



2018-2019 SCHOOL WELLNESS REPORT



CALHOUN COUNTY PUBLIC HEALTH DEPARTMENT

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Introduction

In 2016, the Calhoun County Public Health Department (CCPHD) School Wellness Program (SWP) began a transformational process of evaluating the delivery of school nurse services. In order to provide appropriate services based on need and transition to more effective case management, an Acuity Model of Care was developed based on the Social Determinants of Health (SDOH). School nurses address the SDOH by coordinating care, educating and empowering families, connecting students to health care and health insurance, and connecting families to community resources. The acuity method was based on a 100-point scale, and each school in the SWP was ranked individually based on the following indicators: poverty, race, English language learner, and chronic absenteeism. Schools were given an acuity ranking of 1, 2, or 3, with level 3 representing the highest need. Service delivery was then addressed through the development of two different models of care, consultative and care management.

Acuity Model of Care Basics

- Developed a comprehensive model of care which addresses the Social Determinants of Health
- Worked to address health and educational disparities in the school-age population of Calhoun County, with a renewed focus on chronic disease management
- Developed in conjunction with the Health Officer and School Wellness Program Staff
- Based on the school's acuity score, we work with the schools to implement one of two models: **Consultative** or **Care Management**

The Acuity Score is calculated for each school based on the following indicators:

Minority Population

- Portion of the school which does not self-identify as Caucasian

Economic Disadvantage

- Children who are living at or below the poverty line

English Learner

- Shows progress of school children in learning English language based upon a standardized English language proficiency assessment

Chronic Absenteeism

- Students are classified as a 'chronic absentee' if they miss 10% or more of possible school days

Acuity Scores by School

Scoring Breakdown

Acuity scores were determined through a weighted ranking system. Raw data was collected for each respective school from the MiSchool Data repository. Scores were then calculated and summed to determine which level of acuity each school ranked. Level 1 acuity indicated lowest need, and level 3 acuity indicated highest need. Indicator weights were determined by considering other school wellness programs' use of the acuity model, as well as a comprehensive literature review. The tables below indicate the weighted values given to each indicator, acuity score rankings, and the acuity score for each school which partakes in CCPHD's SWP. **The scores indicated below are from the 2017-2018 school year, when the model was implemented.**

Indicator	Percentage	Point Value
Minority Composition	0-24	1
	25-49	5
	50-74	10
	75+	20
Economic Disadvantage	0-24	10
	25-49	25
	50-74	35
	75+	50
English Learner	0-1	1
	2-4	2
	5-9	5
	10+	10
Chronic Absenteeism	0-9	1
	10-14	5
	15-19	10
	20+	20

Acuity Level Point Ranges	
Acuity Level 1	<45
Acuity Level 2	45-69
Acuity Level 3	70+

Acuity Level FTEs	
Consultative Model	
Harper Creek	1.0
Lakeview	1.2
MERT/Float	0.2
Care Management Model	
Dudley STEM	1.0
LaMora Park	1.0
Valley View	1.0
Verona	1.0

School District	School	Acuity Score	Rank
Battle Creek Public Schools	Dudley STEM School	90	3
Battle Creek Public Schools	LaMora Park Elementary School	85	3
Battle Creek Public Schools	Valley View Elementary School	90	3
Battle Creek Public Schools	Verona Elementary School	90	3
Harper Creek Community Schools	Beadle Lake Elementary School	41	1
Harper Creek Community Schools	Sonoma Elementary School	31	1
Harper Creek Community Schools	Wattles Park Elementary School	33	1
Harper Creek Community Schools	Harper Creek Middle School	33	1
Harper Creek Community Schools	Harper Creek High School	33	1
Lakeview School District	Lakeview High School	40	1
Lakeview School District	Lakeview Middle School	40	1
Lakeview School District	Minges Brook Elementary School	50	2
Lakeview School District	Prairieview Elementary School	55	2
Lakeview School District	Riverside Elementary School	55	2
Lakeview School District	Westlake Elementary School	45	2

Demographics

The table below displays the demographic variables which comprise the acuity model score calculations. Data is derived from the 2018-2019 school year from the MiSchool database. Note, Chronic Absenteeism is reported on a district basis. Dashes indicate insufficient counts.

School District	School	Enrollment	Minority Population	Economically Disadvantaged	English Language Learner	Chronic Absenteeism
Battle Creek Public Schools	Dudley STEM School	155	76.8%	92.3%	--	34%
Battle Creek Public Schools	LaMora Park Elementary School	222	62.2%	88.7%	7.2%	34%
Battle Creek Public Schools	Valley View Elementary School	520	56.7%	82.1%	18.8%	34%
Battle Creek Public Schools	Verona Elementary School	301	69.8%	94.0%	10.3%	34%
Harper Creek Community Schools	Beadle Lake Elementary School	321	17.4%	61.1%	--	13%
Harper Creek Community Schools	Harper Creek High School	887	14.1%	32.4%	2.7%	13%
Harper Creek Community Schools	Harper Creek Middle School	894	15.3%	41.6%	--	13%
Harper Creek Community Schools	Sonoma Elementary School	374	9.1%	43.3%	--	13%
Harper Creek Community Schools	Wattles Park Elementary School	352	20.5%	40.3%	--	13%
Lakeview School District	Lakeview High School	1352	40.4%	45.3%	8.1%	19%
Lakeview School District	Lakeview Middle School	1349	42.3%	54.9%	6.5%	19%
Lakeview School District	Minges Brook Elementary School	313	49.8%	71.9%	8.3%	19%
Lakeview School District	Prairieview Elementary School	268	58.6%	83.2%	19.4%	19%
Lakeview School District	Riverside Elementary School	377	50.4%	61.5%	15.9%	19%
Lakeview School District	Westlake Elementary School	416	38.9%	48.6%	14.2%	19%

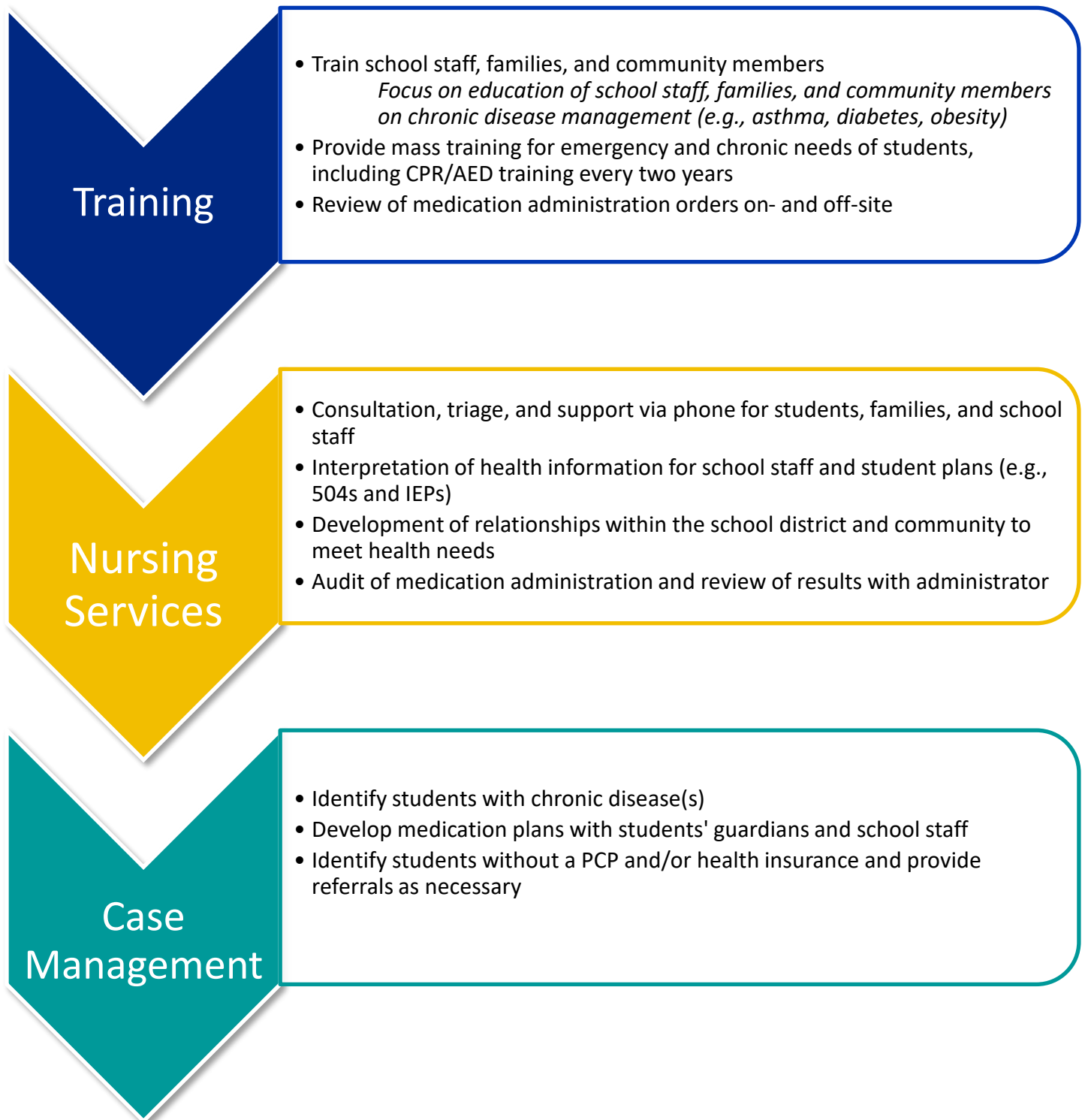
Acuity Model of Care Goals

Implementation of the Acuity Model of Care was accompanied by a series of goals, based upon the SDOH and Acuity Model of Care concepts. The goals are displayed below. As the Acuity Model of Care continues into each school year, the CCPHD will continue evaluating the program and goals.

SWP Goals
50% of students/families who indicate they do not have a primary care provider (PCP) and/or medical home will be provided information on, or referred to a PCP
90% of students evaluated by the school nurse will return to class
25% of students who indicate they have a chronic disease will have an action or medical management plan on file
15% of school staff within participating SWP schools will report having received training on chronic disease management

Consultative Model

The Consultative Model under the SWP focuses on a streamlined system of school nursing. There are currently two participating school districts within the Calhoun County Intermediate School District which operate under the Consultative Model: Lakeview School District and Harper Creek Community Schools. School nurses under this model are responsible for a variety of services. These services can be broken down into three primary categories: Training, Nursing Services, and Case Management. The graphic below depicts the components which comprise each service category.



Care Management Model

The Care Management Model offers a more comprehensive, hands-on approach to school nursing services. There's a special focus on the provision of extensive case management to students with chronic disease (e.g., asthma, diabetes, obesity). The Care Management Model includes all the services provided in the Consultative Model while expanding on specific nurse services in order to better serve the district's population. Four of the five Battle Creek Public Elementary Schools (BCPS) operate under the Care Management Model. The services provided under the Care Management Model can be broken down into three categories: Training, Nursing Services, and Case Management.

Training

- Lead the Medical Emergency Response Team (MERT) for the school
- Develop school-specific MERT training, including a communication plan

Nursing Services

- Manage chronic disease which includes:
 - Link children to specialists*
 - Facilitate regular appointment attendance to PCP*
 - Give referrals to Children's Special Health Care Services*
 - Provide one-on-one student education specific to disease management*
- Provide classroom education on healthy habits and handwashing

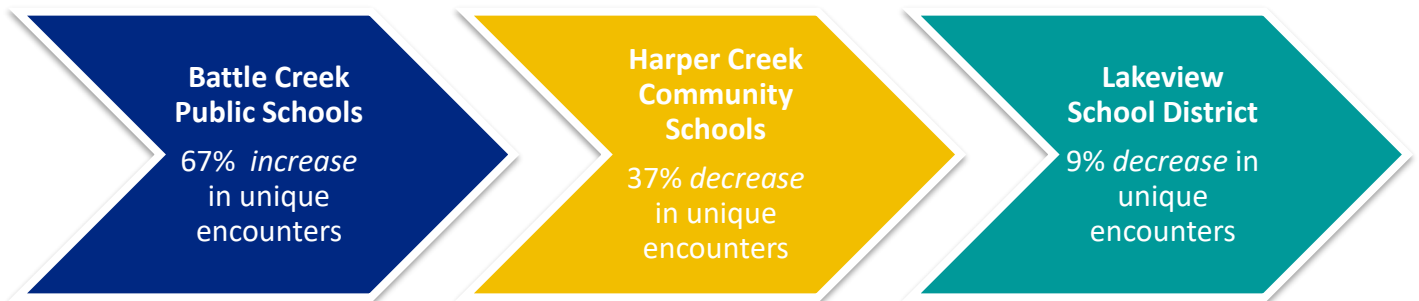
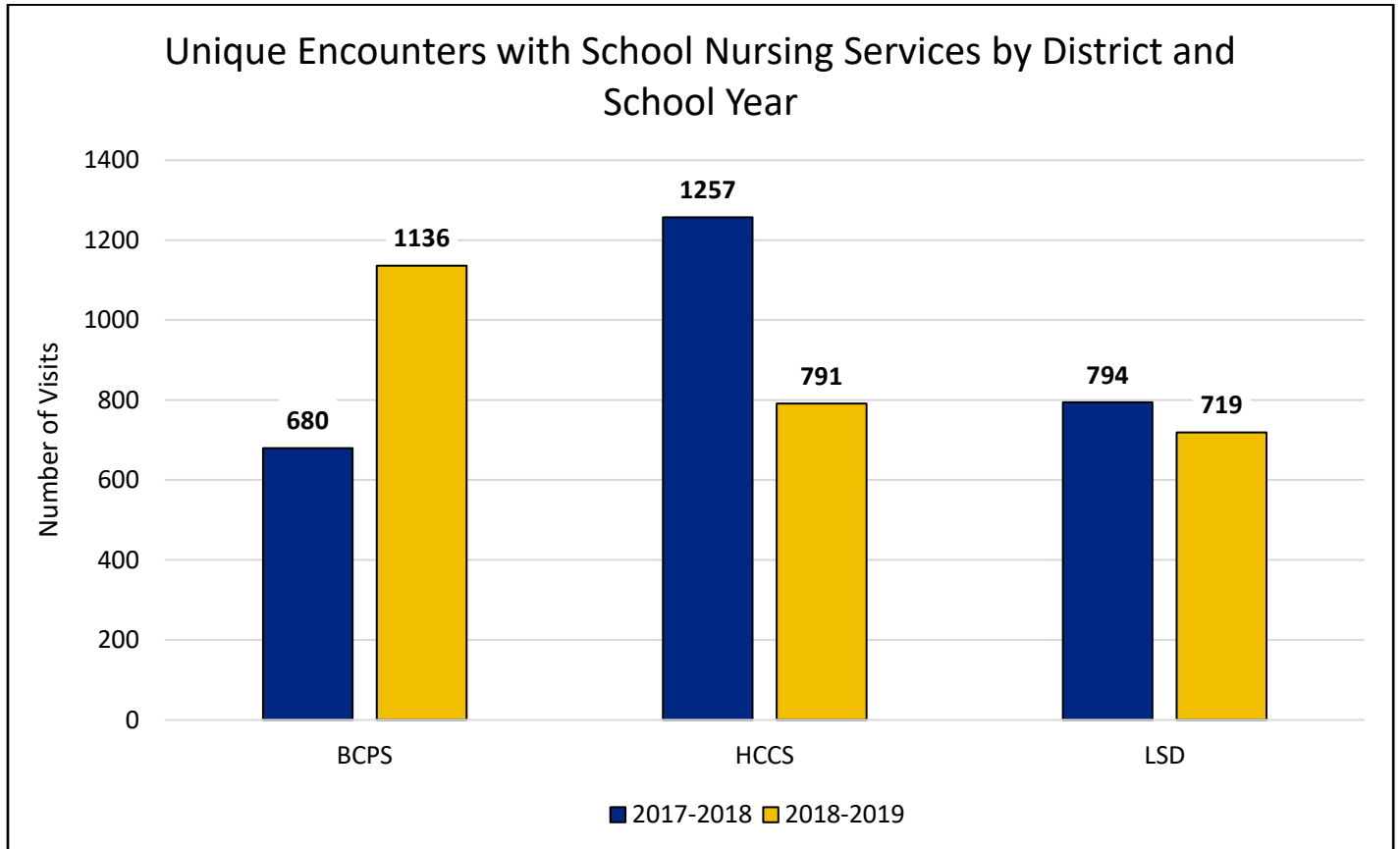
Case Management

- Provide parent education regarding their child's chronic illness
 - Identify family barriers to health*
- Refer students and families to providers (e.g., PCP, dental, hearing, vision) when necessary
- Conduct home visits as needed
- Assess and refer students for mental health services
 - Incorporate ACES/trauma informed care*

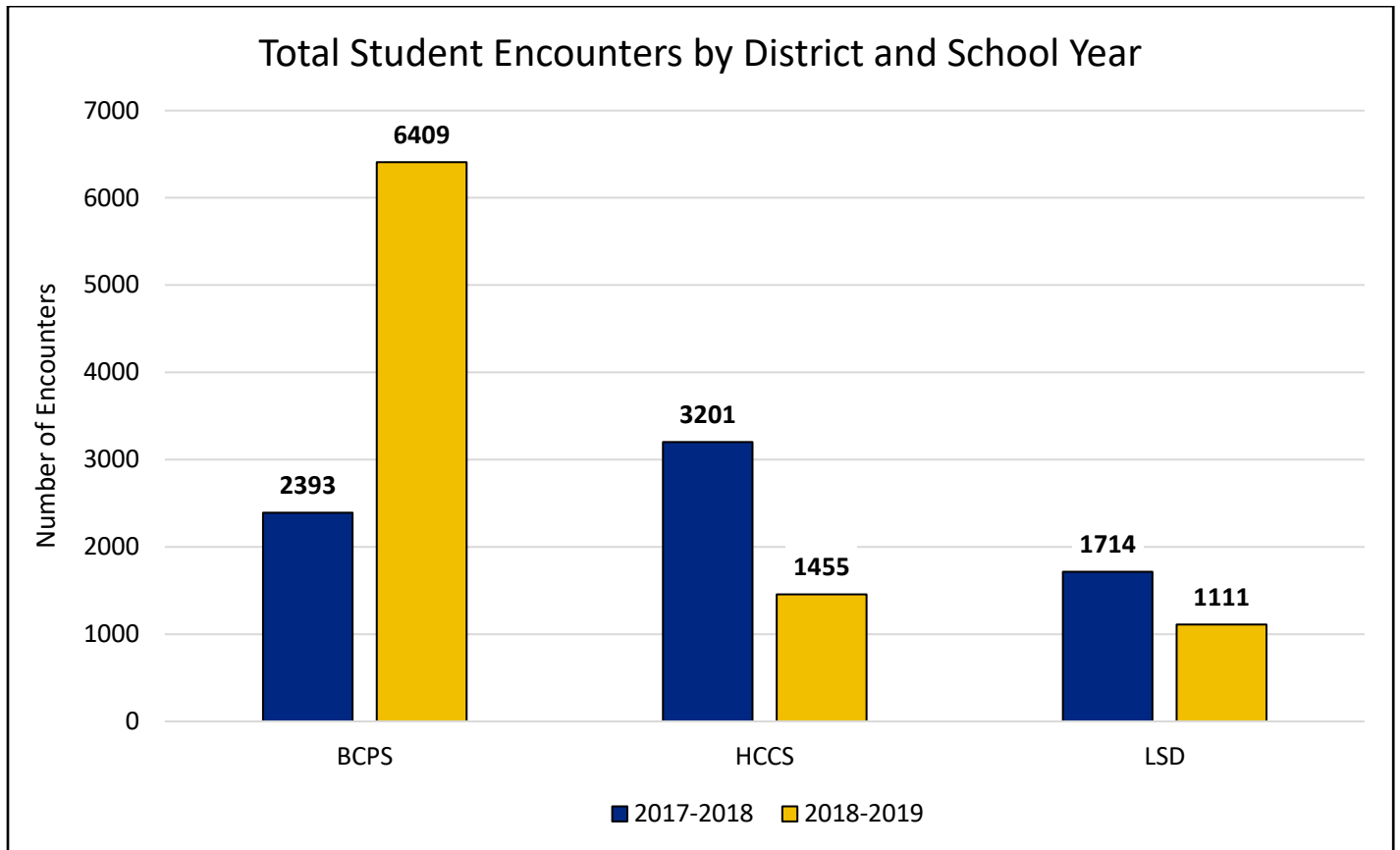
Comparing Pre-Acuity Services and Post-Acuity Services

Implementation of the Acuity Model of Care to CCPHD's SWP allowed for data-driven decisions to be made regarding the allocation of resources. Included in this model was the allocation of one nurse per school per day for the Care Management Model and one nurse per school per week for the Consultative Model. This allocation was based on need as determined by acuity ranking and need (e.g., Level 3 acuity resulting in a higher need for school nursing services). The following data examines the change in services from pre-acuity model to post-acuity model. Please note, data within this section is from the 2017-2018 and 2018-2019 school years.

Encounter Data



Comparing Pre-Acuity Services and Post-Acuity Services



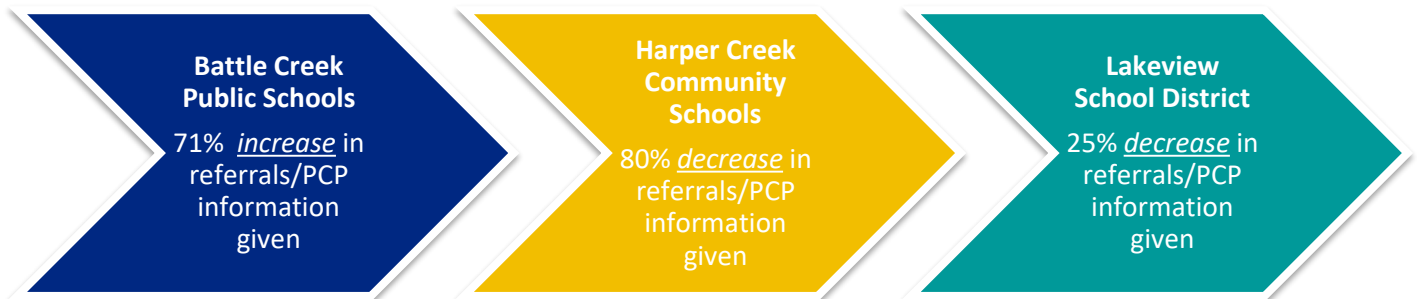
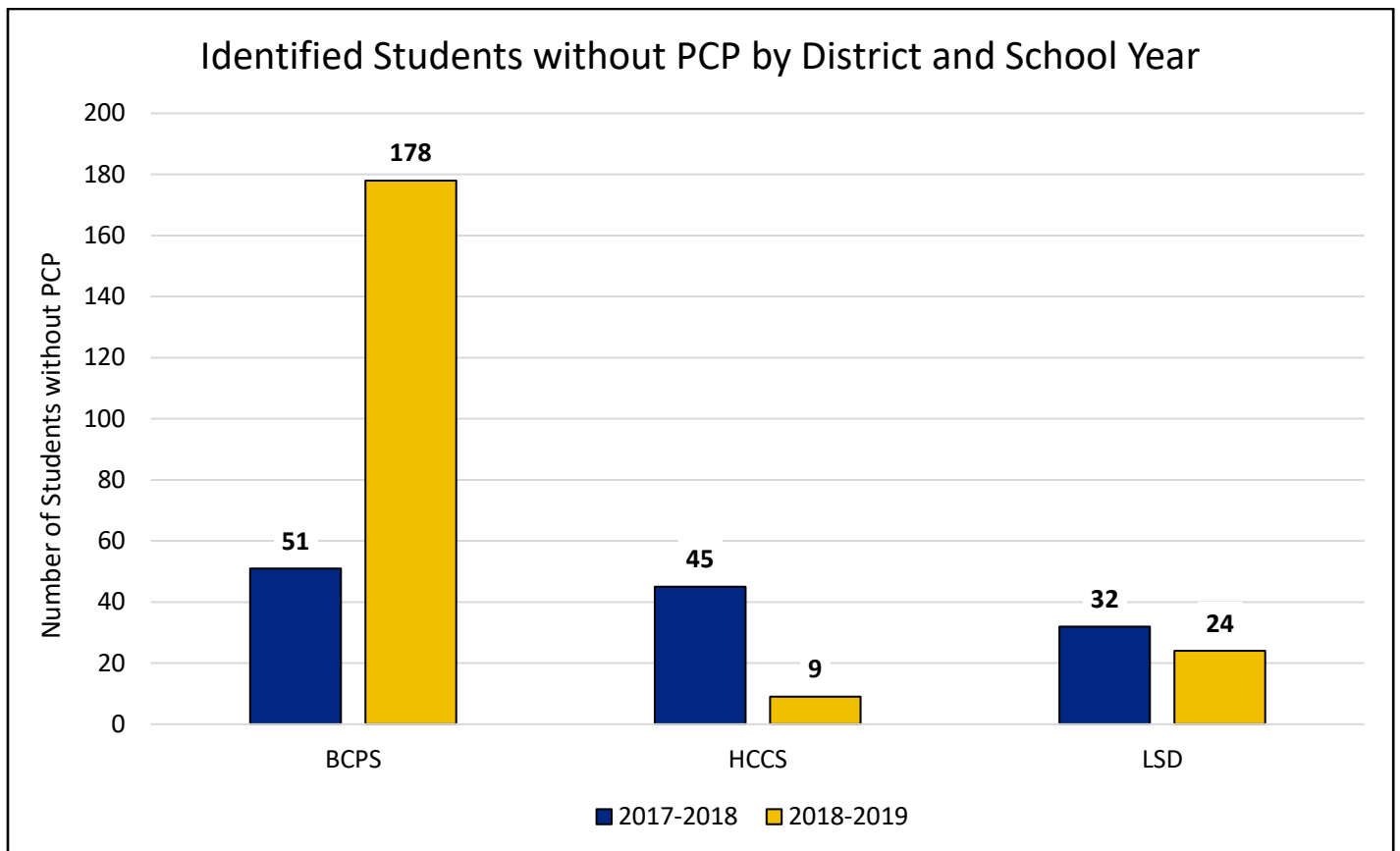
Summary of Encounters Data

Significant differences were observed in visitation data from the pre-acuity model to the post-acuity model. Encounter data is pulled from the HealthMaster EMR database. An encounter is defined as any interaction a school nurse has with a student and/or a student's guardian. The data is pulled by a unique student ID. Total encounters and unique encounters are then derived from this data. Unique encounters are the sum of students who interacted with the school nurse at least once. It is a deduplicated count. Total encounters are every encounter made with the students and/or their families.

BCPS saw an increase in total visits, from 2,393 total school nurse visits in 2017 to 6,409 visits in 2018; an increase of 63%. The four BCPS elementary schools which operate under the SWP are among the highest need in Calhoun County. Under the Care Management Model, nurses were able to offer greater services to these students and their families, which is evidenced by the increase in school nurse visits. LSD and HCCS both observed decreases in the number of visits made to school nurse services. With the shift in resource allocation, this change was anticipated. HCCS experienced the largest decrease, with total visits dropping by 55%. LSD saw a decrease of 35%.

Comparing Pre-Acuity Services and Post-Acuity Services

Access to Care Data

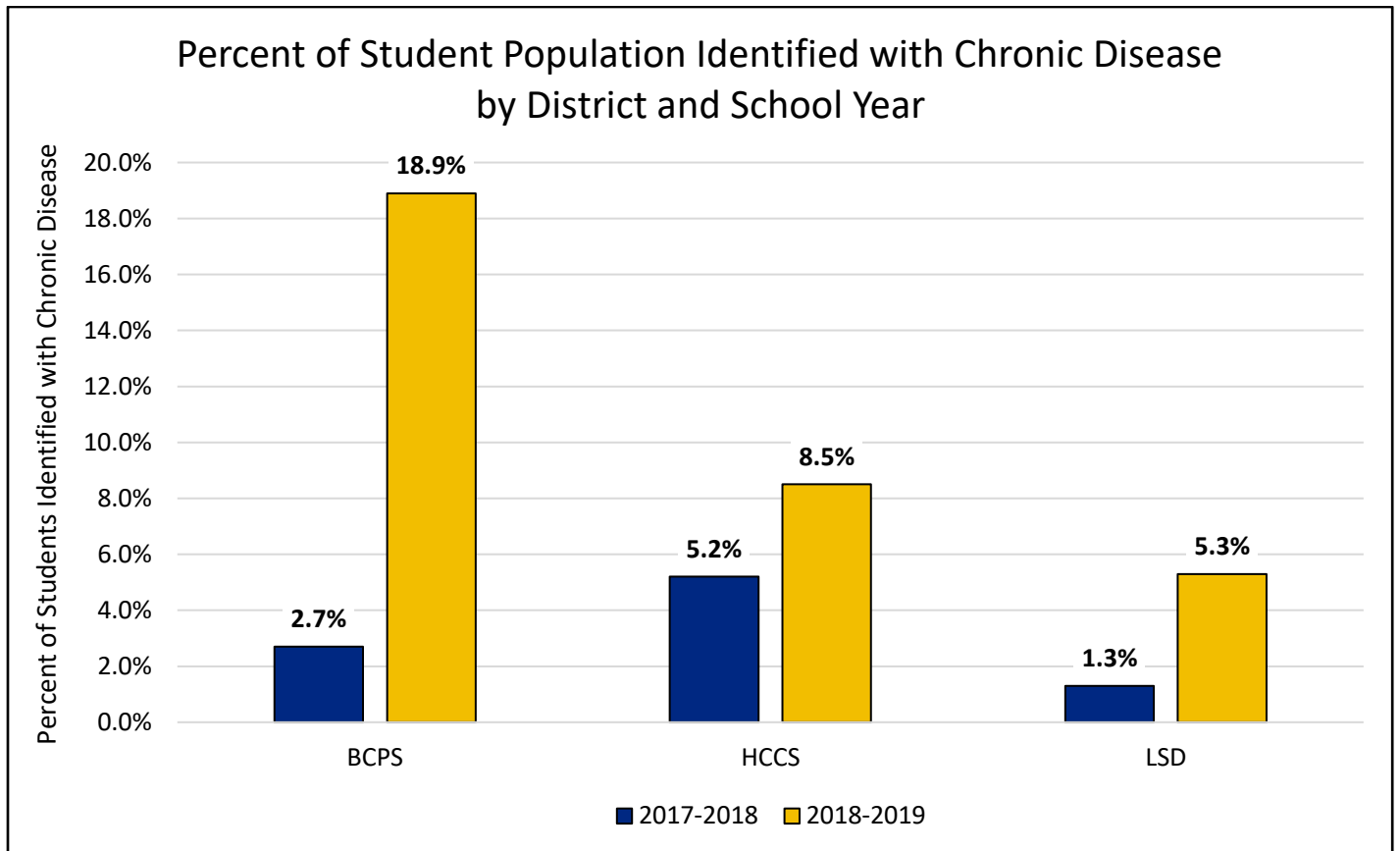


Summary of Access to Care Data

To measure access to care within student populations, health forms are disseminated to parents of each student at the beginning of each school year. On the health form, there is a question which asks, “Does the student have a doctor whom they see regularly?” Parents complete the form, indicating yes or no. Those who answered no or left the question blank are sent information regarding PCPs in the area. Referrals to specific PCPs and/or specialists are made following a health assessment in which the nurse deems a referral necessary. BCPS saw a significant increase in the number of students identified without a PCP, subsequently increasing the number of referrals given by 71%. HCCS and LSD both observed a decrease in the number of students without a PCP being identified. There was an 80% decrease in referrals given within HCCS and a 25% decrease within LSD.

Comparing Pre-Acuity Services and Post-Acuity Services

Chronic Disease Data

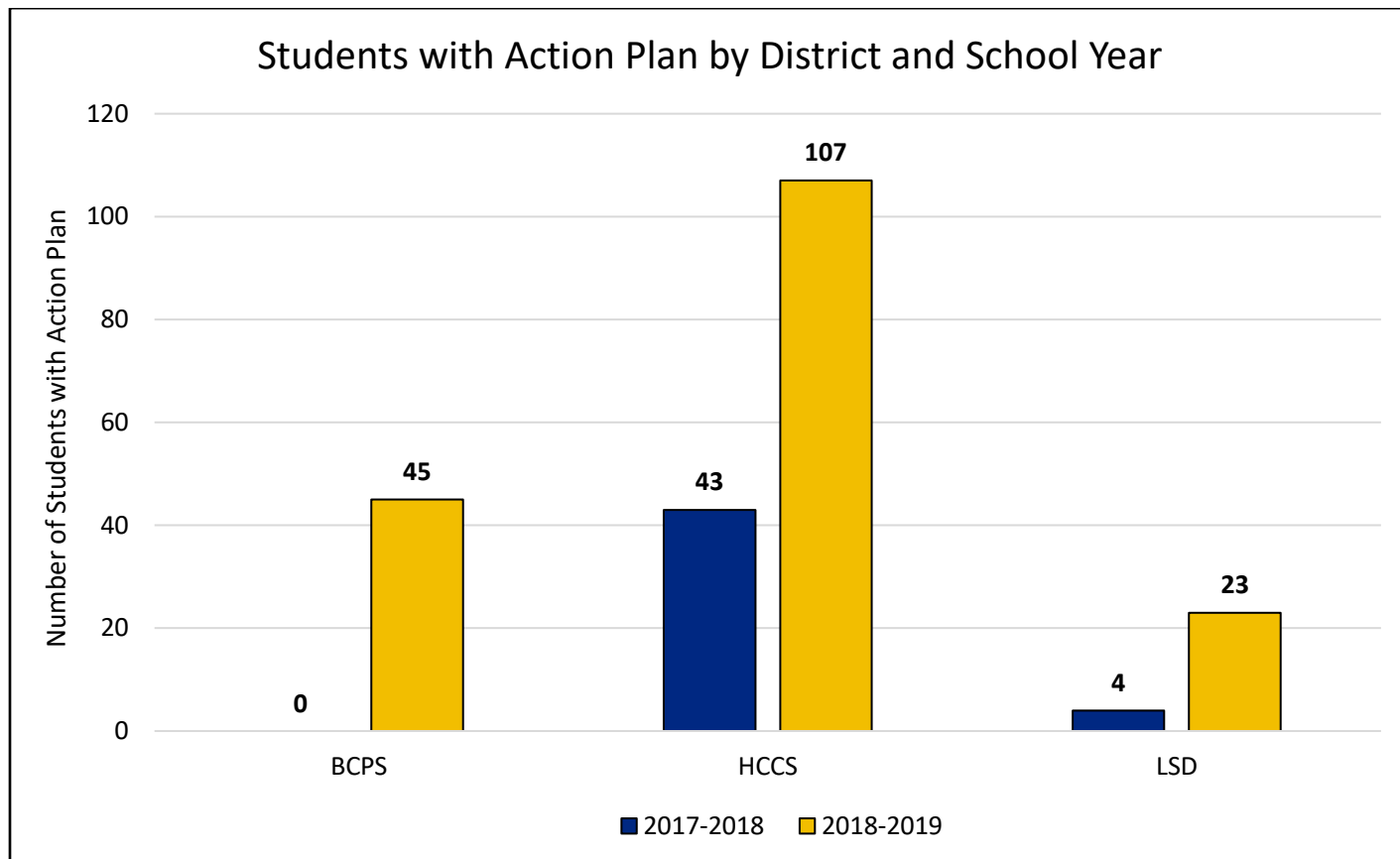


Battle Creek Public Schools
85% *increase* in children with chronic disease identified

Harper Creek Community Schools
39% *increase* in students with chronic disease identified

Lakeview School District
75% *increase* in students with chronic disease identified

Comparing Pre-Acuity Services and Post-Acuity Services



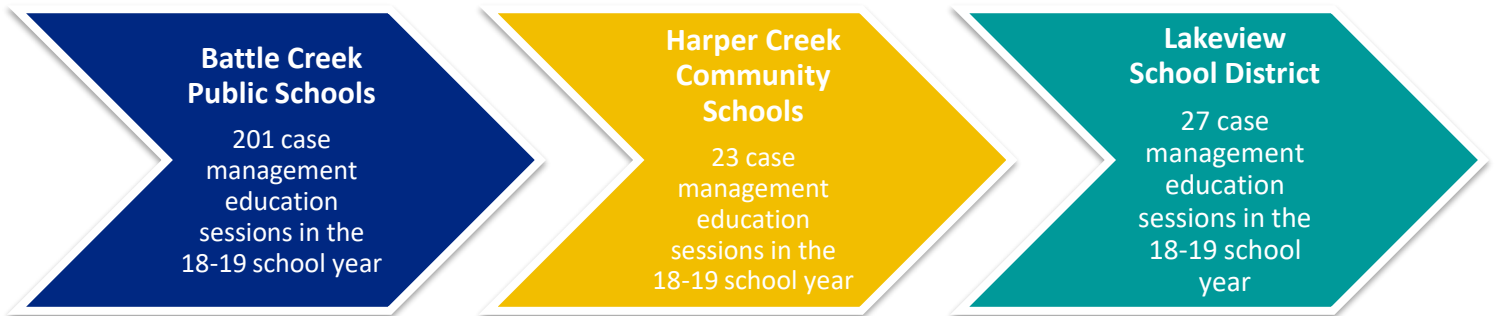
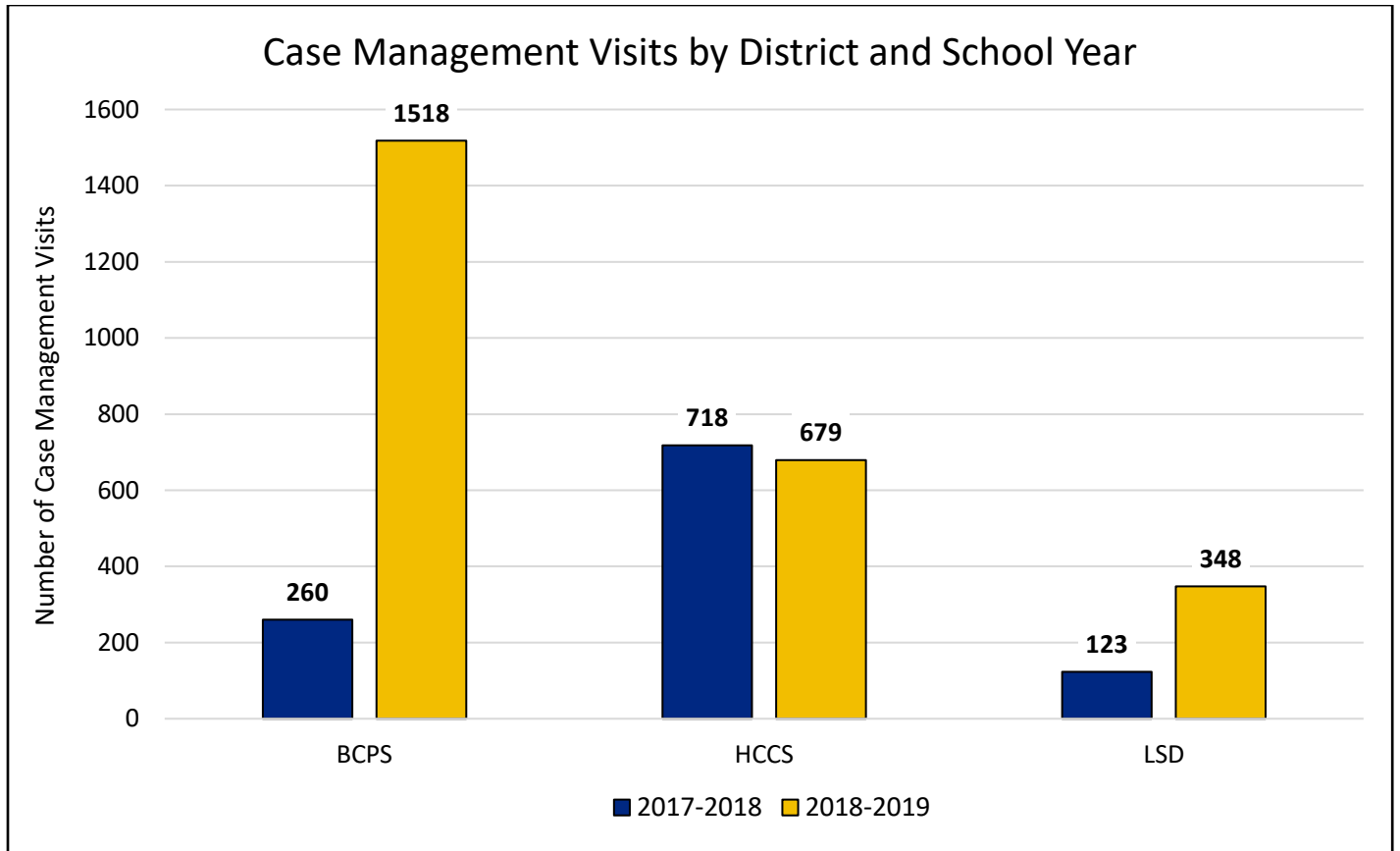
Summary of Chronic Disease Data

With a renewed focus on assisting students with chronic disease management, all three districts with participating schools observed an increase in the number of students identified with a chronic disease. Students were defined as having a chronic disease if they had a previous diagnosis or a new diagnosis due to school nurse referral of one or more of the following conditions: asthma, diabetes, obesity, severe allergies, seizures/epilepsy, or other chronic diseases. The data for chronic disease is pulled from visits made to the school nurse, and from students who had action plans on file. The visit is coded based on the visit's general purpose, which falls under the following categories: allergies, asthma, general medical, health promotion & risk reduction, obesity, other chronic diseases, and seizures/epilepsy. Visit data with a chronic disease code attached was then cross-tabbed with the student ID data to deduplicate the data. Action plans are created for students in conjunction with the student's primary care physician. If the student has a documented chronic disease that needs medication stored at the school, an action plan must be created and kept on file.

As previously stated, the Acuity Model of Care allowed for increased focus on chronic disease management. This change is evident and was observed across all three participating school districts. BCPS saw an 85% increase in the number of students with chronic disease. HCCS observed the smallest increase in the number of students with chronic disease, increasing by 39%. Finally, LSD experienced a 75% increase in the number of students with chronic disease.

Comparing Pre-Acuity Services and Post-Acuity Services

Case Management Data



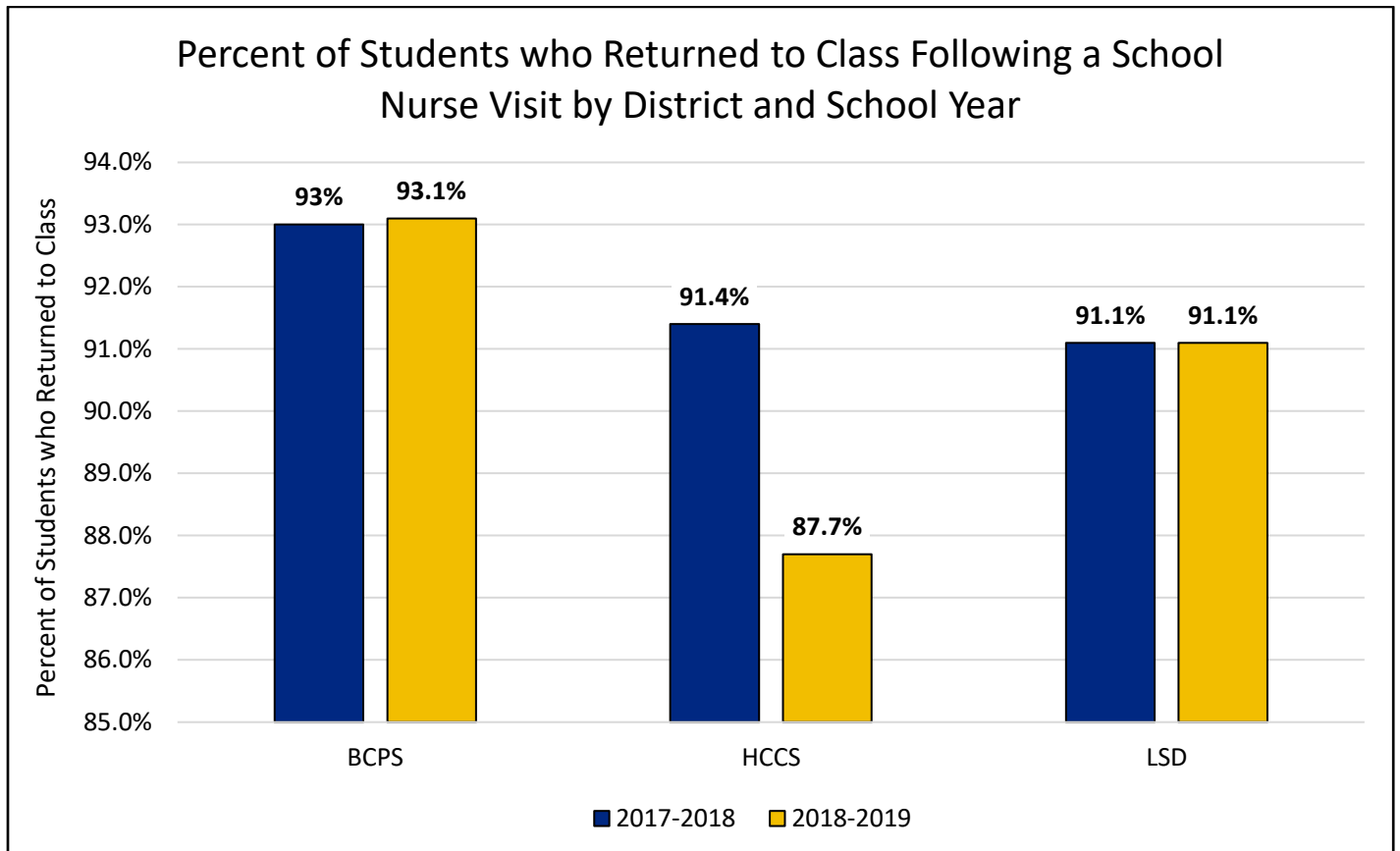
Summary of Case Management Data

The Acuity Model of Care focuses largely on chronic disease management in order to improve health outcomes in students. CCPHD's school nurses utilize case management in order to complete this task. Case management is coded for when a school nurse provides one of the following services: contacting a physician or parent, sending or receiving action plans, sending PCP letters or insurance information to parents/guardians, and providing education to students and/or parents/guardians. Case management education sessions cover a plethora of topics, most pertaining to chronic disease education. Education occurs both one-on-one and within classrooms. One-on-one education typically centers around a student's specific chronic illness and how he/she can best manage it. An example of this would be a nurse teaching a student how to properly utilize his/her inhaler. Classroom education occurs within the classroom setting and centers around healthy habits.

Comparing Pre-Acuity Services and Post-Acuity Services

With the implementation of the Acuity Model of Care, there were significant increases in the number of total case management visits made to the school nurses at both BCPS and LSD. This is consistent with the substantial increase in the number of students who were identified with chronic disease. HCCS experienced a slight drop. This could be due to the small increase in students with identified chronic disease, as well as their students having better management of their illnesses. The greatest change when analyzing the case management data was in case management education. This form of education was newly implemented with the Acuity Model of Care. BCPS conducted 201 sessions, and HCCS and LSD conducted just under 30 education sessions each.

Return to Class Data



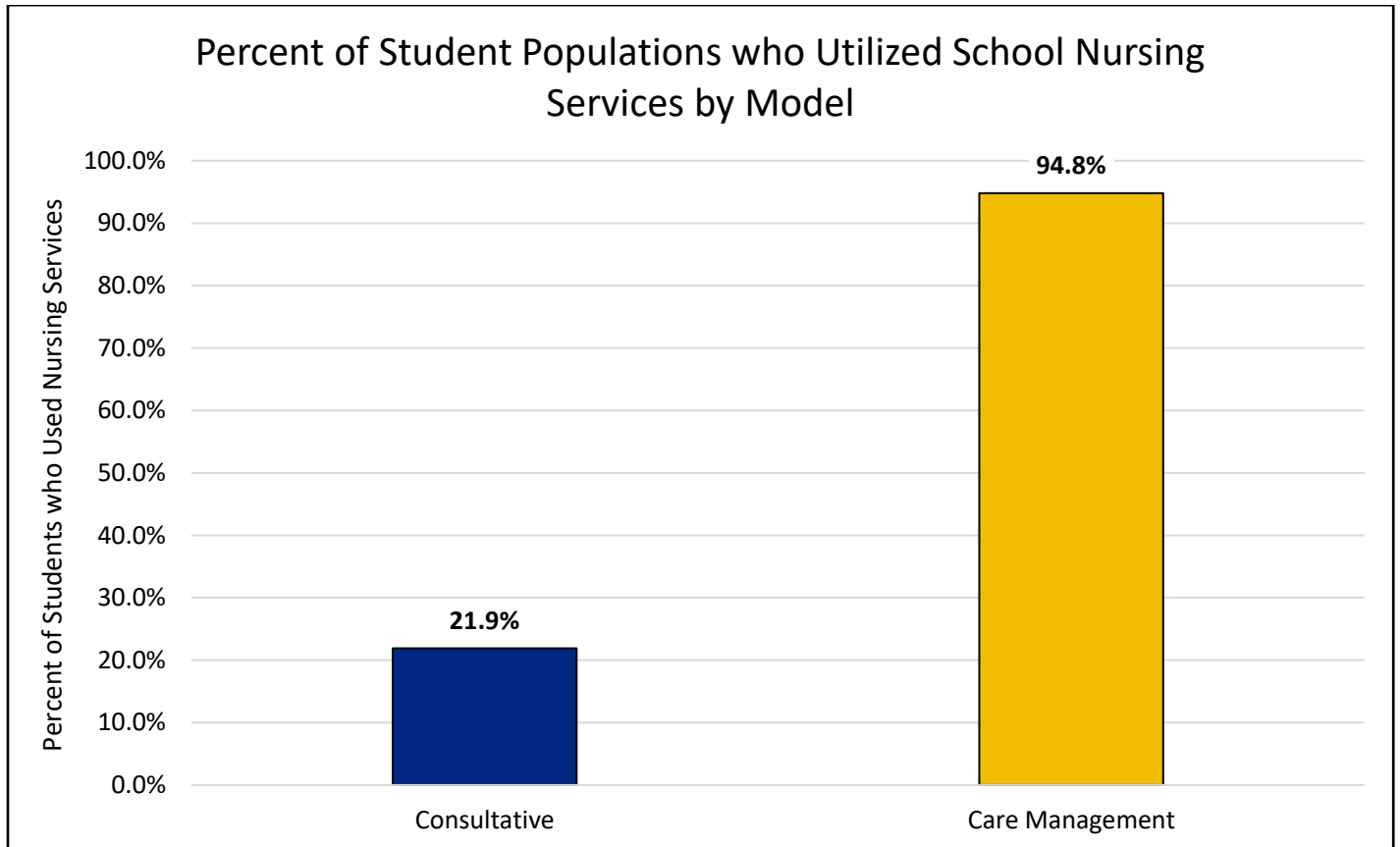
Summary of Return to Class Data

When a student utilizes school nurse services, a disposition code is attached to the visit data. There are six different choices indicated: returned to class, dismissed due to illness, dismissed due to injury, return PRN, dismissed per parent request, and EMT transport. Return to class data can help us evaluate if having a school nurse impacts a child's ability to stay in school more often. Absenteeism is directly related to a child's school performance, so it is the goal of school nurses to keep students in school when it is feasible. Overall, there were no significant changes from the 2017-2018 to 2018-2019 school year. HCCS did experience a minute drop of less than 4%.

Comparing Consultative Model Services and Care Management Model Services

There are clear and distinct differences in services provided prior to and following the implementation of the Acuity Model of Care. In addition to assessing pre/post-acuity model services, CCPHD assessed the differences between both models which operate under the Acuity Model of Care, Consultative and Care Management. Please note, all data below is derived from the 2018-2019 school year.

Encounter Data



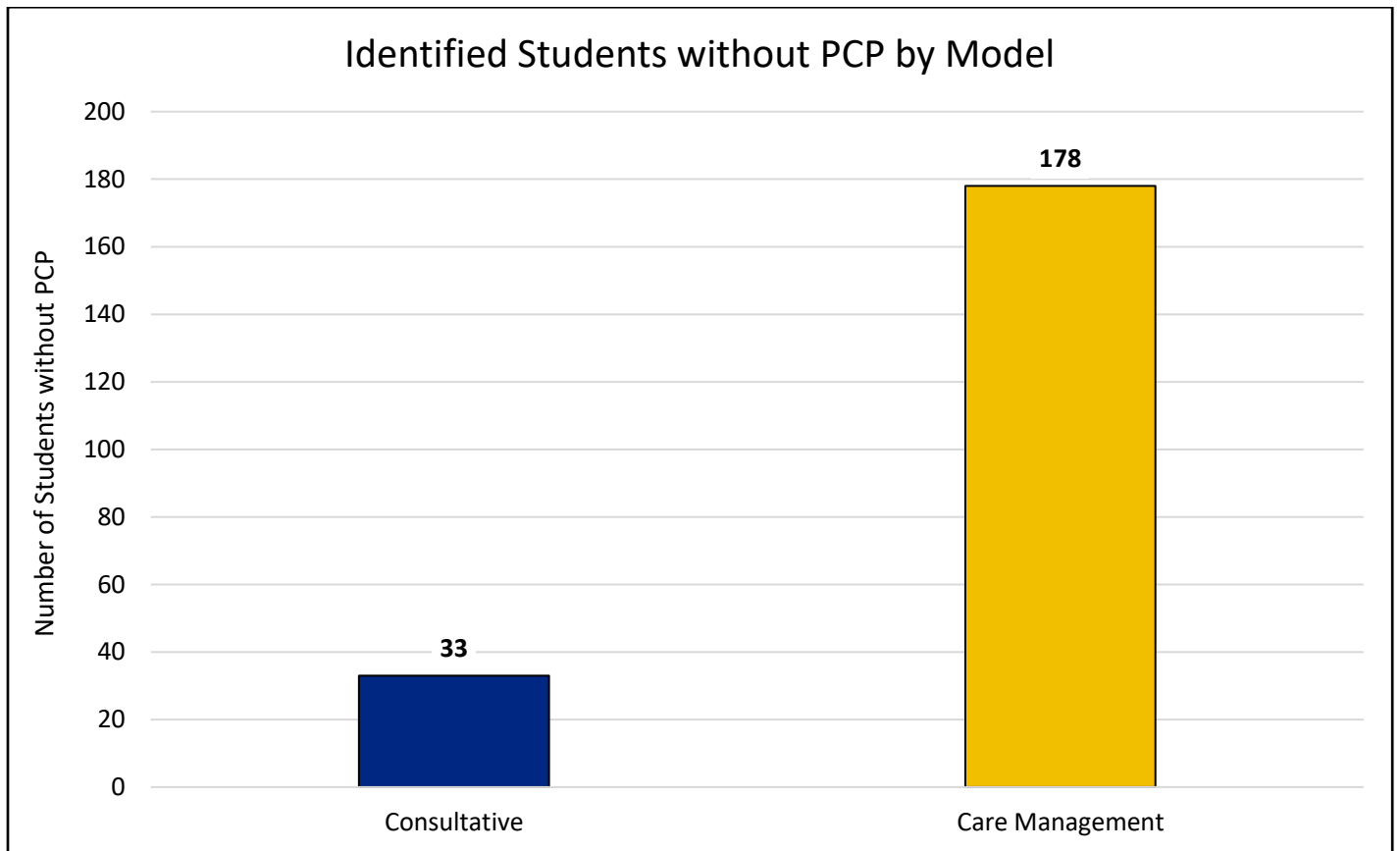
Summary of Encounters Data

Significant differences were observed in visitation data when comparing Consultative and Care Management models. As stated with the previous encounter data, numbers are pulled from the HealthMaster EMR database. An encounter is defined as any interaction a school nurse has with a student and/or a student's guardian. The data is pulled by a unique student ID. Total encounters and unique encounters are then derived from this data. Unique encounters are the sum of students who interacted with the school nurse at least once. It is a deduplicated count. Total encounters are every encounter made with the students and/or their families.

The significant difference in the ratio of the student population which interacted or encountered the school nurse was expected. There is a difference in full-time employees (FTEs) from the Consultative Model to the Care Management Model (see table on page 3). This difference attributes to the number of students who can interact with a nurse. There were 1,510 total encounters under the Consultative Model and 1,136 total encounters under the Care Management Model. However, the ratio of students who had a school nurse encounter was significantly higher under the Care Management Model.

Comparing Consultative Model Services and Care Management Model Services

Access to Care Data



Consultative

- 34 total referrals made by school nurses

Care Management

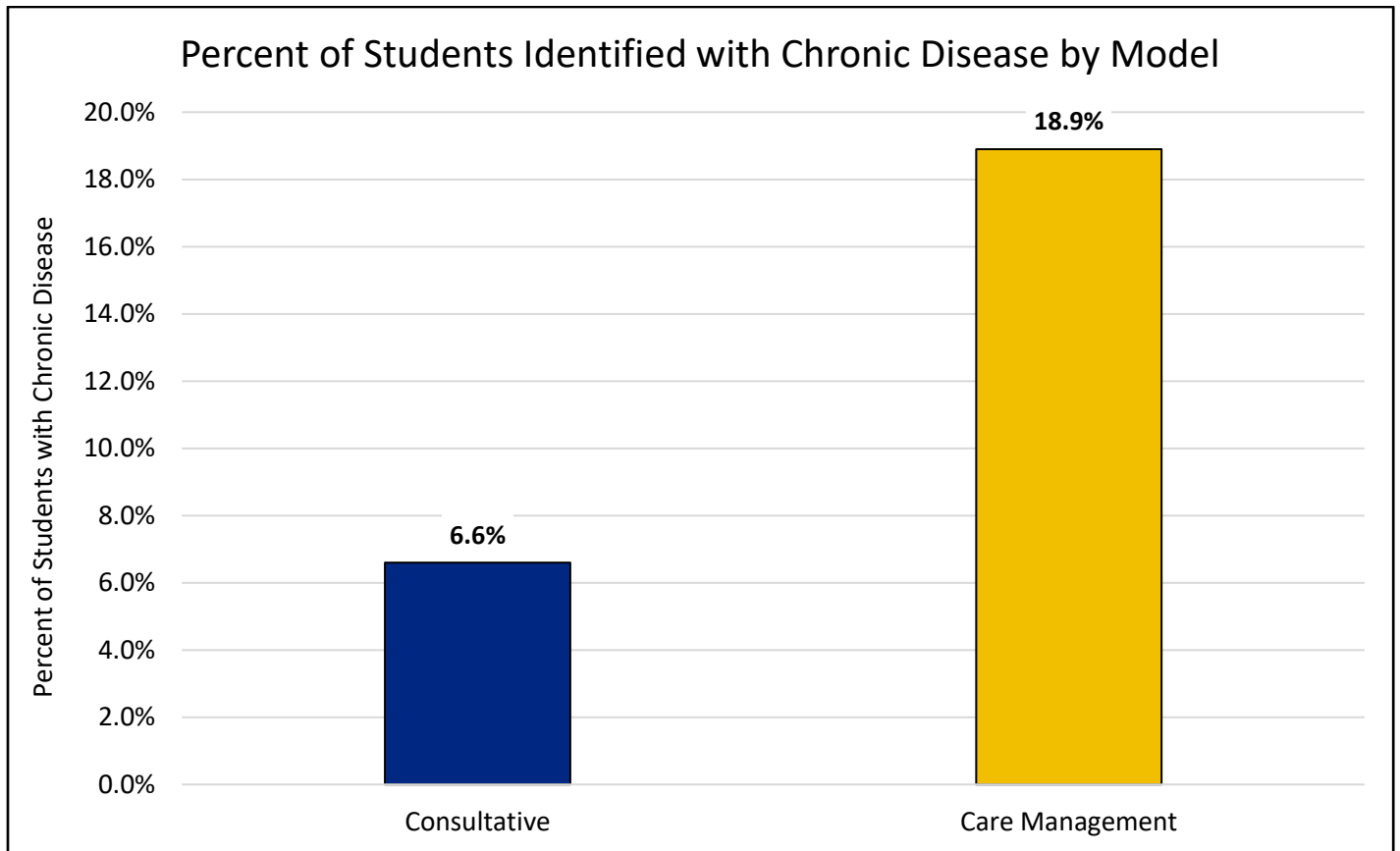
- 199 total referrals made by school nurses

Summary of Access to Care Data

As previously discussed, access to care data references whether a student has regular access to a primary care physician. This data is collected through a form disseminated to parents/guardians at the beginning of the school year. Based upon each response, a letter with referral information is sent out to pertinent families. Under the Care Management Model, 178 students were identified to not have a PCP. Subsequently, 199 referral letters were sent to the appropriate families. In contrast, 33 students were identified to not have a PCP under the Consultative Model, and 34 total referrals were then sent. The distinct differences seen here can be attributed to FTEs operating at each school based on the model, as well as the job functions discussed on pages 6 and 7.

Comparing Consultative Model Services and Care Management Model Services

Chronic Disease Data



Consultative

- 28.5% of students with chronic disease have an AP on file

Care Management

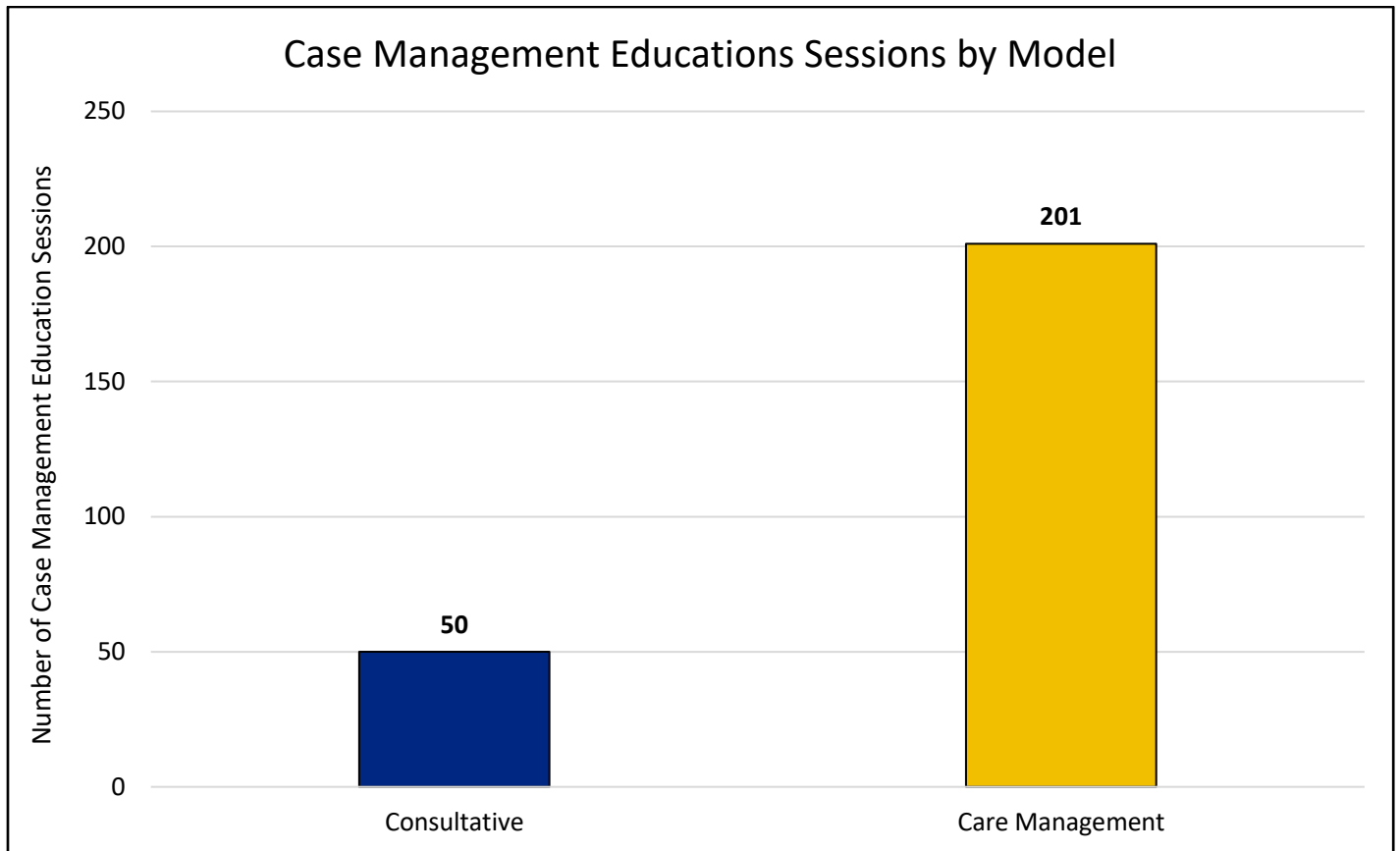
- 19.8% of students with chronic disease have an AP on file

Summary of Chronic Disease Data

Students are indicated as having chronic disease if they possess a diagnosis of one or more of the following: allergies, asthma, diabetes, seizures/epilepsy, or obesity. If a student possesses a different chronic illness diagnosis, he/she may be classified as 'other chronic disease'. Nearly three times the number of students under the Care Management Model have a chronic disease diagnosis compared to students under the Consultative Model. Interestingly, a larger percentage of students under the Consultative Model had an action plan on file compared to those under the Care Management Model. This difference may be due to the ratio of students who need medication to control their illness, as action plans are required for such cases.

Comparing Consultative Model Services and Care Management Model Services

Case Management Data



Consultative

- 1,027 case management visits were made in the 18-19 school year across 4 schools

Care Management

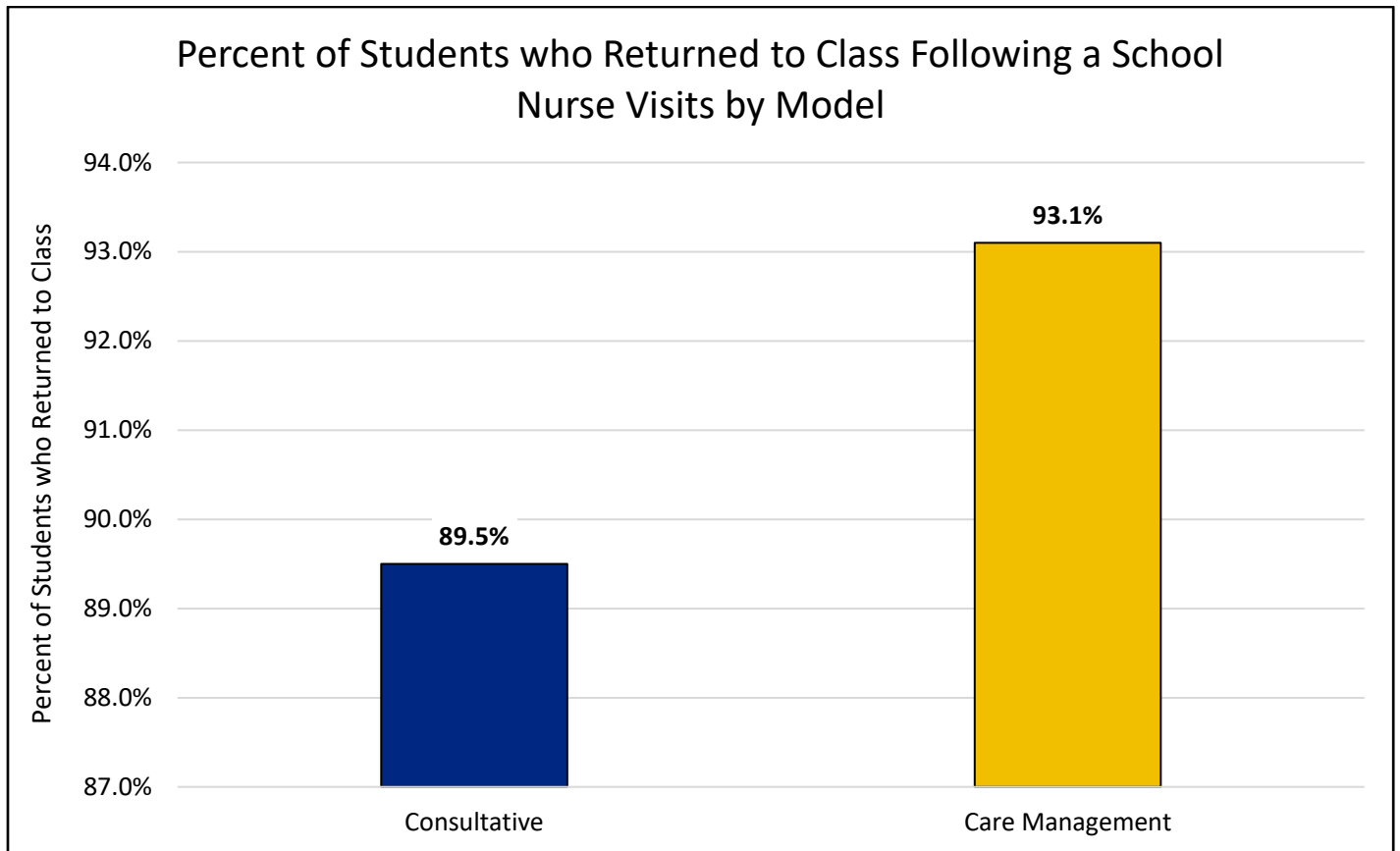
- 1,518 case management visits were made in the 18-19 school year across 9 schools

Summary of Case Management Data

There was a large difference in both the number of Case Management visits and Case Management education sessions. This is due largely to the functions of each model. While both models emphasize chronic disease management, the Care Management Model achieves this through case management visits and education sessions. More commonly under the Consultative Model, consultation and work in conjunction with PCPs is utilized to achieve disease management. In total, 201 case management education sessions were conducted under the Care Management Model. 50 case management education sessions which were conducted under the Consultative Model. In all, across four BCPS elementary schools, 1,027 total case management visits were made under the Care Management Model. There were 1,518 total case management visits under the Consultative Model which operates in 11 HCCS and LSD schools.

Comparing Consultative Model Services and Care Management Model Services

Return to Class Data

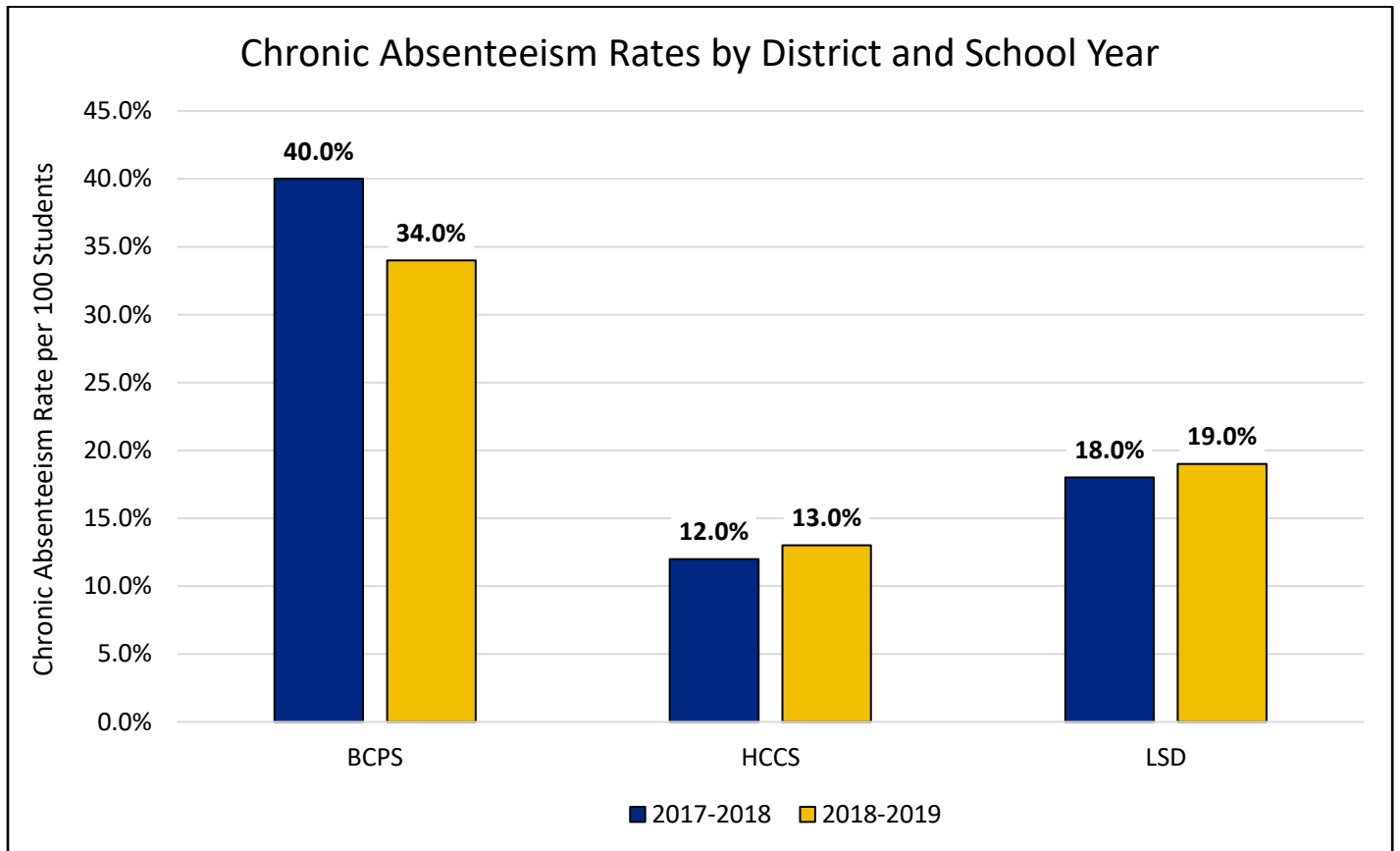


Summary of Return to Class Data

There was a small difference between models in the percent of students who returned to class following an encounter with the school nurse. Just under 90% of students who encountered the school nurse returned to class under the Consultative Model and 93.1% returned to class under the Care Management Model.

Chronic Absenteeism Data

One of the primary overarching goals of the Acuity Model of Care was to reduce rates of absenteeism. Chronic absenteeism is one of the indicators which comprise the Acuity Model Score. Since implementing the Acuity Model of Care, BCPS district, which includes four Care Management Model participating schools, experienced a drop in chronic absenteeism rates. HCCS and LSD, all schools participating in the Consultative Model, remained consistent, experiencing only a 1% increase. The graph below displays the differences in chronic absenteeism from the 2017-2018 school year to the 2018-2019 school year.



Attendance Data

The data below includes attendance data for each school that participates in the SWP. Data is derived from the MiSchool database. Attendance rates consider the number of students absent each day as well as the number of students enrolled in the school each day. The rates below are per 100 students. Of the participating schools during the 2018-2019 school year, BCPS has the lowest average attendance rate (91.6%) and HCCS has the highest attendance rate (95.5%). Each district experienced increases in attendance from the 2017-2018 school year to the 2018-2019 school year.

Battle Creek Public Schools

School	17-18 Attendance Rate	18-19 Attendance Rate
Dudley STEM	90.5%	90.6%
LaMora Park Elementary	90.4%	91.9%
Valley View Elementary	92.2%	94.0%
Verona Elementary	88.6%	90.1%
Average	90.4%	91.6%

Harper Creek Community Schools

School	17-18 Attendance Rate	18-19 Attendance Rate
Beadle Lake Elementary	94.8%	95.4%
Sonoma Elementary	95.9%	96.3%
Wattles Park Elementary	95.9%	96.5%
Harper Creek Middle	95.1%	94.9%
Harper Creek High	95.1%	94.4%
Average	95.4%	95.5%

Lakeview School District

School	17-18 Attendance Rate	18-19 Attendance Rate
Lakeview High	92.6%	93.2%
Lakeview Middle	93.6%	94.8%
Minges Brook Elementary	93.4%	94.3%
Prairieview Elementary	94.3%	93.7%
Riverside Elementary	95.0%	95.0%
Westlake Elementary	95.4%	95.2%
Average	94.0%	94.4%

Limitations

There were numerous challenges in evaluating the SWP from Pre-Acuity Model to Post-Acuity Model. One of the primary limitations was the transition of electronic medical records (EMRs). Previously, CCPHD utilized HealthMaster to store all SWP data. In the summer of 2019, a switch was made to myInsight. When the HealthMaster account closed in the summer of 2019, various data were unfortunately lost.

Another limitation that should be noted is the variation in data entry among nurses. Included with the Acuity Model of Care development were new data collection processes and procedures, which the school nurses were learning throughout the school year. This learning curve regarding the new procedures should be noted, as data input varied across schools.

Much of the data discussed within this report is solely derived from visitation data. This is a limitation, as students who may have a chronic illness could potentially remain unaccounted for if they did not visit the nurse or have a parent/PCP submit an Action Plan. Finally, this data is comprised of two school years, 2017-2018 and 2018-2019. This should be considered as the same cohort of students is not being followed, which can cause anomalies within the data. For example, the 2018-2019 cohort may have a significantly higher rate of students with chronic disease, which can skew the data.

Moving Forward

As the SWP continues into year two of the Acuity Model of Care, plans are underway to expand school nursing services to include adding a part-time school nurse to Fremont International Academy and a full-time Care Management school nurse to Prairieview Elementary. The CCPHD also plans to review the original acuity model indicator method in comparison to the Wake County, North Carolina School Health model. The Acuity Model in Wake County is comprised of the following data weights: 30% free and reduced lunch, 30% NC ABC Result Performance Composite, 10% limited English proficiency, 10% English as second language, 10% identified health conditions, and 10% invasive medical procedures. Moving forward, CCPHD will assess our current model and available data, and update accordingly.

In addition, with the new EMR system implementation comes the creation of a clear, unified process ensuring all nurses are working under the same data method. School nurses will receive comprehensive training and workflows to further ensure data management consistency.

A comprehensive evaluation survey will be developed and distributed to school administrators and staff, and parents/guardians. The survey will provide the CCPHD with information on the value and need of the school nurse from the school and parent/guardian. Included in this survey will be questions to determine the top problems as reported by school staff and parents. This information will provide the CCPHD SWP with data to evaluate the effectiveness and need in addressing health-related issues within Calhoun County participating schools. This information will also be included in annual evaluation reports and provided to non-participating schools.



**United Way of the
Battle Creek and
Kalamazoo Region**
changethestory.org



Students for Life



The Calhoun County Public Health Department appreciates the continued support of program funders and partners. Without this support, the School Wellness Program would not be possible.



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