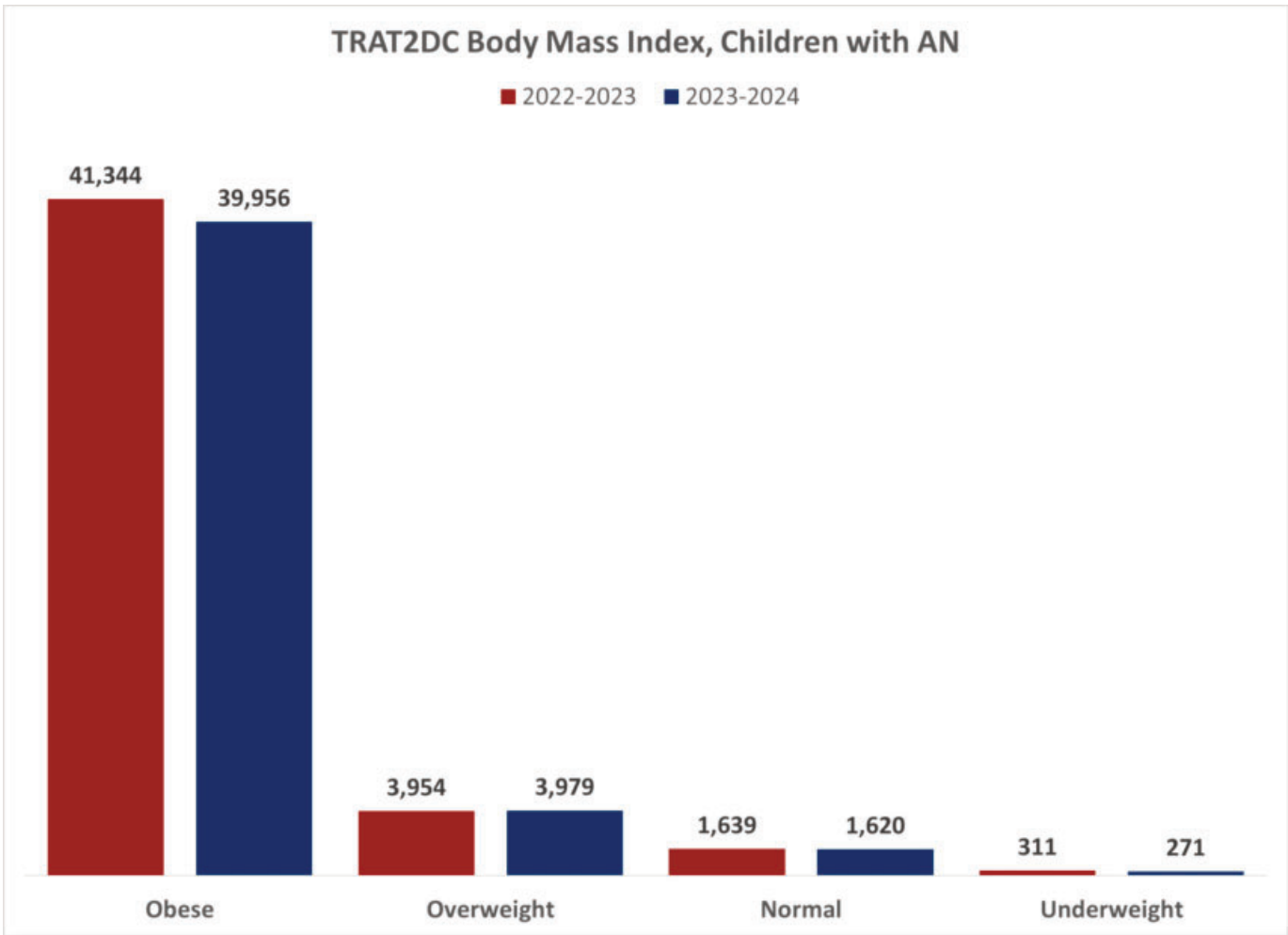


Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for type 2 diabetes and other chronic diseases. During the 2022-2023 reporting period, 47,248 children were identified with the AN marker while 45,826 children were reported as having the marker in the 2023-2024 reporting period.

Risk Assessments

Body Mass Index

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. After BMI is calculated for children and teens with acanthosis nigricans, the BMI number is plotted on the Centers for Disease Control and Prevention (CDC) BMI-for-age growth charts. BMI categories are obese, overweight, normal, and underweight. A child with a BMI greater or equal to the 95th percentile is considered obese and has a greater chance of maintaining obesity into adulthood. This is also significant since studies have shown that BMI above the 95th percentile is associated with elevated blood pressure, hyperlipidemia, and obesity-related disease and mortality. A child whose BMI falls between the 85th and 94th percentile is considered overweight and should be evaluated carefully and should be given particular attention to secondary complications of obesity.



Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. The graph above illustrates the number of children with AN who were identified as obese, overweight, normal, or underweight for the 2022-2023 and 2023-2024 reporting periods. Most children with the AN marker are above the 95th percentile for body mass index for age despite the difference in numbers between reporting periods due to COVID-19 pandemic.

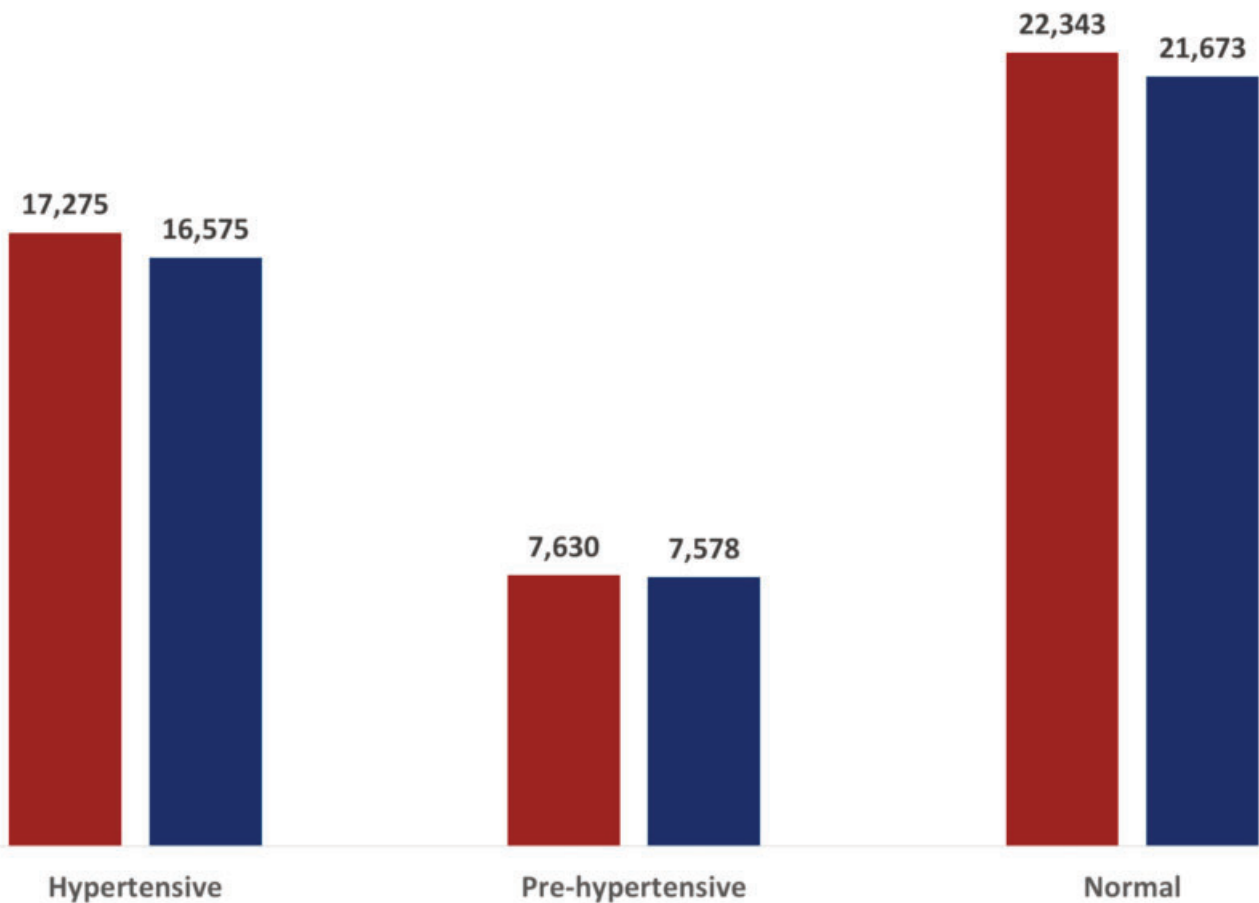
Risk Assessments

Blood Pressure

Hypertension increases the risk for cardiovascular disease and is a complication of obesity. Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to track blood pressure in children. As part of this program, certified personnel perform two blood pressure readings on children who have the AN marker. Blood pressure is taken on the child’s right arm in a controlled environment, allowing three-to-five minutes of rest in between each reading as recommended by the National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

TRAT2DC - Blood Pressure, Children with AN

■ 2022-2023 ■ 2023-2024

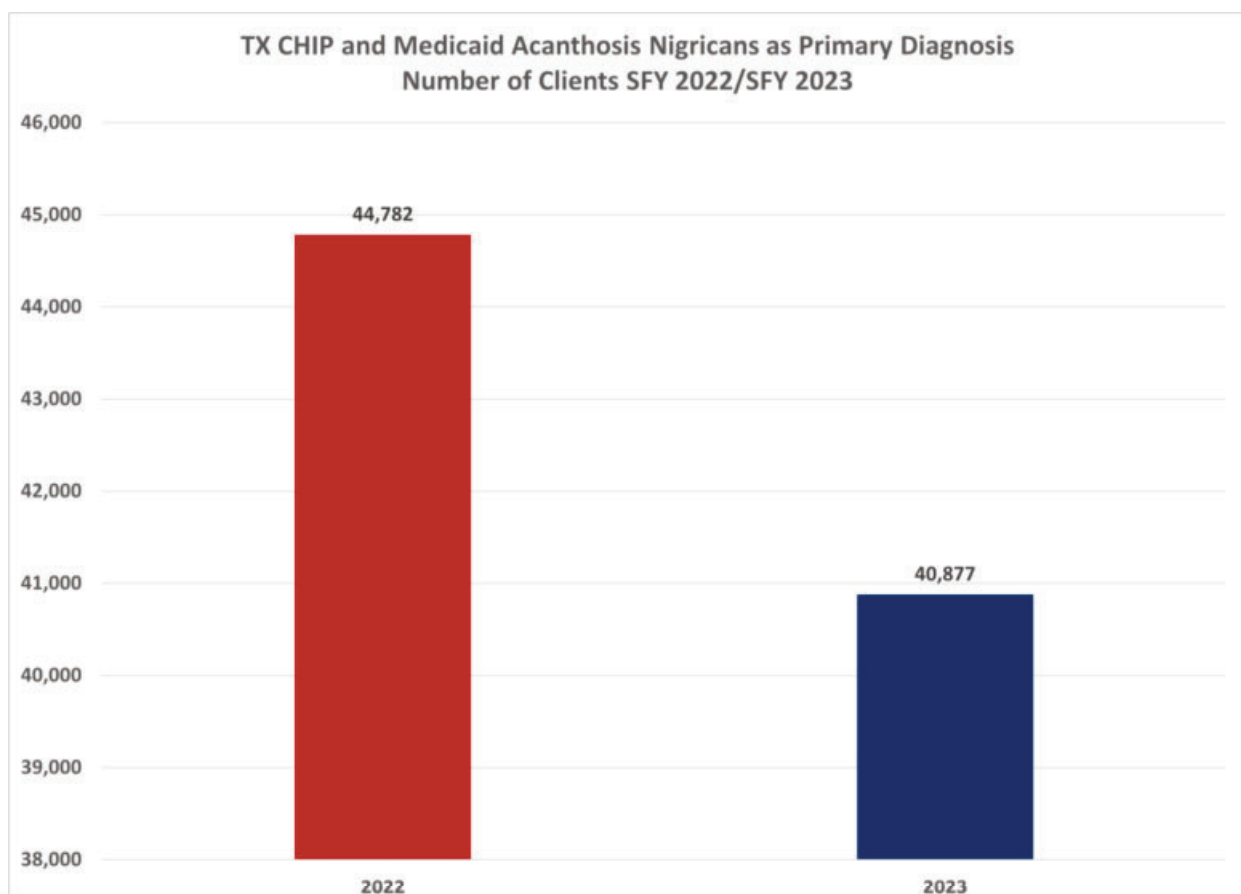


Hypertension increases the risk for cardiovascular disease and is a complication of obesity. Hypertension is also associated with insulin resistance and hyperinsulinemia. Thirty-six percent and 16% of children with AN were classified as hypertensive and prehypertensive, respectively, for both reporting periods.

Risk Assessment Referral Results/International Classification of Diseases-9 CPT Code 701.2 Acquired Acanthosis Nigricans Member Claim/Encounter Data

The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program helps identify those children who may be at-risk to develop type 2 diabetes through simple, non-invasive assessments that have been identified as risk factors for the development of the disease and other complications. During vision/hearing and scoliosis screenings, certified individuals assess school children for these risk factors. If these risk factors are present, a referral is issued to the parents of the child explaining what was found and why it is of concern. The referral includes recommendations to seek further evaluation from a health care professional.

Texas Department of State Health Services Medicaid/CHIP claims data helps understand the medical community's response to the Texas Risk Assessment for Type 2 Diabetes in Children program. Data on International Classification of Diseases (ICD-9) Code 701.2 Acquired Acanthosis Nigricans (AN) claims/encounters among children 0-17 years of age shows an increase since the program began in 1999.



Medicaid/CHIP data for ICD-9 Code 701.2 in FY 2022 (44,782 client claims) and FY 2023 (40,877 client claims) suggest that families are following up on their child's risk assessment referral with a health care professional. This data reflects the awareness and education promoted through the TRATDC2 program as well as physician response to the risk assessment referral.

Data Source:

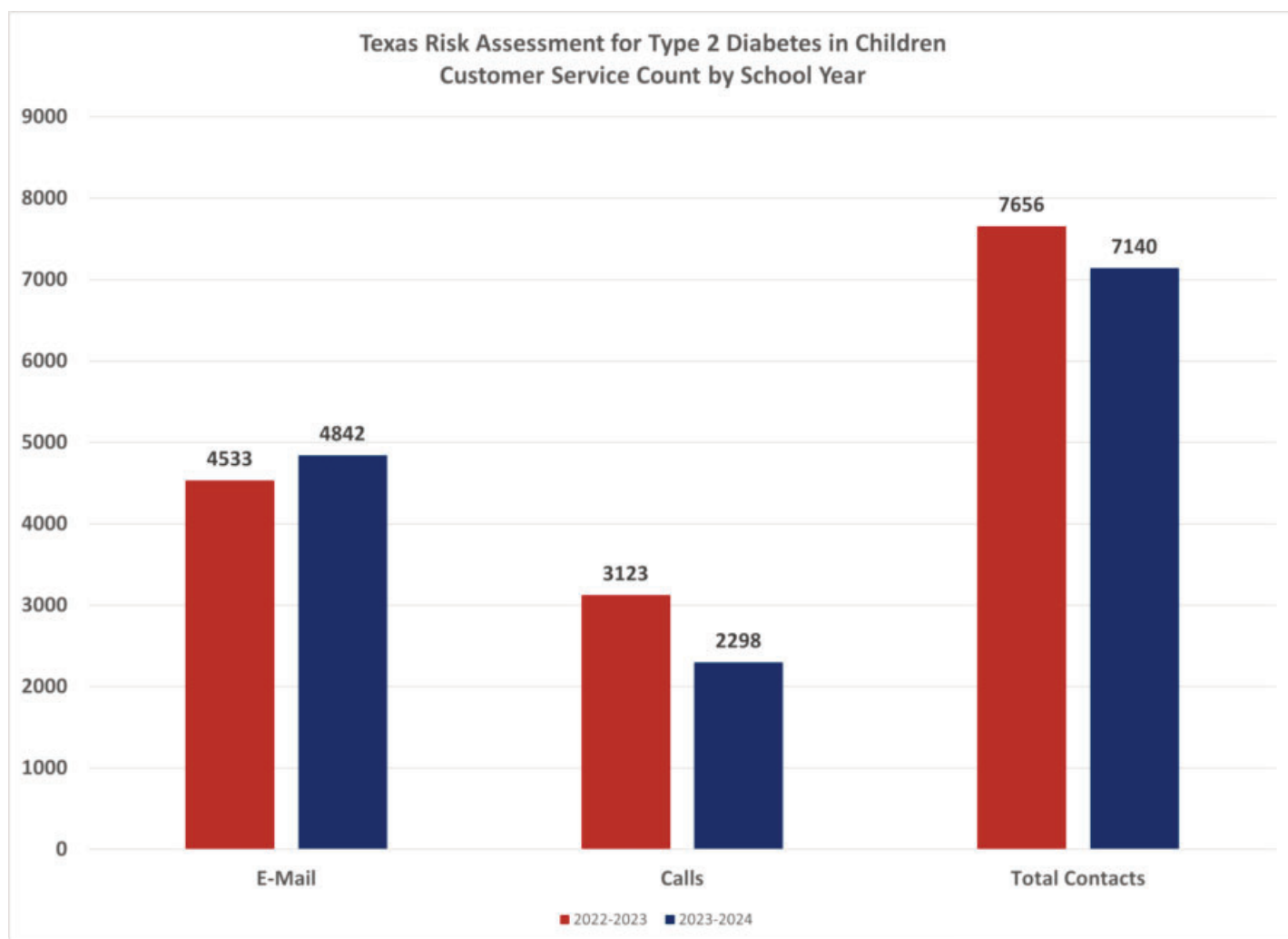
AHQP Claims Universe, TMHP; Enc_Best Picture Universe, TMHP; 8mo Eligibility and CHIP HX Eligibility tables HHSC.

Prepared By:

Data Dissemination & Reporting, Office of Data, Analytics, and Performance, Texas Health and Human Services Commission, July 2024 (ACC/BB)

Technical/Educational Services & TRAT2DC Budget

The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program provides risk assessment training and certification to school nurses or other certified individuals. Training and certification is an important on-going activity as new nurses are hired by districts every year due to growth or turnover. Technical assistance is provided by 2 health education coordinators that are assigned, but not restricted to, certain Texas Education Agency Regional Education Service Centers. Requests for materials, training, and technical support for the Risk Factor Electronic System is also provided by these coordinators. Providing these services is pertinent to the success of the program. Services are provided year round.



The Texas Risk Assessment for Type 2 Diabetes in Children program provides risk assessment training and certification to school nurses or other certified individuals. This graph shows number of service calls and technical support that the Border Health Office provided during the 2022-2023 and 2023-2024 reporting periods.

The TRAT2DC program provides educational materials to school nurses/certified individuals who take part in the risk assessments. These materials are an excellent resource for parents. A colorful, easy-to-read bilingual foldout brochure is available for comprehensible use by school nurses to assist in educating parents and the community-at-large about the TRAT2DC program and the risk factors assessments. Training posters that include helpful tips on how to identify and assess for the acanthosis nigricans marker are provided by request.

The TRAT2DC program is funded in the amount of \$104,201 annually.

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**TEXAS RISK ASSESSMENT FOR TYPE 2 DIABETES IN CHILDREN PROGRAM
TEXAS EDUCATION AGENCY REGIONAL EDUCATION SERVICE CENTER
2022-2023/2023-2024 FACT SHEETS**

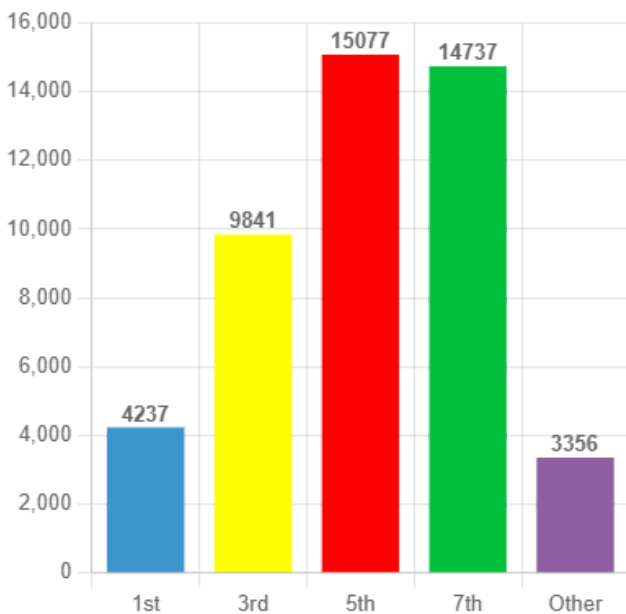
MANDATED REGIONS 2022-2023

The Texas Risk Assessment for Type 2 Diabetes in Children is a state mandated program developed, coordinated, and administrated by The University of Texas Rio Grande Valley College of Health Professions Border Health Office. This program helps assess children who may be at high risk to develop type 2 diabetes. Every year during vision/hearing and scoliosis screenings, children in 1st, 3rd, 5th, and 7th grades are assessed for the acanthosis nigricans marker - a skin marker that signals high insulin levels. Children who are identified with the marker are also assessed to determine body mass index (BMI) and blood pressure. These are the results:

Risk Assessment Data	Referral Information	
Total Children Assessed: 1019586	Seen by health care provider: 3806	Not Seen by health care provider: 164
Total Acanthosis Nigricans: 47248	Already under care: 643	Referral not issued: 32
		Referral not returned: 36326

Acanthosis Nigricans (AN)

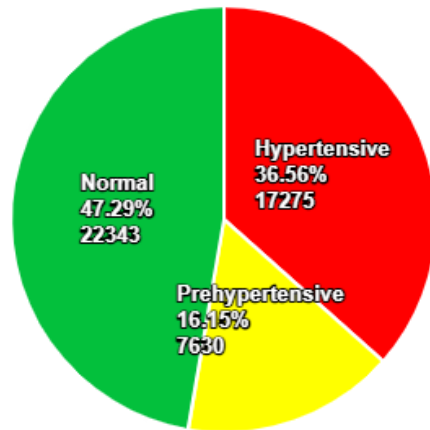
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

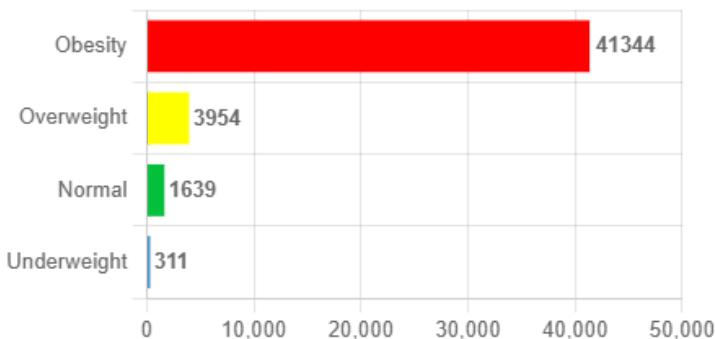
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	1400	3323	5336	5881	1335
Prehypertensive	624	1576	2505	2394	531
Normal	2213	4942	7236	6462	1490



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



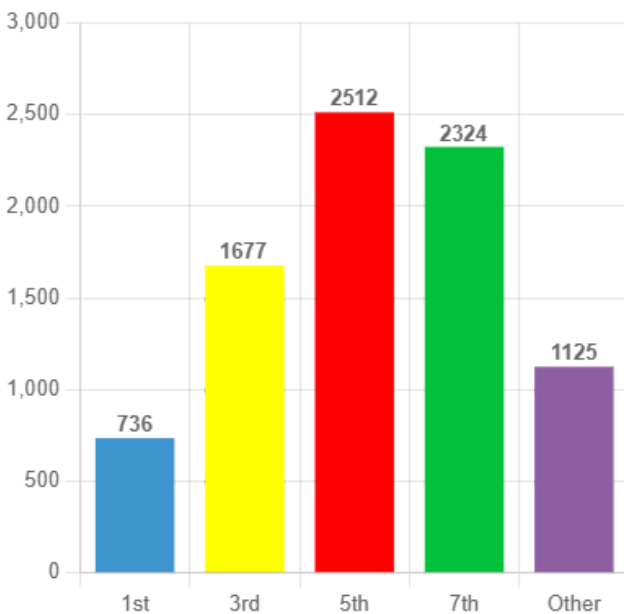
	1st	3rd	5th	7th	Other
Obesity	3743	8725	13194	12637	3045
Overweight	211	733	1360	1432	218
Normal	223	316	421	607	72
Underweight	60	67	102	61	21

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Risk Assessment Data	Referral Information	
Total Children Assessed: 102667	Seen by health care provider: 932	Not Seen by health care provider: 24
Total Acanthosis Nigricans: 8374	Already under care: 131	Referral not issued: 10
		Referral not returned: 5589

Acanthosis Nigricans (AN)

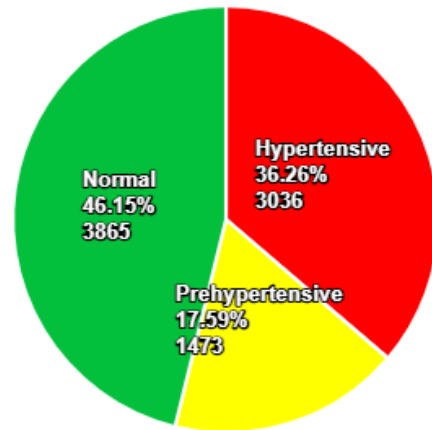
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Blood Pressure - Children with AN

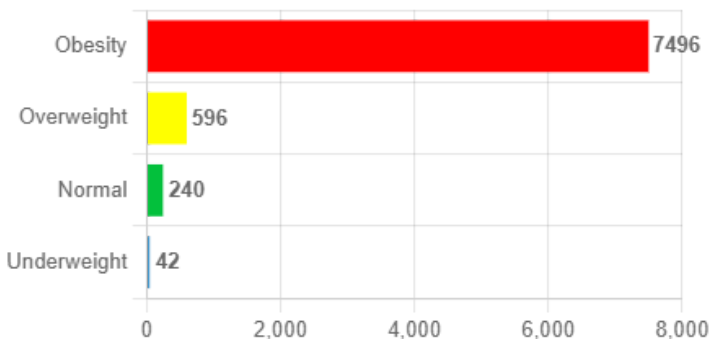
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	239	529	887	918	463
Prehypertensive	113	294	440	429	197
Normal	384	854	1185	977	465



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



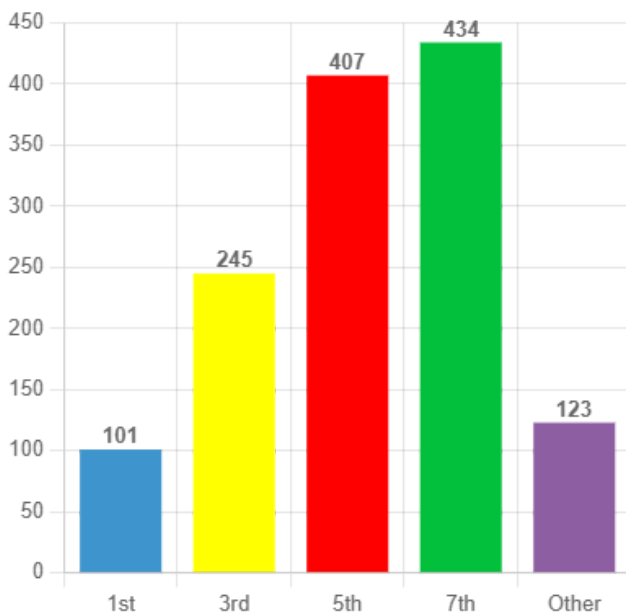
	1st	3rd	5th	7th	Other
Obesity	665	1530	2224	2042	1035
Overweight	30	98	202	198	68
Normal	35	40	78	70	17
Underweight	6	9	8	14	5

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Risk Assessment Data	Referral Information	
Total Children Assessed: 21767	Seen by health care provider: 133	Not Seen by health care provider: 4
Total Acanthosis Nigricans: 1310	Already under care: 40	Referral not issued: 1
		Referral not returned: 1083

Acanthosis Nigricans (AN)

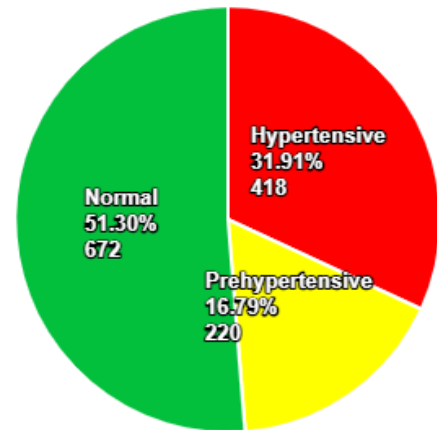
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Blood Pressure - Children with AN

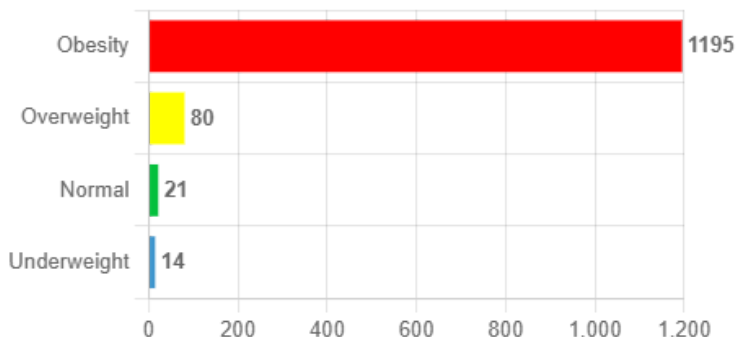
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	38	56	109	169	46
Prehypertensive	12	43	73	70	22
Normal	51	146	225	195	55



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



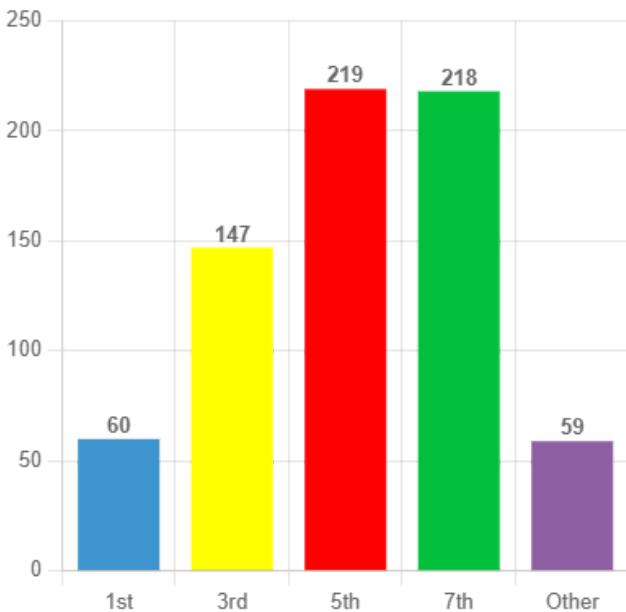
	1st	3rd	5th	7th	Other
Obesity	96	223	367	394	115
Overweight	2	15	26	29	8
Normal	1	5	5	10	0
Underweight	2	2	9	1	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 13594	Seen by health care provider: 93	Not Seen by health care provider: 2
Total Acanthosis Nigricans: 703	Already under care: 14	Referral not issued: 568
		Referral not returned: 568

Acanthosis Nigricans (AN)

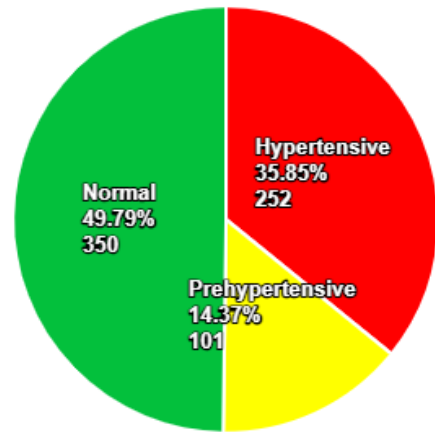
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Blood Pressure - Children with AN

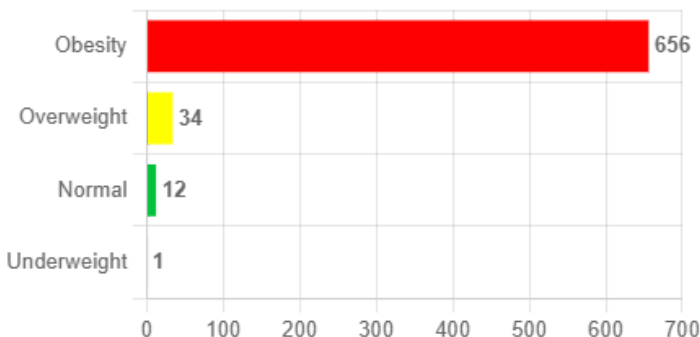
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	16	51	75	94	16
Prehypertensive	5	26	35	32	3
Normal	39	70	109	92	40



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



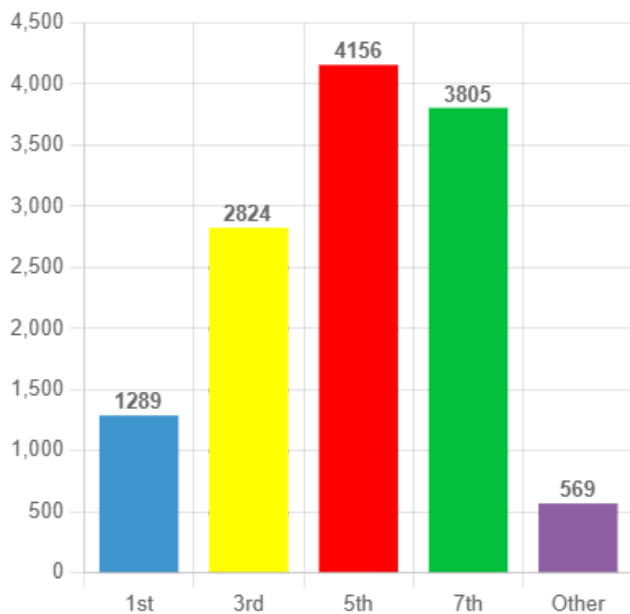
	1st	3rd	5th	7th	Other
Obesity	55	141	208	197	55
Overweight	3	3	10	14	4
Normal	1	3	1	7	0
Underweight	1	0	0	0	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 289367	Seen by health care provider: 853	Not Seen by health care provider: 59
Total Acanthosis Nigricans: 12643	Already under care: 116	Referral not issued: 4
		Referral not returned: 9997

Acanthosis Nigricans (AN)

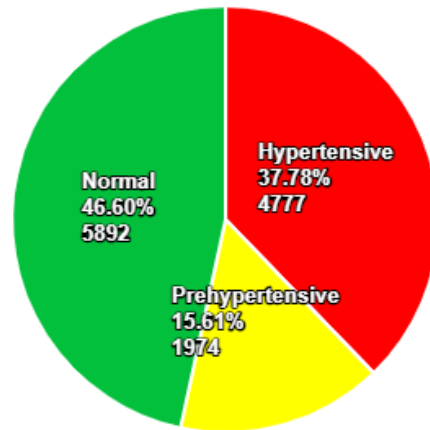
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Blood Pressure - Children with AN

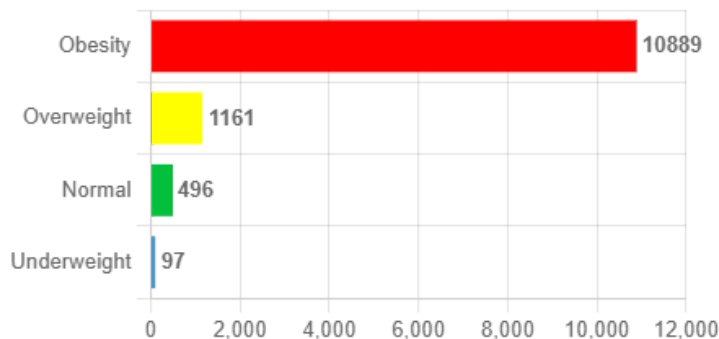
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	430	1036	1544	1557	210
Prehypertensive	183	444	675	579	93
Normal	676	1344	1937	1669	266



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



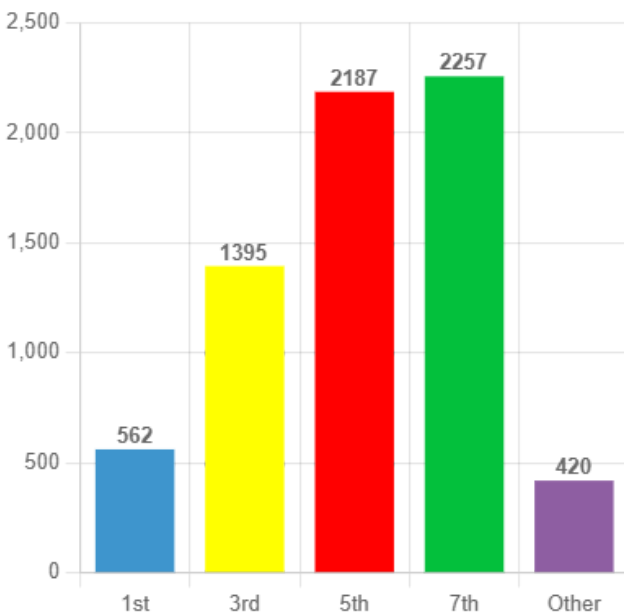
	1st	3rd	5th	7th	Other
Obesity	1116	2438	3608	3207	520
Overweight	80	260	390	392	39
Normal	75	99	126	187	9
Underweight	18	27	32	19	1

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Risk Assessment Data	Referral Information	
Total Children Assessed: 188529	Seen by health care provider: 556	Not Seen by health care provider: 38
Total Acanthosis Nigricans: 6821	Already under care: 97	Referral not issued:
		Referral not returned: 5063

Acanthosis Nigricans (AN)

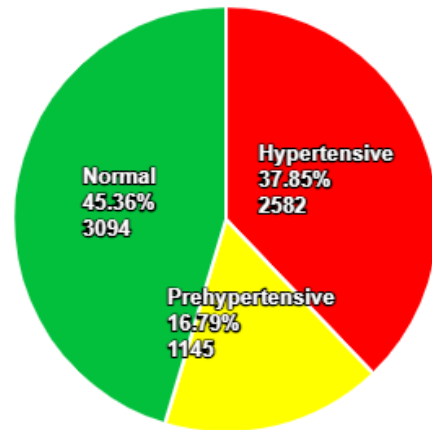
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Blood Pressure - Children with AN

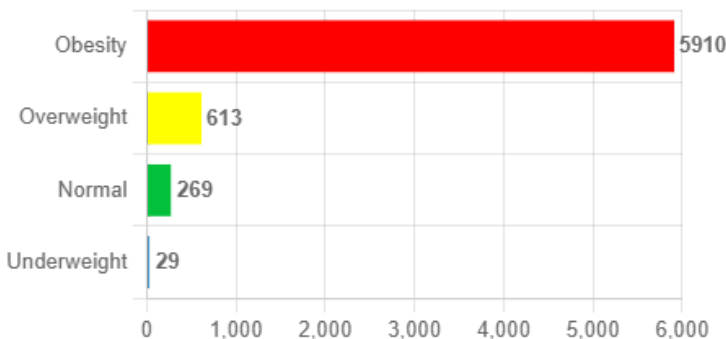
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	190	495	796	914	187
Prehypertensive	92	230	387	380	56
Normal	280	670	1004	963	177



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



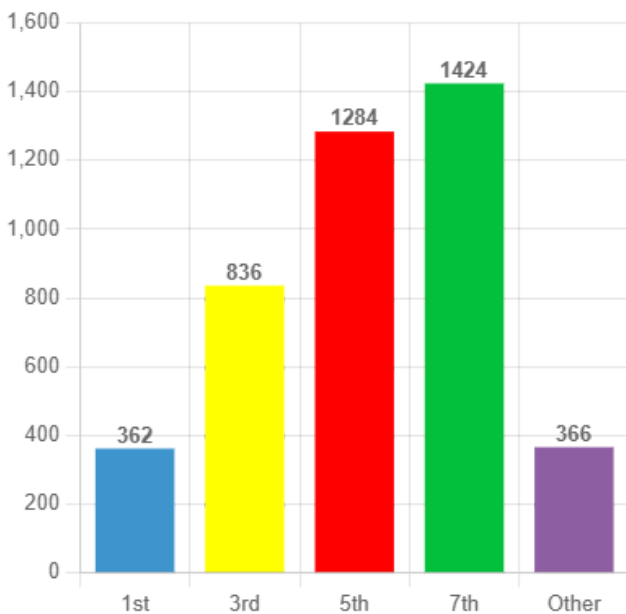
	1st	3rd	5th	7th	Other
Obesity	480	1246	1905	1916	363
Overweight	36	96	212	232	37
Normal	36	51	68	95	19
Underweight	10	2	2	14	1

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Risk Assessment Data	Referral Information	
Total Children Assessed: 122990	Seen by health care provider: 254	Not Seen by health care provider: 8
Total Acanthosis Nigricans: 4272	Already under care: 52	Referral not issued: 1
		Referral not returned: 3736

Acanthosis Nigricans (AN)

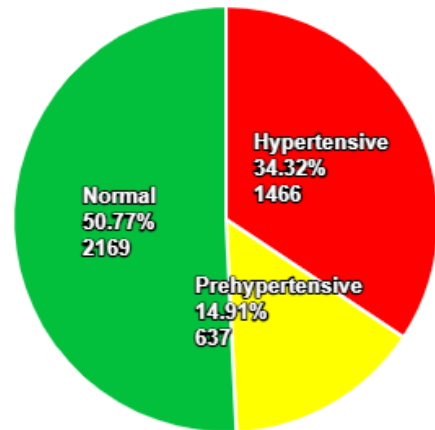
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Blood Pressure - Children with AN

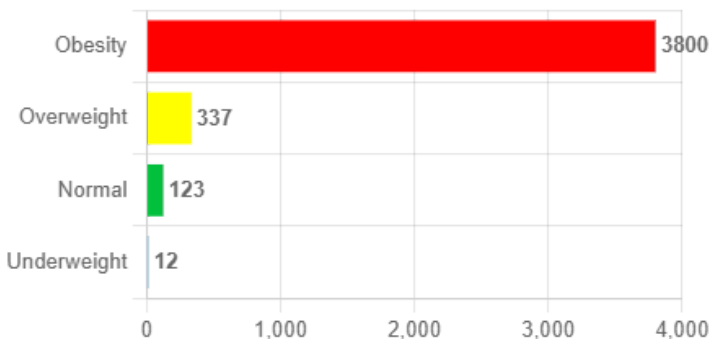
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	100	261	429	541	135
Prehypertensive	57	107	203	217	53
Normal	205	468	652	666	178



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



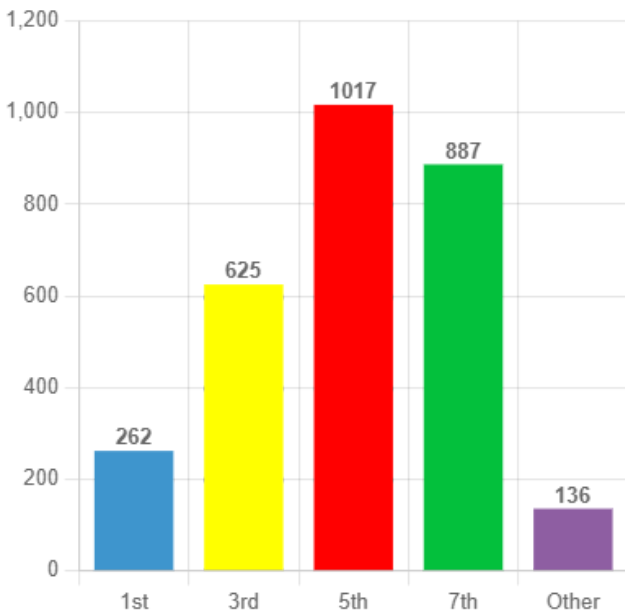
	1st	3rd	5th	7th	Other
Obesity	328	756	1161	1225	330
Overweight	6	58	104	146	23
Normal	25	19	17	52	10
Underweight	3	3	2	1	3

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Risk Assessment Data	Referral Information	
Total Children Assessed: 90663	Seen by health care provider: 164	Not Seen by health care provider: 6
Total Acanthosis Nigricans: 2927	Already under care: 20	Referral not issued: 4
		Referral not returned: 2521

Acanthosis Nigricans (AN)

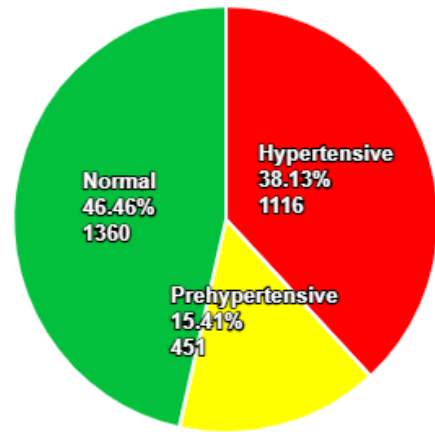
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Blood Pressure - Children with AN

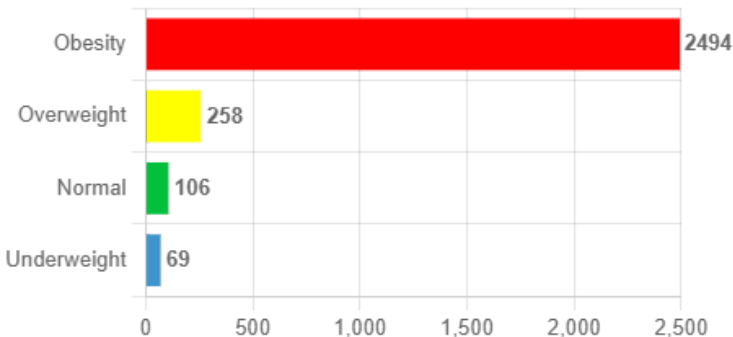
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	94	223	332	413	54
Prehypertensive	36	88	164	137	26
Normal	132	314	521	337	56



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



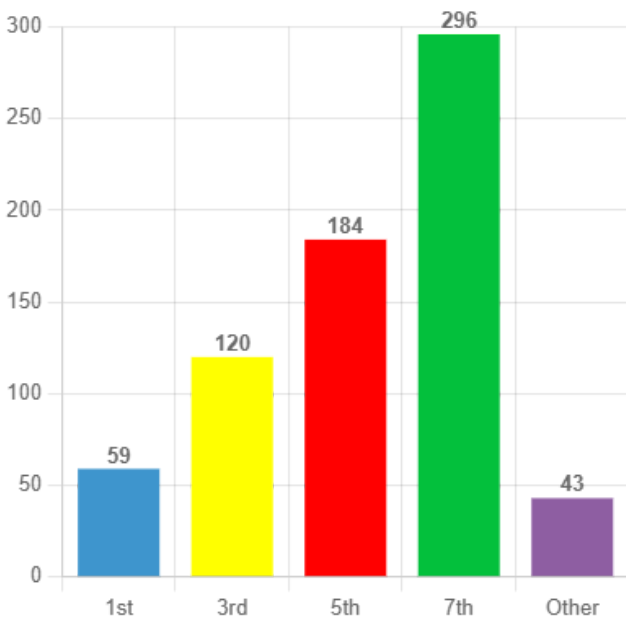
	1st	3rd	5th	7th	Other
Obesity	238	529	850	759	118
Overweight	11	53	102	87	5
Normal	8	25	30	37	6
Underweight	5	18	35	4	7

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Risk Assessment Data	Referral Information	
Total Children Assessed: 10813	Seen by health care provider: 48	Not Seen by health care provider: 3
Total Acanthosis Nigricans: 702	Already under care: 23	Referral not issued: 1
		Referral not returned: 615

Acanthosis Nigricans (AN)

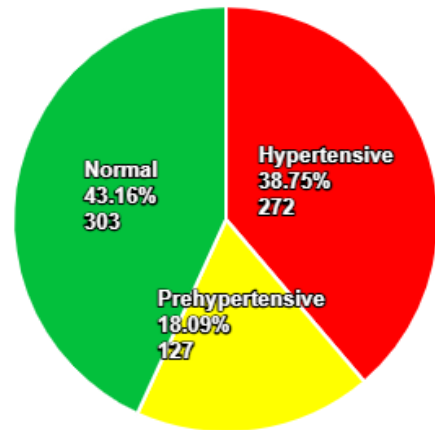
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Blood Pressure - Children with AN

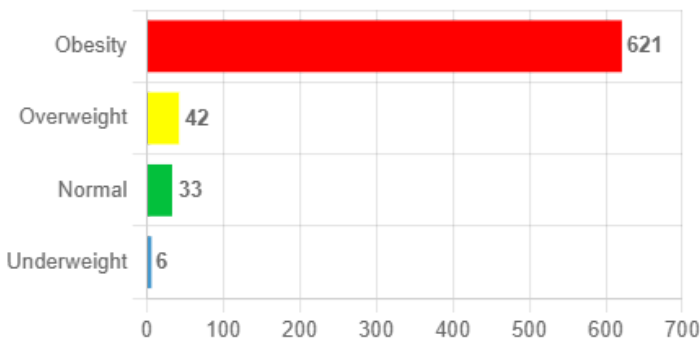
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	18	40	71	127	16
Prehypertensive	11	26	38	43	9
Normal	30	54	75	126	18



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



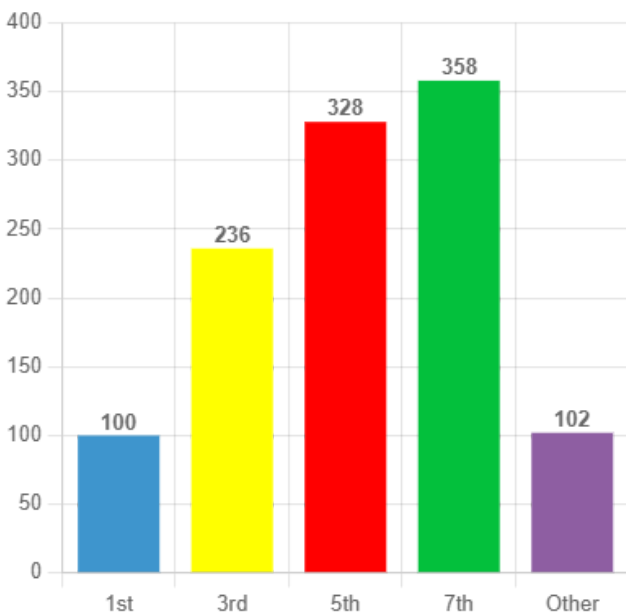
	1st	3rd	5th	7th	Other
Obesity	49	104	153	276	39
Overweight	2	10	18	10	2
Normal	8	6	12	6	1
Underweight	0	0	1	4	1

The Texas Risk Assessment for Type 2 Diabetes in Children is a state mandated program developed, coordinated, and administrated by The University of Texas Rio Grande Valley College of Health Professions Border Health Office. This program helps assess children who may be at high risk to develop type 2 diabetes. Every year during vision/hearing and scoliosis screenings, children in 1st, 3rd, 5th, and 7th grades are assessed for the acanthosis nigricans marker - a skin marker that signals high insulin levels. Children who are identified with the marker are also assessed to determine body mass index (BMI) and blood pressure. These are the results:

Risk Assessment Data	Referral Information	
Total Children Assessed: 25589	Seen by health care provider: 108	Not Seen by health care provider: 1
Total Acanthosis Nigricans: 1124	Already under care: 10	Referral not issued: 3
		Referral not returned: 781

Acanthosis Nigricans (AN)

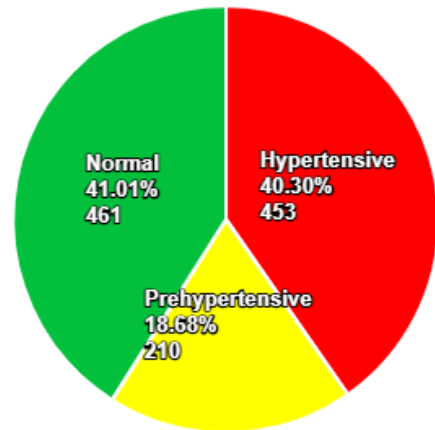
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

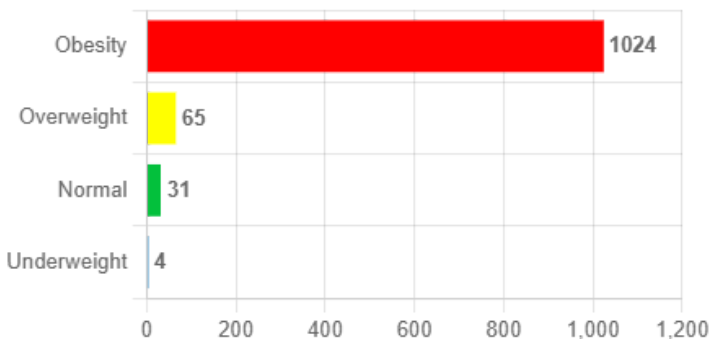
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	36	96	131	147	43
Prehypertensive	18	39	49	77	27
Normal	46	101	148	134	32



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



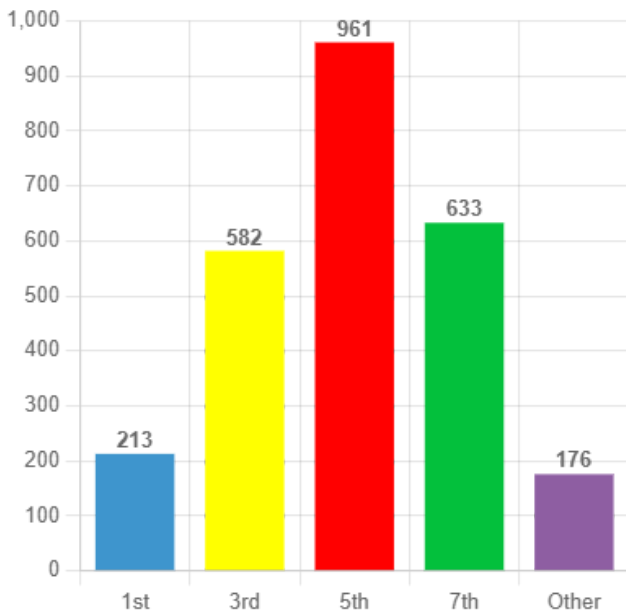
	1st	3rd	5th	7th	Other
Obesity	86	218	295	330	95
Overweight	5	11	24	21	4
Normal	7	7	7	7	3
Underweight	2	0	2	0	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 33198	Seen by health care provider: 259	Not Seen by health care provider: 2
Total Acanthosis Nigricans: 2565	Already under care: 74	Referral not issued: 1
		Referral not returned: 2059

Acanthosis Nigricans (AN)

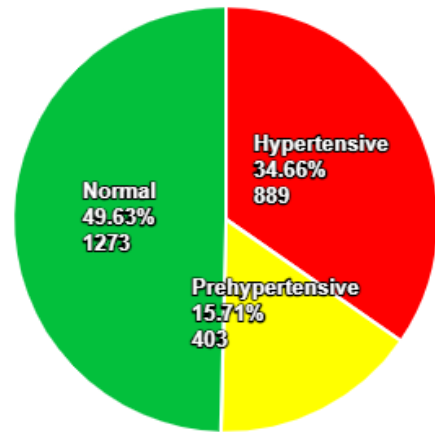
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

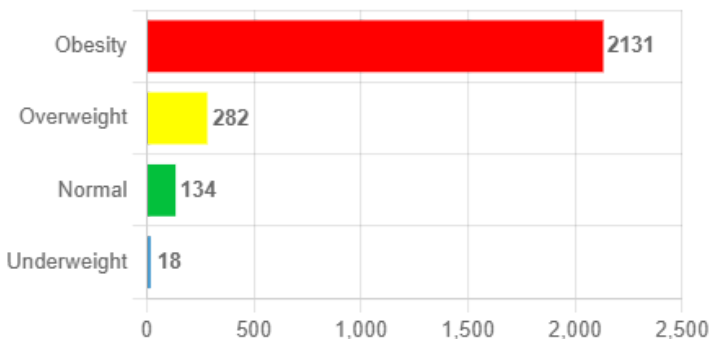
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	75	183	335	235	61
Prehypertensive	29	87	162	106	19
Normal	109	312	464	292	96



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



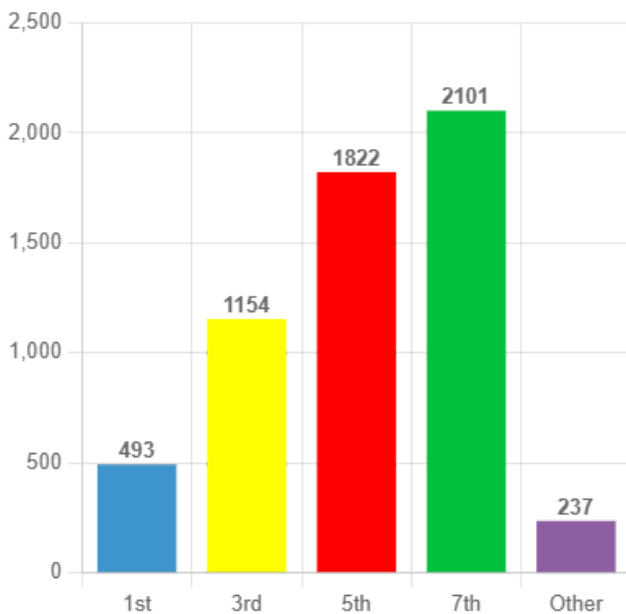
	1st	3rd	5th	7th	Other
Obesity	179	498	790	500	164
Overweight	12	55	122	83	10
Normal	13	27	46	48	0
Underweight	9	2	3	2	2

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Risk Assessment Data	Referral Information	
Total Children Assessed: 114430	Seen by health care provider: 406	Not Seen by health care provider: 17
Total Acanthosis Nigricans: 5807	Already under care: 66	Referral not issued: 7
		Referral not returned: 4314

Acanthosis Nigricans (AN)

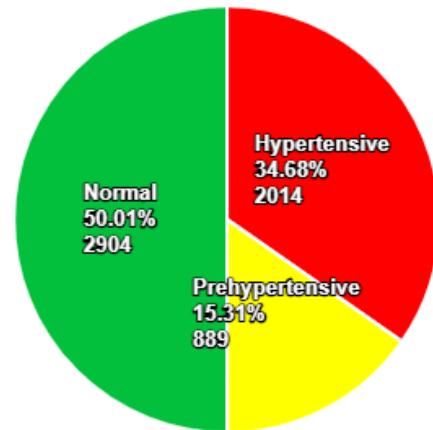
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

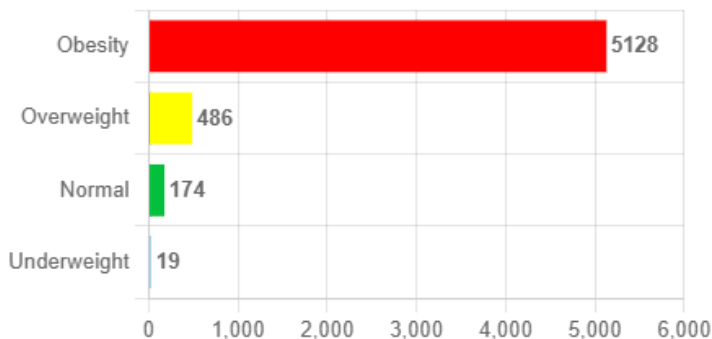
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	164	353	627	766	104
Prehypertensive	68	192	279	324	26
Normal	261	609	916	1011	107



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



	1st	3rd	5th	7th	Other
Obesity	451	1042	1633	1791	211
Overweight	24	74	150	220	18
Normal	14	34	31	88	7
Underweight	4	4	8	2	1

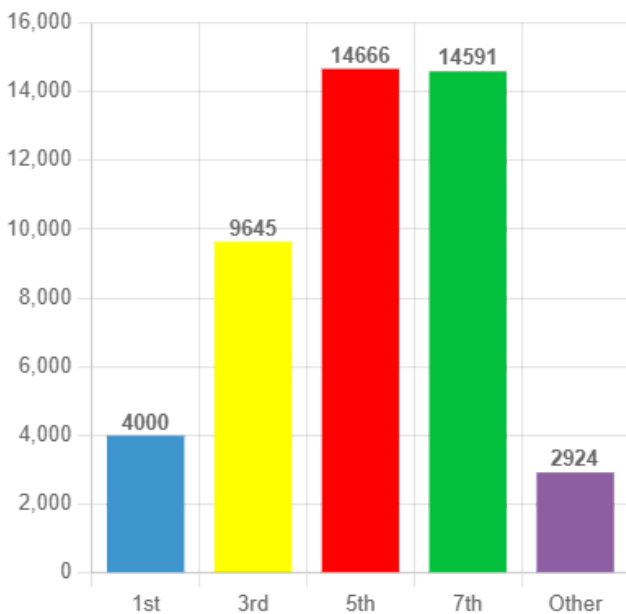
MANDATED REGIONS 2023-2024

The Texas Risk Assessment for Type 2 Diabetes in Children is a state mandated program developed, coordinated, and administrated by The University of Texas Rio Grande Valley College of Health Professions Border Health Office. This program helps assess children who may be at high risk to develop type 2 diabetes. Every year during vision/hearing and scoliosis screenings, children in 1st, 3rd, 5th, and 7th grades are assessed for the acanthosis nigricans marker - a skin marker that signals high insulin levels. Children who are identified with the marker are also assessed to determine body mass index (BMI) and blood pressure. These are the results:

Risk Assessment Data	Referral Information	
Total Children Assessed: 1018556	Seen by health care provider: 3674	Not Seen by health care provider: 116
Total Acanthosis Nigricans: 45826	Already under care: 753	Referral not issued: 22
		Referral not returned: 34502

Acanthosis Nigricans (AN)

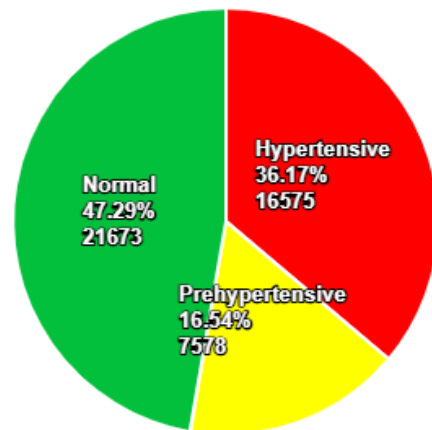
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

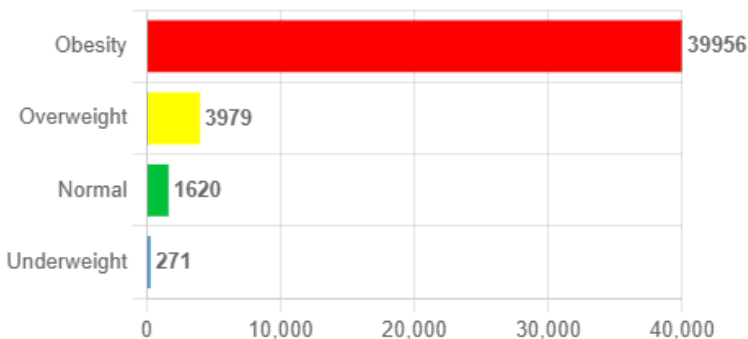
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	1267	3237	5084	5833	1154
Prehypertensive	622	1568	2543	2378	467
Normal	2111	4840	7039	6380	1303



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



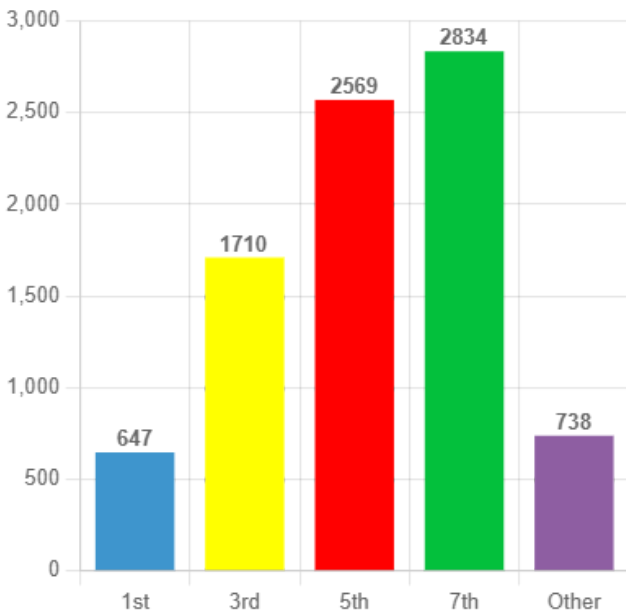
	1st	3rd	5th	7th	Other
Obesity	3536	8561	12759	12515	2585
Overweight	212	693	1362	1481	231
Normal	224	318	453	531	94
Underweight	28	73	92	64	14

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Risk Assessment Data	Referral Information	
Total Children Assessed: 103551	Seen by health care provider: 952	Not Seen by health care provider: 1
Total Acanthosis Nigricans: 8498	Already under care: 166	Referral not issued: 4
		Referral not returned: 5678

Acanthosis Nigricans (AN)

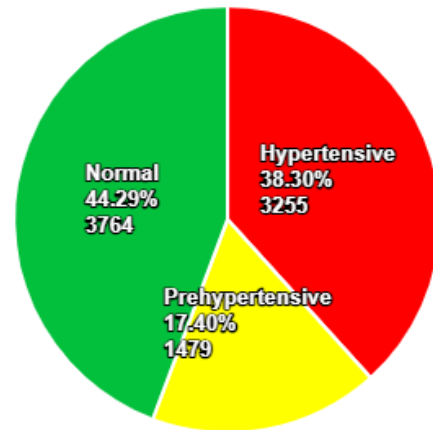
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

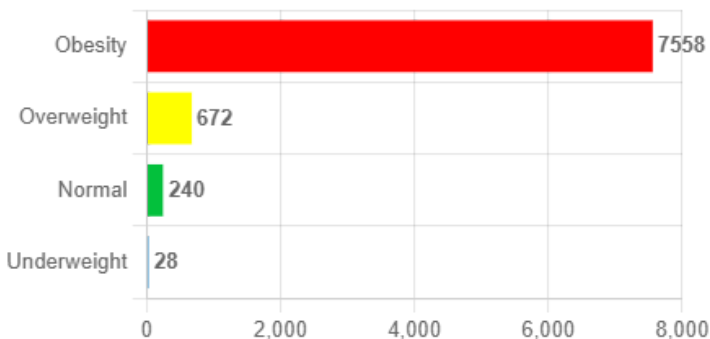
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	236	602	911	1177	329
Prehypertensive	95	277	489	511	107
Normal	316	831	1169	1146	302



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



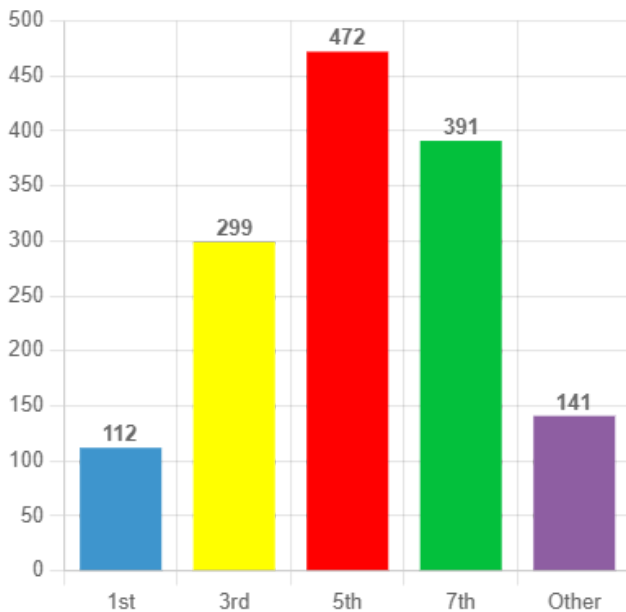
	1st	3rd	5th	7th	Other
Obesity	577	1560	2282	2456	683
Overweight	33	108	221	266	44
Normal	32	36	60	102	10
Underweight	5	6	6	10	1

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Risk Assessment Data	Referral Information	
Total Children Assessed: 24738	Seen by health care provider: 170	Not Seen by health care provider: 8
Total Acanthosis Nigricans: 1415	Already under care: 65	Referral not issued: 5
		Referral not returned: 1044

Acanthosis Nigricans (AN)

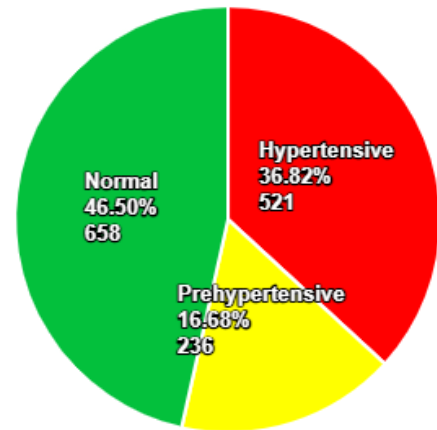
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Blood Pressure - Children with AN

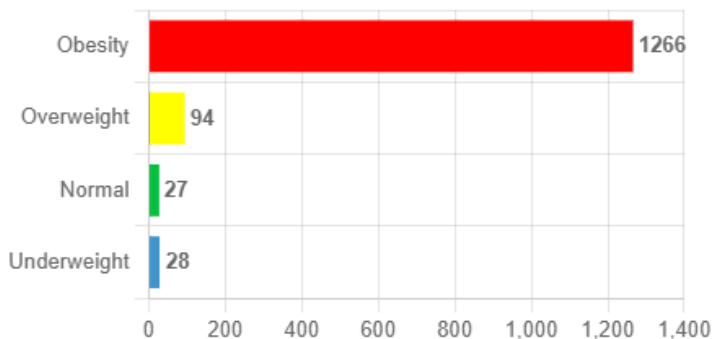
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	34	100	177	159	51
Prehypertensive	18	41	82	76	19
Normal	60	158	213	156	71



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



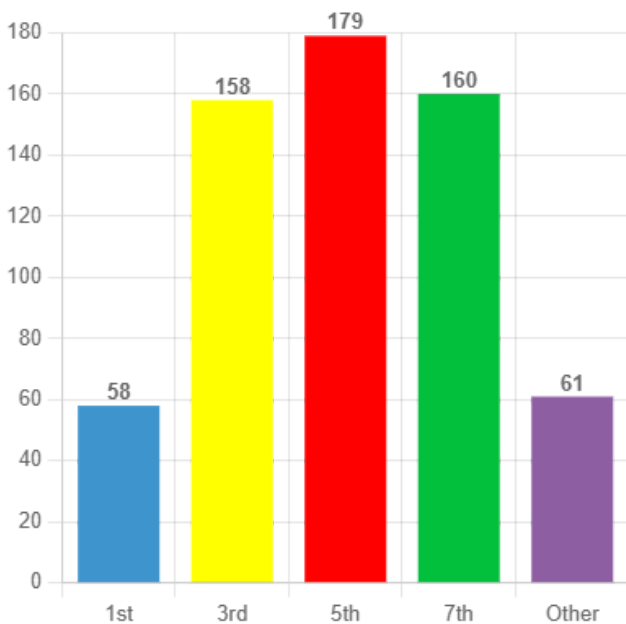
	1st	3rd	5th	7th	Other
Obesity	100	263	414	360	129
Overweight	6	19	38	20	11
Normal	3	8	7	8	1
Underweight	3	9	13	3	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 13503	Seen by health care provider: 67	Not Seen by health care provider: 2
Total Acanthosis Nigricans: 616	Already under care: 23	Referral not issued: 1
		Referral not returned: 505

Acanthosis Nigricans (AN)

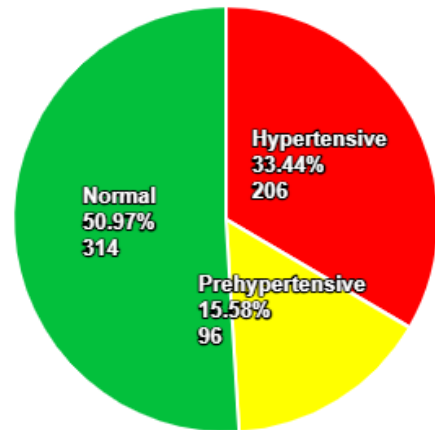
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

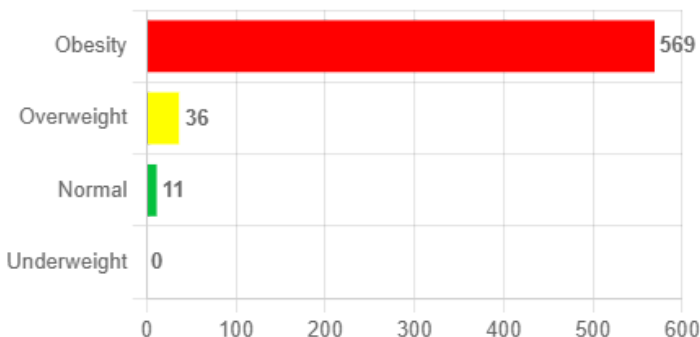
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	16	47	59	60	24
Prehypertensive	9	24	39	21	3
Normal	33	87	81	79	34



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



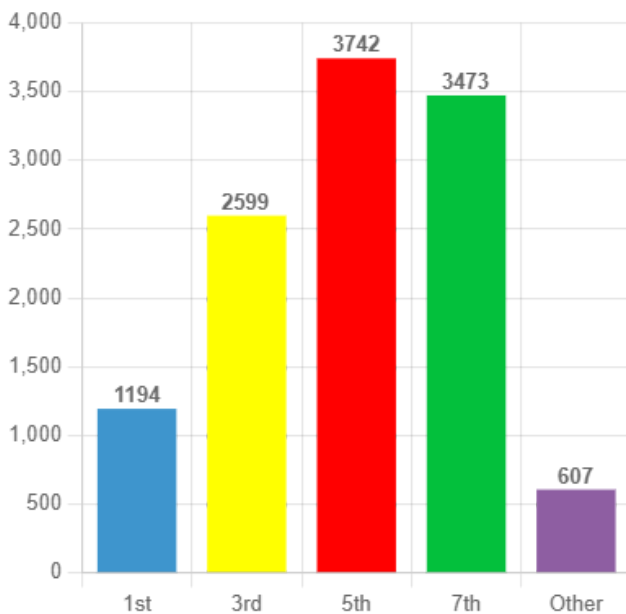
	1st	3rd	5th	7th	Other
Obesity	56	142	166	147	58
Overweight	1	10	12	10	3
Normal	1	6	1	3	0
Underweight	0	0	0	0	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 272470	Seen by health care provider: 961	Not Seen by health care provider: 41
Total Acanthosis Nigricans: 11615	Already under care: 113	Referral not issued: 5
		Referral not returned: 8846

Acanthosis Nigricans (AN)

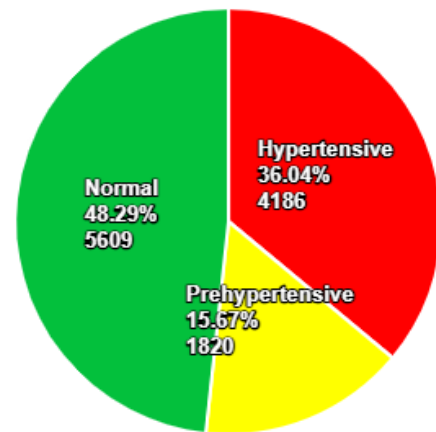
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Blood Pressure - Children with AN

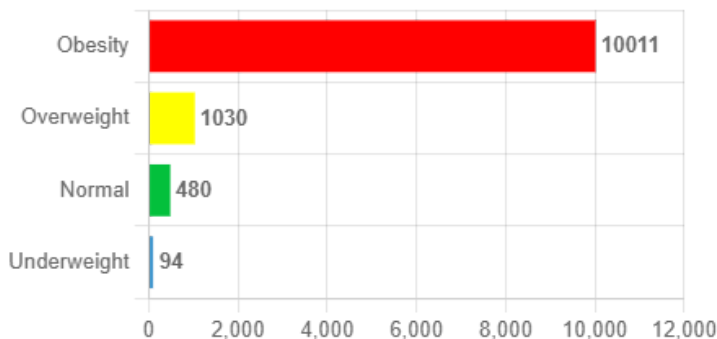
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	359	834	1262	1484	247
Prehypertensive	167	423	567	560	103
Normal	668	1342	1913	1429	257



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



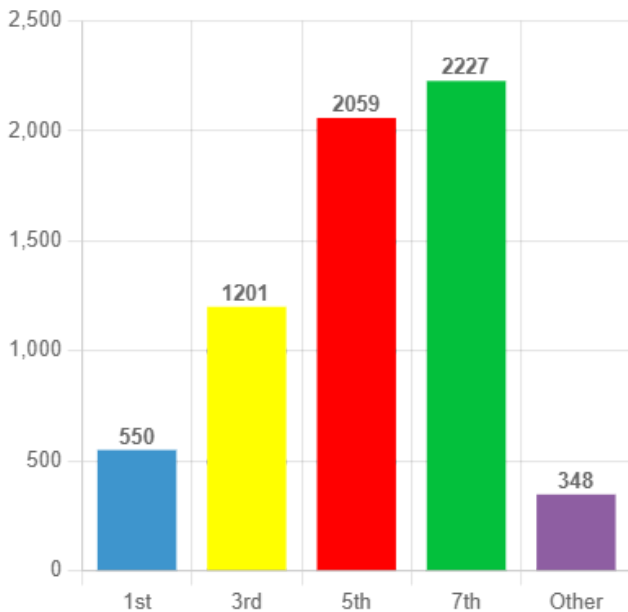
	1st	3rd	5th	7th	Other
Obesity	1042	2262	3195	2999	513
Overweight	75	202	365	332	56
Normal	72	114	153	112	29
Underweight	5	21	29	30	9

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Risk Assessment Data	Referral Information	
Total Children Assessed: 188289	Seen by health care provider: 412	Not Seen by health care provider: 3
Total Acanthosis Nigricans: 6385	Already under care: 124	Referral not issued: 1
		Referral not returned: 4609

Acanthosis Nigricans (AN)

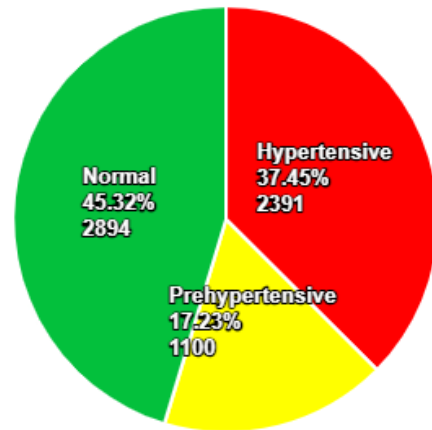
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Blood Pressure - Children with AN

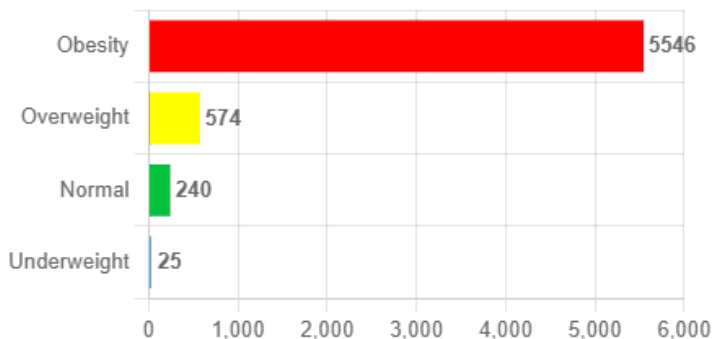
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	168	440	782	868	133
Prehypertensive	97	209	388	348	58
Normal	285	552	889	1011	157



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



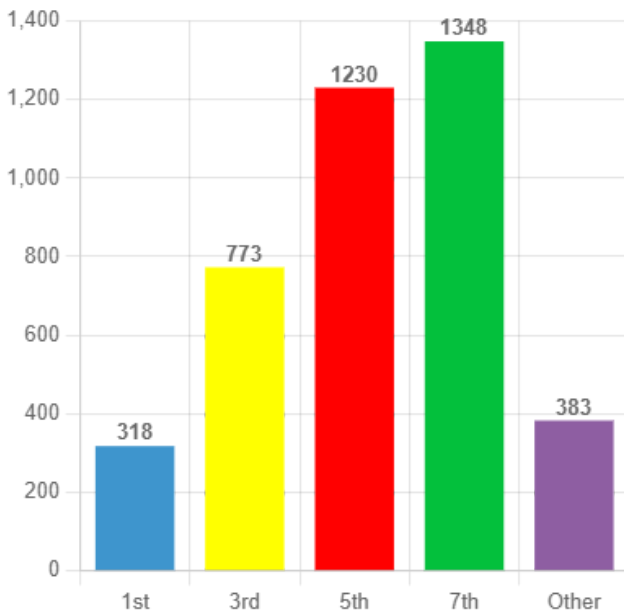
	1st	3rd	5th	7th	Other
Obesity	484	1079	1783	1894	306
Overweight	28	83	198	238	27
Normal	35	35	66	91	13
Underweight	3	4	12	4	2

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Risk Assessment Data	Referral Information	
Total Children Assessed: 127764	Seen by health care provider: 202	Not Seen by health care provider: 8
Total Acanthosis Nigricans: 4052	Already under care: 43	Referral not issued: 1
		Referral not returned: 3529

Acanthosis Nigricans (AN)

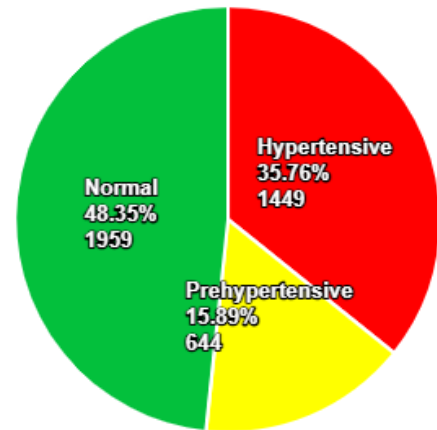
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Blood Pressure - Children with AN

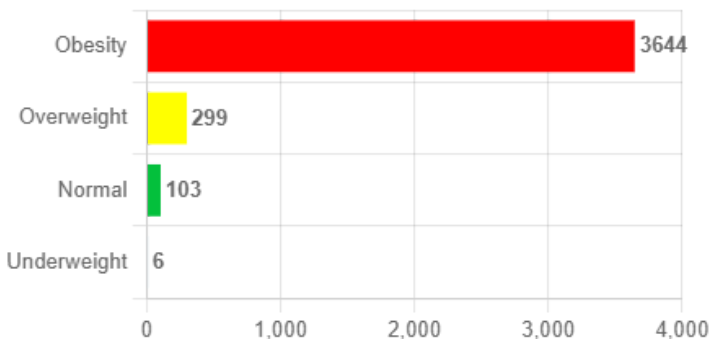
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	98	249	436	532	134
Prehypertensive	58	131	193	202	60
Normal	162	393	601	614	189



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



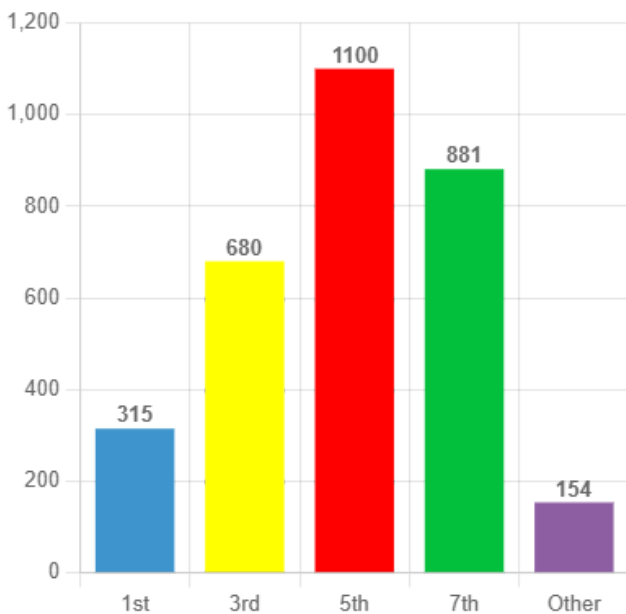
	1st	3rd	5th	7th	Other
Obesity	289	706	1117	1187	345
Overweight	13	47	85	123	31
Normal	13	18	28	37	7
Underweight	3	2	0	1	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 99469	Seen by health care provider: 173	Not Seen by health care provider: 5
Total Acanthosis Nigricans: 3130	Already under care: 30	Referral not issued: 5
		Referral not returned: 2585

Acanthosis Nigricans (AN)

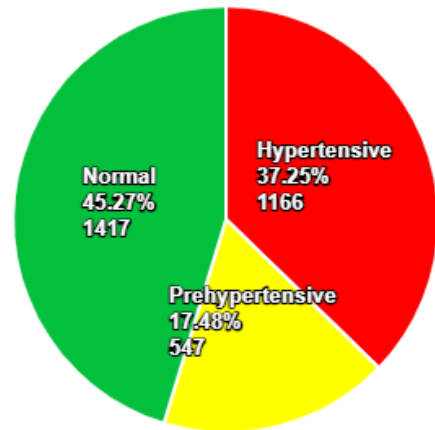
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Blood Pressure - Children with AN

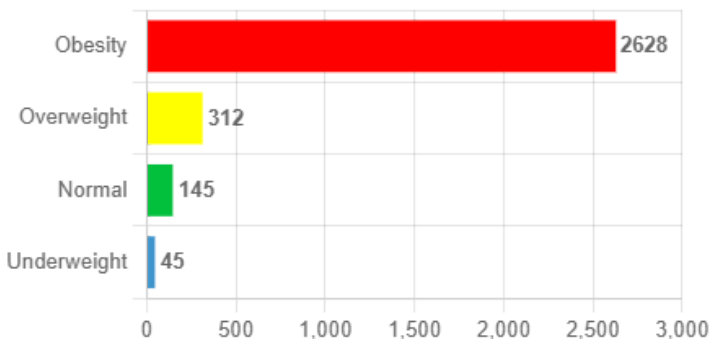
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	103	243	385	379	56
Prehypertensive	58	108	205	149	27
Normal	154	329	510	353	71



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



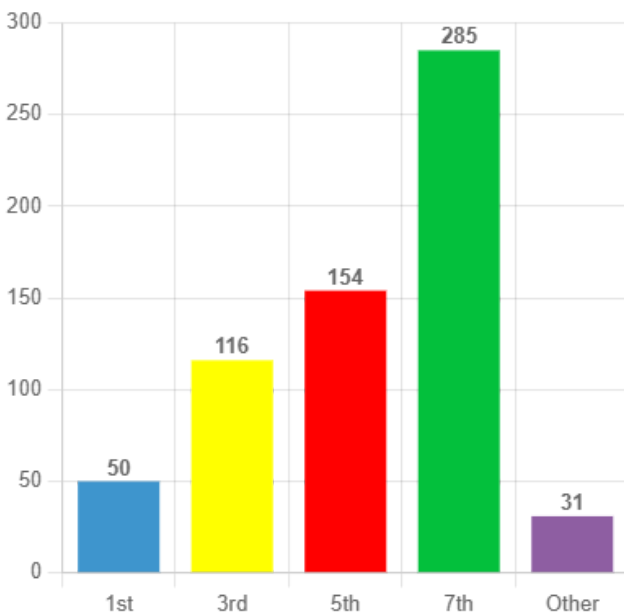
	1st	3rd	5th	7th	Other
Obesity	269	597	919	715	128
Overweight	19	41	115	123	14
Normal	23	25	44	41	12
Underweight	4	17	22	2	0

The Texas Risk Assessment for Type 2 Diabetes in Children is a state mandated program developed, coordinated, and administrated by The University of Texas Rio Grande Valley College of Health Professions Border Health Office. This program helps assess children who may be at high risk to develop type 2 diabetes. Every year during vision/hearing and scoliosis screenings, children in 1st, 3rd, 5th, and 7th grades are assessed for the acanthosis nigricans marker - a skin marker that signals high insulin levels. Children who are identified with the marker are also assessed to determine body mass index (BMI) and blood pressure. These are the results:

Risk Assessment Data	Referral Information	
Total Children Assessed: 10779	Seen by health care provider: 27	Not Seen by health care provider:
Total Acanthosis Nigricans: 636	Already under care: 55	Referral not issued:
		Referral not returned: 563

Acanthosis Nigricans (AN)

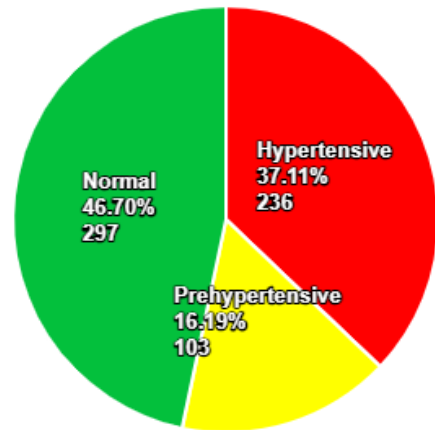
Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for the development of type 2 diabetes.



Blood Pressure - Children with AN

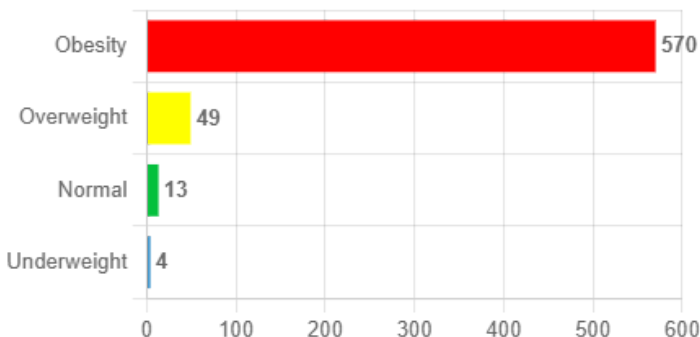
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	19	53	62	93	9
Prehypertensive	8	20	25	43	7
Normal	23	43	67	149	15



Body Mass Index - Children with AN

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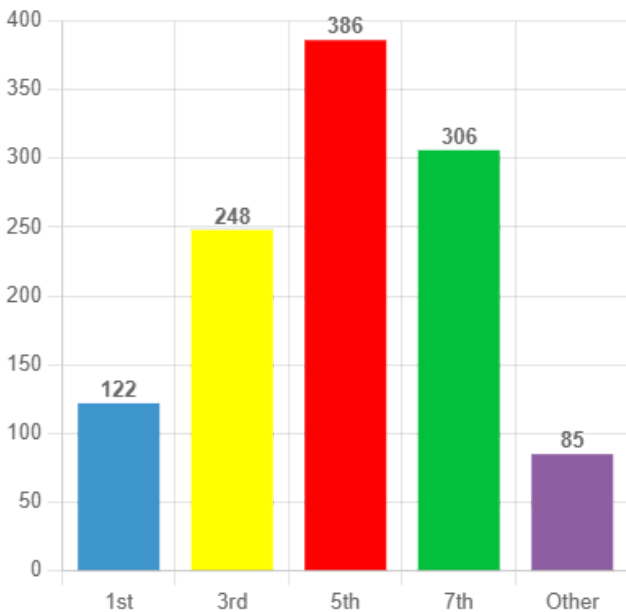
	1st	3rd	5th	7th	Other
Obesity	47	104	144	249	26
Overweight	2	7	6	29	5
Normal	0	4	3	6	0
Underweight	1	1	1	1	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 22665	Seen by health care provider: 92	Not Seen by health care provider: 3
Total Acanthosis Nigricans: 1147	Already under care: 18	Referral not issued:
		Referral not returned: 920

Acanthosis Nigricans (AN)

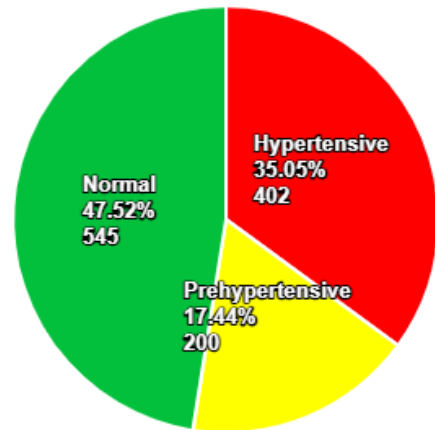
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Blood Pressure - Children with AN

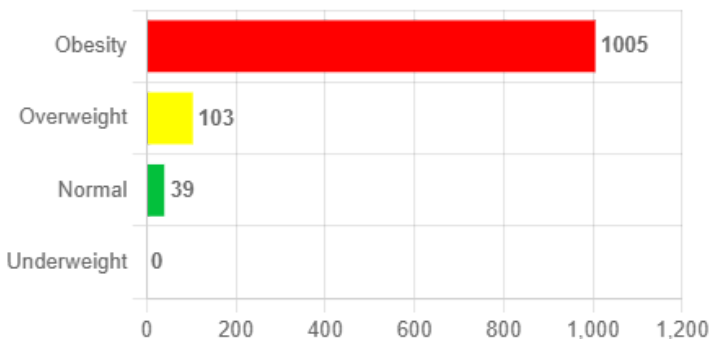
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	26	80	136	114	46
Prehypertensive	27	40	75	49	9
Normal	69	128	175	143	30



Body Mass Index - Children with AN

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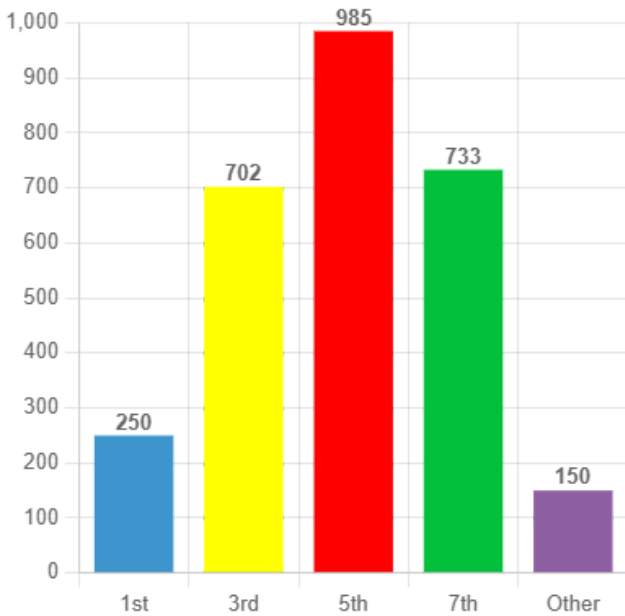
	1st	3rd	5th	7th	Other
Obesity	108	223	339	261	74
Overweight	4	20	37	37	5
Normal	10	5	10	8	6
Underweight	0	0	0	0	0

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Risk Assessment Data	Referral Information	
Total Children Assessed: 31054	Seen by health care provider: 269	Not Seen by health care provider: 7
Total Acanthosis Nigricans: 2820	Already under care: 66	Referral not issued: 1
		Referral not returned: 2289

Acanthosis Nigricans (AN)

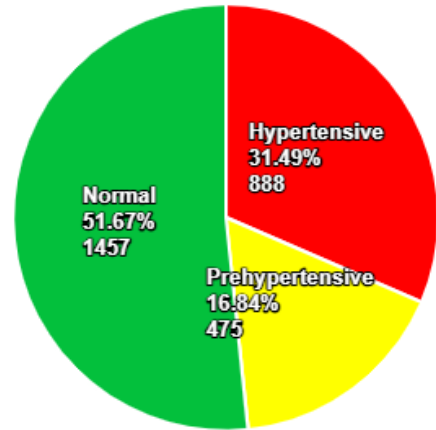
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Blood Pressure - Children with AN

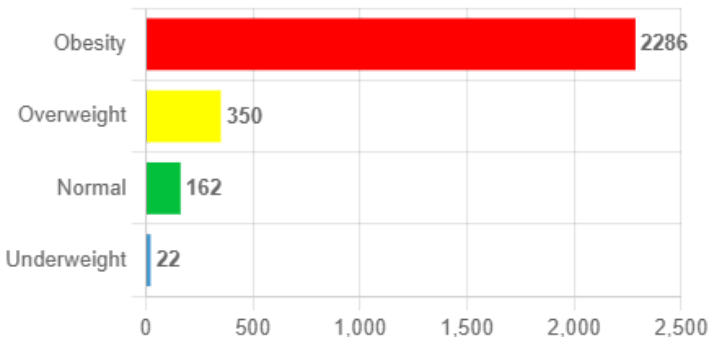
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	79	206	298	265	40
Prehypertensive	33	112	165	133	32
Normal	138	384	522	335	78



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



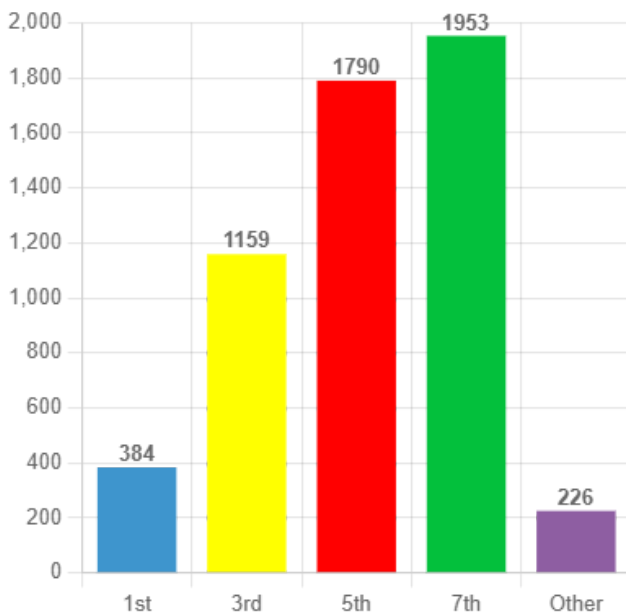
	1st	3rd	5th	7th	Other
Obesity	214	566	807	577	122
Overweight	15	87	129	100	19
Normal	19	40	46	49	8
Underweight	2	9	3	7	1

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Risk Assessment Data	Referral Information	
Total Children Assessed: 116644	Seen by health care provider: 349	Not Seen by health care provider: 38
Total Acanthosis Nigricans: 5512	Already under care: 70	Referral not issued: 4
		Referral not returned: 3934

Acanthosis Nigricans (AN)

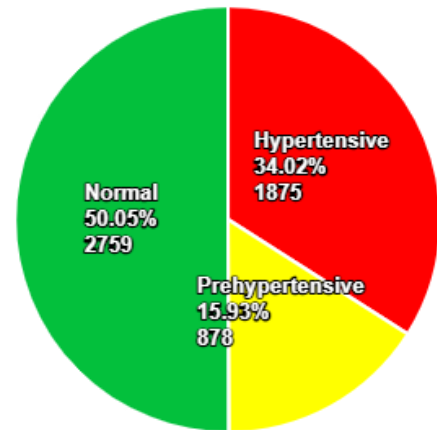
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Blood Pressure - Children with AN

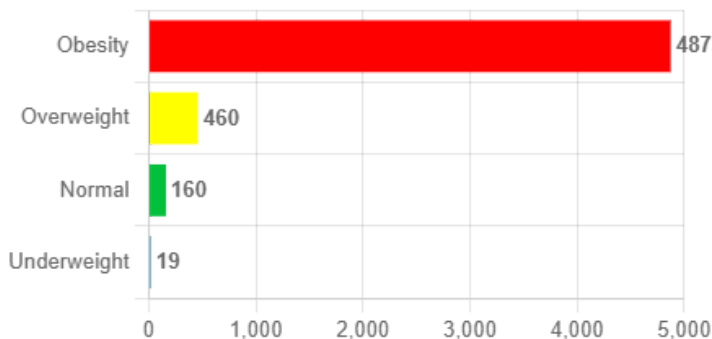
Hypertension is also associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood. Blood pressure categories are identified as hypertensive, prehypertensive, or normal.

	1st	3rd	5th	7th	Other
Hypertensive	129	383	576	702	85
Prehypertensive	52	183	315	286	42
Normal	203	593	899	965	99



Body Mass Index - Children with AN

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account age, height, and weight. BMI categories are obesity, overweight, normal, and underweight.



	1st	3rd	5th	7th	Other
Obesity	350	1059	1593	1670	201
Overweight	16	69	156	203	16
Normal	16	27	35	74	8
Underweight	2	4	6	6	1