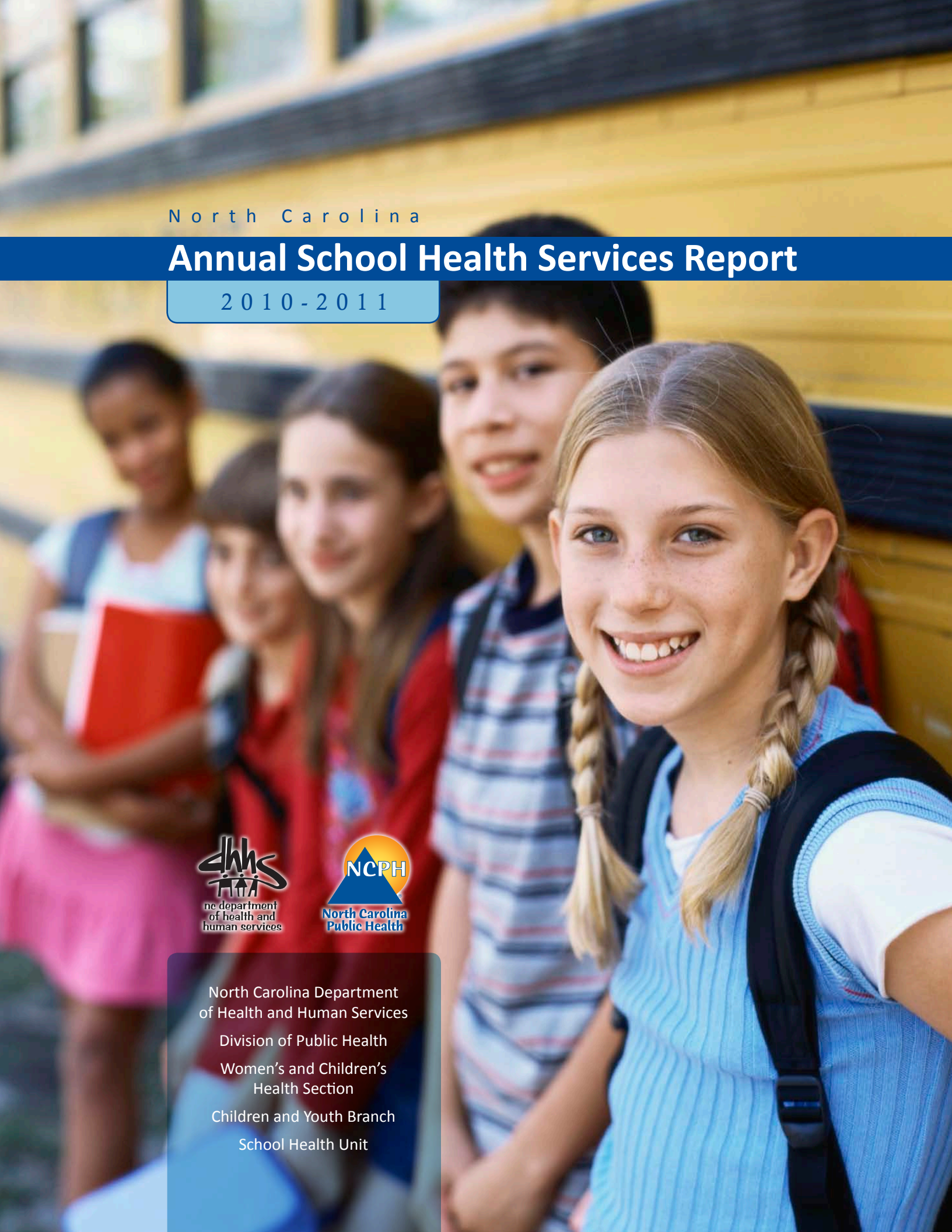
North Carolina

Annual School Health Services Report

2010-2011



North Carolina Department of Health and Human Services

Division of Public Health

Women's and Children's Health Section

Children and Youth Branch

School Health Unit

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Executive Summary

The National Center for Education Statistics identifies North Carolina as the 10th largest state public school system in the country.[1] More than 1.4 million children were enrolled in North Carolina public schools during the 2010-2011 school year, an increase of 7,626 students from the previous school year. North Carolina's leaders in both education and health agree that health and education are interdependent; therefore the identification of health-related barriers to learning is crucial to the academic success of every student. By the beginning of school year 2005-2006, North Carolina had instituted comprehensive school health services in every school district. This goal became a priority of the N.C. Public Health Task Force, and subsequently, the state's Division of Public Health, the American Academy of Pediatrics, the Centers for Disease Control and Prevention (CDC), the American School Health Association and the National Association of School Nurses, established a goal that every public school student in North Carolina have access to a school nurse in a ratio not to exceed one nurse per 750 students.

Over the years, the state has made comprehensive school health services a priority through strategies such as the N.C. Healthy Schools Coordinated School Health program, the School Health Advisory Councils (SHACs), the N.C. School Health Leadership Assembly, and establishment of a School Health Cabinet at the highest levels of state government. Other strategies include the School Nurse Funding Initiative, the Child and Family Support Team initiative, and local funding directed toward school health services and personnel. Support for those efforts is provided through the Department of Public Instruction and the Department of Health and Human Services by designated staff members, including the state and regional school health nurse consultants and allied health consultant, among others. During the 2010-2011 school year the number of full time school nurse positions decreased slightly from the year before from 1,183.36 to 1173.5 nurse positions. (See chart on page 11 for historical detail.)

School nurses in North Carolina are employed by a variety of agencies. Among the 115 LEAs (Local Education Agencies), three-quarters of the school health programs are administered by the school districts themselves. The remaining quarter of the programs are administered by local health departments, hospitals, or a combination of all three. Funding for school nurse positions is derived from a variety of sources including local and state funds, federal Title V block grant dollars, categorical funds, and public and private foundations.

Administrative Responsibility for School Nurses (source of management, supervision and payment, regardless of funding source)

LEA	84	73%
Health Department	15	13%
Hospital	2	2%
Health Alliance	2	2%
Combination	12	10%

The slight decrease in the full-time equivalents of school nurses this past year and a slight increase in the number of students in the state contributed to a worsening of the statewide ratio of school nurses to students.

[1] http://nces.ed.gov/datatools/index.asp?DataToolSectionID=4 (Accessed 9-19-11)

The 2010-2011 school year was the first year since 2004 when the ratio did not improve. On average, each school nurse in the state cared for an additional 16 students this past year, from 1:1,185 in 2009-2010 to 1:1,201.44 in the 2010-2011 school year. The ratio improved in about half (62) of the LEAs and worsened in just under half (53) of the LEAs. In August 1998, about 556 school nurses delivered services in 87 counties, and these nurses carried caseloads of about 2,450 students each. Over the past dozen years, the number of students in the average nurse's caseload has been cut by more than half, enabling more students to access health services from a school nurse.

The roles and the responsibilities of a school nurse are different from those of registered nurses working in other settings. Although principles of professional nursing remain consistent, the school nurse also must possess skills related to:

- A population-based focus on the entire school community, from students to staff to visitors to residents.
- Expertise in pediatric and adolescent growth and development.
- Knowledge and clinical expertise in the unique health issues of children and adolescents.
- Ability to identify academic difficulties that may be related to a health problem.
- Ability to problem solve in order to accommodate a student's disabilities and health needs into the challenges of school.
- Knowledge of and ability to implement school nursing services in the federal and state programs designed for students with special needs (including both Individual Education Plans and Section 504 Disability Plans).
- Ability to put epidemiological principles into practice, including monitoring for clusters of symptoms that may indicate an emerging health threat for students and staff.
- Knowledge of research findings and emerging issues, to educate the school community and implement evidence-based practices.
- Skills in advocating for students and their parents to find common ground and reach agreement on accommodations to health problems.
- Leadership and confidence while negotiating a student's personal crisis or assisting school administration in a school's crisis.
- Ability to practice independently in a setting where he or she is usually the only health professional.

Examples of school nurse activities include:

- Ensures compliance with school entry health requirements such as immunizations and physical exams.
- Provides care and case management for children with chronic health problems.
- Monitors security and safe administration of medications.
- Assures the health and safety of the students and staff.
- Takes a lead role in managing disasters and planning for emergencies.
- Promotes student and staff wellness programs.
- Assures school compliance with state and local regulations related to health and safety.
- Identifies school health needs and advocates for necessary resources.

National certification in school nursing is the standard by which school nurses are judged to have the knowledge and skills necessary to provide these health services. During 2010-2011, the number of nationally certified school nurses, as a percentage of the total number of school nurses in North Carolina, decreased slightly, by 1 percentage point to 52 percent. North Carolina remains the state with the highest number of nationally certified school nurses in the country.[2]

The skills and knowledge that the school nurse brings to the school health activities can be measured partially by outcomes related to the dual goals of improving a student's health status and academic achievement. During the 2010-2011 school year, the following outcomes were a direct result of school nurse-led management of students with specific disease processes:

Among students with allergies severe enough to affect their health and ability to learn:

- 1,861 of those students stated that they had reduced the number of episodes of severe allergic reactions that required the use of their injectible emergency medication.
- 4,190 stated that with the school nurse's assistance, they had increased their knowledge of their disease, its causes and treatments, and how to better manage the illness.

Among students with asthma severe enough to affect their health and ability to learn:

- 4,655 said their improved health allowed them to increase their participation in physical education and/or after school physical activity.

Among students with diabetes severe enough to affect their health and ability to learn:

- 2,083 improved their skill in testing their own blood sugar and 1,223 calculated and correctly drew their own dose of insulin 100 percent of the time.

Among students with weight issues severe enough to affect their health and ability to learn:

- 934 were able to increase their participation in physical education, sports or after school activity and about the same number demonstrated a better understanding of their condition.

Additional data about these improved outcomes are described further under the heading "Student Health Outcomes" and specific examples are included throughout this report. School nurses also provide general health education to staff and students; during the 2010-2011 school year, the nurses reported providing 28,842 programs and presentations:

- 45 LEAs (39%) presented asthma education programs for staff.
- 42 LEAs (37%) provided asthma education programs for students.
- 109 LEAs (95%) provided diabetes education programs for staff.

A critical function of school nurses is managing the care of students with chronic health conditions throughout the school day. During 2010-2011, the most common chronic health conditions of K-12 public school students in North Carolina, as reported by the nurses who care for them, included asthma (101,599), ADD/ADHD (63,689), severe allergies (24,806), and diabetes (4,854).

[1] NCBSN, 2010 [A number of states require certification in school nursing through a state-designed program rather than the national certificate.]

As part of care management, school nurses develop individual health care plans and train school staff members to give necessary medications and safely perform nursing procedures delegated by the nurse to school staff. During the 2010-2011 school year, the state's school nurses developed more than 100,000 individual health plans for those students. More than half of those plans, 51,000, were for students with asthma. For each plan, the individual student's medical orders and individual needs were assessed, goals for student-management were written with the student, interventions were carried out, staff members were trained, and the student's health status following treatment was evaluated.

Health counseling is defined as any encounter with a student where instruction and advice for health promotion, health improvement and health maintenance were discussed. During the 2010-2011 school year, school nurses provided 193,136 health counseling sessions to individual students and staff. School nurses facilitated health screenings conducted in schools. Over a half-million school children (519,149) were screened for vision, and more than 25,465 students were seen by physicians or eye care professionals as a result of the referrals from school health professionals to obtain comprehensive eye exams.

Nurses received 114,404 physician orders for individual medications, including drugs ordered to be given regularly during each school day to specific students over the entire school year, drugs such as antibiotics or pain medication ordered daily but for short term use, as well as drugs ordered to be on hand should the student need them. Those drugs ordered to be available included those for emergencies (including diabetes, severe allergies, and intractable seizures) and those ordered for occasional headaches and other ailments. The school nurse reviews the orders prior to administering the medications, training non-health care school staff to administer them, or, when specific conditions are met, assisting students to self-administer these medications. Review of the order by a Registered Nurse trained to identify the indications for use of a drug, its side effects and usual dosages and routes for it to be given, can reduce the incidence of medication errors. When an RN conducts an audit of records of medications given to students, the incidence of errors and risks of additional errors can be spotted and reduced quickly.

School nurses work with their local School Health Advisory Councils (SHAC) to develop and implement local programs designed to prevent illness and promote health. The SHACs are mandated by the North Carolina State Board of Education Healthy Active Children Policy (GCS-S-000). School nurses also assist with disaster/emergency planning for their communities. As the number and complexity of health needs of children in school continue to grow, so must the availability of school nurses until the recommended ratio of 1:750 is reached and, ideally, there is at least one school nurse in every school in North Carolina.

Methodology

This report is compiled from data submitted by school nurses based on their data collection and knowledge of health services provided in their schools. Data specialists and school nurse consultants in the N.C. Division of Public Health's Children and Youth Branch developed the survey instrument. Each of the 115 LEAs — 100 percent— participated in the data collection and submitted data onto the survey instrument electronically. These data address health services in North Carolina public schools, not including public charter and state residential schools. Charter and private schools

were invited to participate in data collection for this 2010-2011 school year, but, except for a required report from charter schools for data on students with diabetes, an insufficient number of reports were received from those schools to provide significant information. This report also does not include data from federal schools, such as those on military bases or in Native American reservations or in private or parochial schools.

The data were collected and sorted by Children and Youth Branch staff and analyzed by staff in the School Health Unit and Best Practices Unit.[3]

Additional data for this report were collected from other sources, including:

- North Carolina Department of Public Instruction;
- North Carolina Department of Health and Human Services, Division of Public Health, Women's and Children's Health Section;
- The National Society to Prevent Blindness North Carolina Affiliate, Inc.; and
- North Carolina Child and Family Support Teams Initiative.

Additional data are available for further review by request.

Contact:

Jessica Gerdes, State School Nurse Consultant, Jessica.Gerdes@dhhs.nc.gov

Carol Tyson, School Health Unit Manager, Carol.Tyson@dhhs.nc.gov

[3] DATA SOURCES

N.C. Annual School Health Nursing Survey: Summary Report of School Nursing Services 2009-2010

N.C. Division of Public Health • Department of Health and Human Services

Public Schools of North Carolina • Department of Public Instruction

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Introduction

The 2010-2011 report is the 15th Edition of the North Carolina Annual School Health Services Report. For each school year since 1996-1997, the North Carolina Division of Public Health has summarized significant findings from the collected school health data from each school district. This report summarizes data for school health services during school year 2010-2011 and provides information on trends.

The survey of the school health service programs also asks for comments regarding outcomes and successes during the past school year and goals for future years. This report includes a small selection of the accounts of successful outcomes; they are labeled "local outcomes" and offer examples of potential solutions to some vexing student health issues.

Survey Population

Profile of Students Enrolled in North Carolina Public Schools

North Carolina's 1.4 million (1,409,895) school children are as diverse as the state's population.[4] They come from all socio-economic backgrounds and represent ethnic backgrounds from around the globe. A slim majority are male (51%) and white (53.1%). Other racial and ethnic populations in our schools are: Black or African American, 26.4%; Asian, 2.5%; Hispanic, 12.7%; American Indian, 1.5%; other, 3.8%. Students attend our 2,425 public schools in 115 educational districts (100 districts organized by county and 15 by city). An additional 41,232 students attend the 99 North Carolina public charter schools in operation in 2010-2011.

Exceptional Children

Intellectual, emotional and health impairments are among the disabilities that negatively impact a student's ability to learn. Nearly 12 percent of the state's public school children have disabilities that impact learning to such a degree that they are eligible to receive additional specialized instruction through the Exceptional Children's (EC) services. According to federal and state regulations, students with disabilities may be enrolled and receive appropriate educational services from ages 3 through 21. During the 2010-2011 school year, approximately 18,433 preschool students and 166,674 students ages 6-21 in North Carolina grades kindergarten through 12th were enrolled in EC programs.[5] The incidence of EC enrollment peaks at around age 10; among students receiving EC services, one out of every 10, is 10 year olds.[6]

Students in the EC program often require the assistance of school nurses, as many of them have additional conditions beyond their primary disability that require health care plans, emergency action plans, and other health accommodations. Most school nurses care for these students in addition to students in regular education. A small percentage of school nurses (fewer than 2 percent) are assigned to work exclusively in the EC program.

All students eligible for EC services must meet criteria for one primary disability from among 13 eligible categories, and may meet criteria for additional disability categories. Although

[4] http://www.dpi.state.nc.us/docs/fbs/accounting/data/adm/ratio.xls (Accessed 10-31-11) Does not include charter school or state residential school students.

[5] http://www.ncpublicschools.org/docs/ec/data/childcount/reports/december1/2010/osep006.pdf (ages 6-21) (Accessed 9-20-2011)

[6] U.S. Department of Education, EDFacts (SY2010-2011), posted April 18, 2011, accessed Oct. 20, 2011

"specific learning disability" was the most frequent classification among students in EC programs in North Carolina, "other health impairment" was the second most frequent primary disability (30,541 students). The state EC program classified another 6,070 students with these health-related primary disabilities: "traumatic brain injured," "visual impairment," "hearing impaired," "orthopedically impaired," and "multiple disabilities." With nearly each student who has a chronic health condition, the school nurse is involved in planning and caring for the student, sometimes in direct care and other times in delegating, training and overseeing nursing care provided by other school staff.

School nurses often arrange for and provide general supervision of other nurses in the school setting. In some LEAs (17 during the 2010-2011 school year), private-duty nurses, including licensed practical nurses (LPNs), provided care to students who were medically fragile and needed care on a one-on-one basis during the entire school day. The LPNs worked under the supervision of a registered nurse, a condition required by the N.C. Board of Nursing. LPNs may be hired by the school system or by an agency to provide direct care to an individual student who needs such a level of nursing care due to severe disabilities or severe health conditions that the care can not be provided by a teaching assistant.

Local Outcome

We will continue to focus more closely on attendance and address those concerns early on, looking for health reasons that students miss school. We want to identify health barriers to school attendance and academic success and eliminate them, improving the student's chances for academic success.

Pre-kindergarten (Pre-K) Students

The physical well-being of children when they enter school is one of five domains that lead to success in school, according to the N.C. Ready Schools Initiative. North Carolina state government and the federal government provide funding for students in pre-school programs to promote future success in school. In the public schools, those students enroll in More at Four Pre-Kindergarten programs, Title I Preschool, and Exceptional Children Preschool. The state's school nurses serve pre-k students to maximize their ability to be "healthy and ready to learn" at kindergarten entry, partnering with the community to provide health screening and health services to the children and their families. During the 2010-2011 school year, the school nurses reported serving 37,925 pre-k students. Nearly half of those students, 18,433, are enrolled in preschool as students in Exceptional Children programs.[7] Although nearly half (48%) of these students are enrolled due to speech impairments or language delays and about 40 percent have developmental delays, the remaining 12 percent have disabilities ranging from autism (1,324, or 7%) to hearing, vision, orthopedic or other health impairments (totaling 662, or 3.6%). Another 203 students are classified as having multiple disabilities. The preschool student enrollment is not counted in this survey for purposes of the formula that results in the statewide school nurse-to-student ratio.

Profile of Nurses Employed in N.C. Public Schools

The school nurse is a registered nurse (RN) in a specialized professional practice that

[7] http://www.ncpublicschools.org/docs/ec/data/childcount/reports/december1/2010/osep004.pdf (Accessed 9-27-2011)

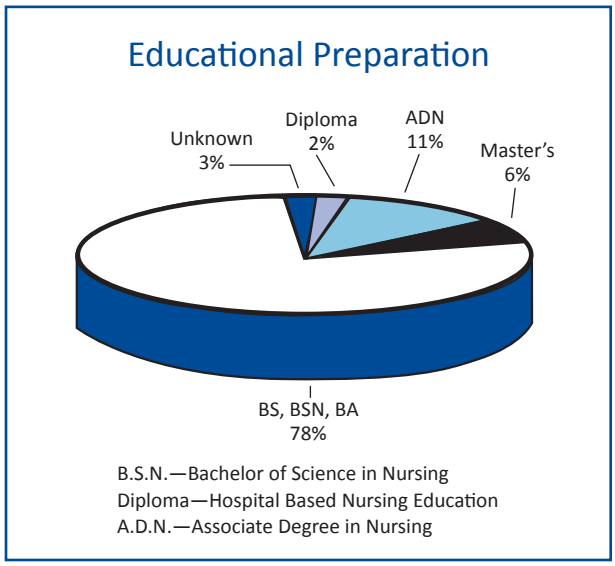
requires different educational preparation, experiences, skills and knowledge than that of nurses working in acute care or even other community settings. The American Academy of Pediatrics has affirmed that the school nurse has a crucial role in the seamless provision of comprehensive health services to children and youth.[8] The Academy's position statement of May 2008 states that increasing numbers of students enter schools with chronic health conditions that require management during the school day. School nurses provide preventive services, early identification of problems, interventions, and referrals that serve to improve health and educational outcomes. In North Carolina, the school nurse often functions as a member and occasionally as the coordinator of the local School Health Advisory Council. School nurses are involved in each of the eight components of a Coordinated School Health Program: health services, health education, physical education, nutrition services, health promotion for staff, counseling and psychological services, healthy school environment, and family/community involvement.

Educational Preparation of School Nurses

School nurses are registered nurses (RN) licensed by the North Carolina Board of Nursing. Educational preparation for entry into registered nursing is through one of three routes: a bachelor's degree from a four-year college or university; an associate degree in nursing from a community college or technical college, or a diploma conferred by a hospital. Driven in part by recommendations of national leaders in school health,[9] and in part by recommendations of state leaders and requirements of funding partners, the level of educational preparation of school nurses in North Carolina has increased steadily over the years. It increased again this year, with 84 percent of school nurses holding bachelor's degrees or higher during the 2010-2011 school year.

Local Outcome

Our school nurses hosted 15 pediatric residents (physicians) for up to one day each to help them understand the need for care and advocacy for health in the school community.



In addition to the basic preparation of registered nurses through formal education, RNs are expected to learn additional aspects of their specialties through on-the-job and continuing education. Registered nurses who are new to the specialty of school nursing learn their new roles and responsibilities through continuing education provided by the N.C. Division of Public Health and its co-sponsors, as well as during orientation offered by their school district, health department or hospital

[9] American Academy of Pediatrics: Policy Statement "Qualifications and Utilization of Nursing Personnel Delivering Health Services in Schools (RE7089)."

employers. The N.C. Board of Nursing requires evidence of continuing education for the state's registered nurses to renew licensure. School nurses in North Carolina attend continuing education activities offered through the nine regional Area Health Education Centers (AHECs), through a number of colleges of nursing, and through the Public Health Nursing Professional Development (PHNPD) provider of continuing education, delivered through a network of state and regional nurse consultants within the N.C. Division of Public Health.

Local Outcome

The nurses, together, certified or recertified 207 school personnel in CPR/First Aid.

National School Nurse Certification

Since 1998, the N.C. Department of Public Instruction has required that all school nurses hired by local education agencies hold national school nurse certification. Non-certified nurses hired after this date may be employed but must achieve certification within three years of date of employment. School nurses not employed by LEAs are encouraged, and in some cases required, through their funding partners, to obtain certification as a mark of achieving this increasingly recognized standard. National certification requires RN licensure, four-year degree, and a written exam that encompasses the full realm of school nursing, both from clinical and student educational perspectives. It is recommended that school nurses experience a full year in the practice of school nursing before attempting to take the certification examination. Currently, more than half (52%) of North Carolina nurses working in public schools hold national school nurse certification from one of the two national certifying bodies: the American Nurses Credentialing Center (ANCC) or the National Board for Certification of School Nurses (NBCSN).

As a rule, school nurses in North Carolina have a number of years of practice as a Registered Nurse in acute care and community health settings before entering the school nurse specialty. During the 2010-2011 school year, 76 percent had more than three years' experience in school nursing in addition to prior years of professional practice.

Ratio of School Nurse to Students

The national recommendation for the school nurse-to-students ratio is 1:750 for students in the general population; 1:225 in the student populations requiring daily professional school nursing services or interventions; 1:125 in student populations with severe and profound disabilities and complex health care needs; and 1:1 for some individual students who require daily and continuous professional nursing services.[10] The aforementioned ratios would allow all students to have their health needs safely met while in the school setting, including appropriate preventive, health promotion, early identification and intervention services.

For this report, school nurse-to-students ratios were based on full-time equivalencies (FTEs of positions budgeted for school nurses[11]) to work in local education agencies (LEAs). Registered nurses working solely as administrators, without caseloads of students, were not counted in the FTE or ratio. Using

[10] National Association of School Nurses, Position Statement, Caseload Assignments, Adopted 1972, Rev. 2006; See also CDC Healthy People 2010

[11] FTE = Full Time Equivalency for school nurse positions (all full and part time hours divided by full time hours as defined by local school district)

that definition, there were 1173.5 FTE budgeted school nurse positions active during the 2010-2011 school year, about 10 fewer than 2009-2010.

Each school district in North Carolina must have at least one registered nurse available to provide for school health services, though only the most sparsely populated counties have only one. The number of schools assigned to each school nurse varies from one-to-ten with an average of two schools per nurse. The school nurse-to-students ratio also varies widely from LEA to LEA. At the end of the 2010-2011 school year, the statewide average ratio of school nurse to students was 1:1,201. Most LEAs showed improvement, and 40 LEAs met the target ratio of 1:750. The ratios ranged from 1:316 in Pamlico County to 1:3,117 in Davidson County Schools.

Local Outcome

Our School Nursing Program was the first in the nation to be designated as a Magnet Program by American Nurses Credentialing Center, and now we are the first to be redesignated!

For a breakdown of school nurse to students ratio by LEA, see Appendix C.

The following chart shows the yearly changes in the number of North Carolina public school nurses in the past five years. A relatively small number of school nurses are employed part-time.

Student Population, School Nurse Staffing, and Nurse-to-Students Ratios

Number of:	School Year 2006-2007	School Year 2007-2008	School Year 2008-2009	School Year 2009-2010	School Year 2010-2011
Schools* (in 115 Local Education Agencies	2,338	2,354	2,399	2,422	2,425
Students**	1,386,363	1,404,957	1,410,497	1,402,269	1,409,895
School Nurse FTEs	1,034.00	1,146.51	1,169.04	1,183.36	1173.50
Average N.C. School Nurse/ Student Ratio	1:1,340	1:1,225	1:1,207	1:1,185	1:1,201
School Nurse Personnel (Individuals)	1,083	1,266	1,231	1,233	1,231

* Public Schools of North Carolina, "Facts and Figures 2010-2011", February 2011

** NC DPI. Final ADM: http://www.dpi.state.nc.us/docs/fbs/accounting/data/adm/ratio.xls posted 8-26-11, retrieved 9/27/2011

Employment and Financing of School Health Services

Employment

School nurses are primarily employed by their local education agencies (LEA). The administrative responsibility for 75 percent of school health services programs in North Carolina lies within the LEA. In 87 percent of the counties, either the school district (LEA) or health department hires, supervises, and manages the school health services program and staff. In three counties, the hospital provides those services, and in the remainder, there is more than one agency providing oversight and management of the school nurses.

Administrative agent	Percent of school districts (LEAs)*
Local Education Agency (LEA)	73%
Health Department	13%
Hospital/ Health Alliance	4%
Administration from a combination of agencies	10%

Funding

In any school health program, the funding may come from a variety of sources and be funneled to the agency with administrative responsibility over the program. Rarely is the entire school health services program funded through a sole source.

Funding sources include: local tax revenue, through property taxes allocated to the local school and local health department; N.C. General Assembly appropriations, such as through distributions from the Department of Public Instruction and Division of Public Health; federal reimbursement, including approved Medicaid expense reimbursements or federal Title V grants and categorical funds; hospitals; health care organizations and private foundations. The great majority of school nurses were funded through non-categorical funds provided to the local education system from the Department of Public Instruction. State categorical funds for school nurses provided financial support for nearly 26 percent of the school nurses: Child and Family Support Team (CFST) program (79 positions, 6.7 percent of total funding); School Nurse Funding Initiative (SNFI) program (225.75 positions, 19.2 percent).

In recognition of the enormous health needs of school-age children and the relationship between health and academic success, the General Assembly appropriated funds through the School Nurse Funding Initiative (SNFI), beginning in the 2004-05 school year and additionally each long session thereafter, in 2007 and 2009 and 2011. By the end of the 2010-2011 school year, the state had 225.75 full time school nurse positions allocated through the SNFI program, and during the 2011 session, the legislature added 10 full time positions. Those 10 additional nurses will begin work during the 2011-12 school year. These funds are distributed by the N.C. Division of Public Health to local health departments, who may employ the nurses or may contract with local education agencies or hospitals to employ the school nurses.

In 2005, the Child and Family Support Teams Initiative was authorized and funded by the N.C. General Assembly. It was reauthorized in the 2007, 2009 and 2011 state budgets. It is the state's only inter-departmental, school-based family-centered student support service system. The Initiative provides recurring state funds to team 79 school nurses with an equal number of school social workers at schools in 21 school districts across the state. The purpose of the Initiative is

for school-based professionals to identify students who are potentially at risk of academic failure or out-of-home placement due to physical, social, legal, emotional or developmental factors; screen them for needed services, then provide family centered services to plan and manage appropriate interventions.

According to information provided by the Initiative's evaluation team (Duke University's Center for Child and Family Policy) in the July 2011 CFST Legislative Report, the nurse-social worker teams identified 7,714 students as being potentially at risk of academic failure or out-of-home placement for the time period of July 1, 2010 through April 30, 2011. Administrative data from the third year of program implementation (2008-2009) did not indicate a statistically significant difference in math or reading scores between students in the CFST program and a control group of similar students. It did show that students in CFST schools were more likely to be promoted to the next grade but missed slightly more days of school than students in non-CFST control schools.

The evaluation's survey data shows that 94 percent of parents surveyed strongly agreed or agreed that the CFST program helped their children be more successful at school. A similar percentage, 89.7 percent of the parents, strongly agreed or agreed that the CFST helped their children or family with issues outside of the school environment. Middle and high school students who responded to the survey rated the CFST process highly with 50 percent rating it as excellent, 25 percent rating it as very good, and 18 percent rating good. Nearly all, 94.2 percent of the students, strongly agreed or agreed that the CFST helped them be more successful at school. Ninety percent of principals reported that CFST was successful or very successful at identifying vulnerable youth and families, connecting youth and families to services, and following up with youth and family about services, improving academic performance, improving behavioral outcomes, improving attendance, and positively impacting the school overall.

Through these state and local efforts to increase funding for school nurses, the number of LEAs meeting the recommended ratio of 1:750 has nearly quadrupled in the five years between the 2003-2004 and 2010-2011 school years. The labor demand for all nurses, including qualified school nurses, has grown rapidly in the past decade. At the same time, the complexity of student health needs has grown. School health program supervisors are highly successful in attracting and retaining school nurses. In the 2010-2011 school year, they succeeded in filling 99 percent of all school nurse positions. Only nine positions statewide were vacant for the majority of the school year.

School Health Services

School nurses provide basic and comprehensive school health interventions to all children in the population served, including children with special health care needs resulting from acute and chronic complex medical conditions.

Chronic Health Conditions

All children are eligible to attend public school and receive a free and appropriate education. A number of these children – about one of every eight students attending school – have chronic health conditions. Since these conditions can affect attendance, school performance, and the students' physical and emotional level of well-being, school nurses work closely with students, their families, health care providers and school staff to reduce the negative impact of illness on learning. Nurses serve as case managers, evaluate activities of daily living, and develop appropriate modifications for the learning environment. The number of individual students with chronic health conditions, as reported by the school nurses, is 181,353 in 2010-2011, approximately 12.8 percent of students. The number of reported individual chronic health conditions (with some students diagnosed with more than one condition) has risen almost every year for the past decade. The number and percent change of reported chronic health conditions are illustrated in the following table. (Thirteen LEAs did not report this number.) The chart (Appendix A) lists all the conditions that were counted and also indicates the number of individual health plans written for each student with that condition, totaling 100,998 care plans.

Asthma, a major chronic illness among school children, is the leading cause of school absenteeism nationwide, according to national experts on lung disease. The number of North Carolina students known to school nurses to have asthma during 2010-2011 school year, was 101,599.

Severe allergies, such as peanut allergies or allergies to insect stings, are those for which a student carries or is provided medication at school. During the 2010-2011 school year, 24,806 students were listed as having severe allergies, 2,447 more than during school year 2009-2010.

There was a slight increase in the number of students reported with diabetes, 4,854. School nurses provide care as well as train other staff to care for students with diabetes, who bring to school increasingly complex needs and high technology. The school nurse develops a diabetic care plan (individual health plan) and a nurse or a physician trains school personnel who are designated as diabetic care managers. The General Assembly created the role of diabetic care manager in 2003 to assure consistent care for students with diabetes

Local Outcome

I have worked very closely with a diabetic child and he has improved in almost every measure of his diabetes management. He has become more independent in his care at school and now checks his blood sugar in the classroom, instead of leaving the class for the student health office. He initiates treatment for low blood sugar in his classroom, then comes to the student health office to be monitored. He verbalizes understanding of the role of exercise and healthy food choices in improving his overall health status, but needs improvement in practicing this. His A1C has improved from 10.3 at the beginning of the school year to 9.4 in April (a significant drop).

during the school day. Students with diabetes are also encouraged to self-manage their symptoms, which will most likely last their lifetime.

- Diabetes: Among the 4,854 students reported with diabetes 2010-2011:
  - 3,764 monitor blood glucose at school (with physician's order for procedure);
  - 2,359 receive insulin injections at school;
  - 1,812 manage insulin pumps; and
  - 3,681 are known to self-carry their medication (with appropriate authorizations).

Students in North Carolina public schools are not permitted to carry medications or to self-administer medications except for medications used to treat emergencies in students with asthma, severe allergies and/or diabetes. The option to self-carry and self-administer those medications continues to increase in popularity. This past year, 3,454 more students with asthma, 1,338 more students with severe allergies, and 1,077 more students with diabetes selected that option. The option comes with precautions to maintain safety and good health: 1) appropriate physician authorization to self-carry and self-administer; 2) parental authorization; and, 3) demonstration by the student to a registered nurse his or her ability to safely administer his or her own medication appropriately, e.g. for severe allergy, asthmatic episodes and diabetes. Students who are not able to demonstrate that ability and understanding or students who intentionally misuse the medications may have that option temporarily suspended and instead receive those medications with supervision. Even students who are able to self-medicate for asthma, severe allergies or diabetes often still seek the help of a school nurse to assist them.

Medication	Number 09-10	Number 10-11	Percent self-carry compared to all diagnosed
Asthma inhalers known for self-carry	19,247	22,701	22 %
Diabetes medication known for self-carry	2,604	3,681	76 %
Epinephrine auto injectors known for self-carry	3,572	4,910	20 % of students with severe allergies; 38 % of students with orders for injectors

For a more extensive list of the types of chronic health conditions that were managed at school, see Appendix A, page 22.

Number of Individual Chronic Health Conditions[12] And Percent Change Per Year

School Year	Number and Percent
00-01	131,589
01-02	129,329 (–1.7%)
02-03	121,877 (-5.8%)
03-04	161,559 (+32.6)
04-05	197,052 (+22%)
05-06	209,718 (+6%)
06-07	227,940 (+8.7%)
07-08	237,245 (+4%)
08-09	240,528 (+1.4%)
09-10	265,479 (+10%)
10-11	292,288 (+10%)

Diabetes – Compliance with State Law

In 2009, the General Assembly enacted additional requirements to the "Care of Students with Diabetes Act" (also known as SB 738, additional requirements to SB 911). At the request of the State Board of Education, the School Health Unit of DHHS surveyed all public schools in North Carolina, including charter schools, with questions designed to assess compliance with the Act. All public schools were asked these four questions concerning school year 2010-2011:

1. How many students with diabetes were enrolled in your LEA / charter school this past school year?
2. Does your LEA/charter school offer annual generalized diabetes training to school staff, system-wide?
3. Did your LEA/charter school have at least two persons who were intensively trained on diabetes care, in any school in which one or more students with diabetes were enrolled?
4. How many students with diabetes had an Individual Health Plan (IHP) completed by a school nurse or other health care provider in the past school year?

Public, non-charter school districts reported:

Number and percent of school districts with one or more students with diabetes	115 (100%)
Number of students with diabetes	4,854 (0.34% of enrolled students)
Offered annual generalized training about diabetes to school staff, system-wide, as required by the statute	109 (95%)
Students with diabetes who had an Individual Health Plan (IHP) completed by a school nurse (parent or student over age 18 may refuse an IHP)	4,152 (86% of students with diabetes)
In each school where one or more students with diabetes were enrolled, there were two or more persons intensively trained on diabetes care	114 (99%)

Although this publication of the School Health Services report does not otherwise contain information from charter schools, this section summarizes data provided by charter schools to these questions. Each of the public, charter school districts completed these questions and reported:

[12] Students may have more than one chronic health condition.

Charter schools reported:

Number and percent of charter schools with one or more students with diabetes	43 (43.4 percent of charter schools) (The majority of charter schools, 57, reported no students with diabetes.)
Number of students with diabetes	121 (0.3% of enrollment)
Offered annual generalized training about diabetes to school staff, system-wide, as required by the statute	45 (80% of the charter schools that had one or more students with diabetes)
Students with diabetes who had an Individual Health Plan (IHP) completed by a school nurse or other health care provider (parent or student over age 18 may refuse an IHP)	102 (84% of students with diabetes)
In each school where one or more students with diabetes were enrolled, there were two or more persons intensively trained on diabetes care	45 (80% of the charter schools with one or more students with diabetes)

Local Outcome

We have seen remarkable improvements in A1C blood levels after 83.3 percent of the school nurses participated in the Case Management Project for School Age Children with Chronic Illness (coordinated by East Carolina University). The resulting improvement with diabetes management by the students was remarkable.

Health Care Coordination and Case Management

The school nurse's role often extends beyond the school setting. Children with chronic or serious acute illnesses and conditions often require frequent daily nursing interventions and coordination of health care across multitude providers to enable them to remain in school. School nurses utilize a variety of strategies to communicate with all those involved in the care of a student. Nurses serve as liaisons with physicians, dentists, community agencies and families while supporting and caring for the health needs of students. Among the strategies school nurses enlist to provide health care coordination and case management is making visits to the homes of students. More than 13,209 home visits were conducted during the 2010-2011 school year to assist families with student health issues, to investigate chronic absenteeism, to review emergency action plans and other student health plans with parents, and to visit home-bound students to plan for transition back to school.

Case management has been found to be an evidence-based model for coordination of a student's health care. In 38 school districts, the process has been formalized into a case management program with core components of assessment, health care management, community resources and support, psychosocial intervention, and documentation and evaluation. Research conducted by the East Carolina University School of Nursing and published in national journals verified that managing the health of the most complex student conditions results in improved health and educational outcomes.[13] During the 2010-2011 school year, coordination of care for a student with special health care needs produced outcomes that indicate increased

[13] Engelke, M., Guttu, M., Warren, M., Swanson, M. School Nurse Case Management for Children with Chronic Illness: Health, Academic, and Quality of Life Outcomes. Journal of School Nursing, Vol. 24 No. 4, August 2008

ability by students to manage the condition in school, and students who receive case management services from a school nurse report positive health outcomes.

School nurse consultants made a concerted effort in the state to foster school nurse case management, even in schools without a formalized case management program. Those efforts led to reports of significant improvement in students' skills in improving their self-care, reducing their own exposures to allergens in order to reduce the need for emergency allergy medications, increasing their ability to participate in the entire school day, including physical education, and demonstrating other improvements in health and ability to manage their illnesses. Raw numbers of students receiving school nurse case management, are tallied in the following table. The tables below demonstrate the positive outcomes of school nurses who provided case management of students:

Local Outcome

We identified the health care needs of students during after school activities as a concern. We were able to convince the district to fund one of our nurses to be available on-site or by telephone for after-school staff. This nurse served this population after completing her regular school duties. She identified students with health concerns, assisted with CPR/First Aid training and served as a resource to staff.

Student Health Outcomes

School Nurse and Student Management for Allergies

Student Outcome	Number Students
1. Verbalized increased knowledge of pathophysiology of illness	4,190
2. Improved skill in delivering own epinephrine	794
3. Reduced episodes of severe allergic reactions requiring use of epi-pen	1,861
4. Verbalized skill in recognizing hidden sources of allergen	2,957

School Nurse and Student Management for Asthma

Student Outcome	Number Students
1. Verbalized increased knowledge of pathophysiology of illness	10,160
2. Demonstrated correct use of asthma inhaler and/or spacer	14,564
3. Listed 2 or more of his/her asthma triggers	10,854
4. Remained within acceptable peak flow/pulse oximeter parameters according to care plan	1,409
5. Increased participation in PE and/or after school physical activity	4,655

School Nurse and Student Management for Diabetes

Student Outcome	Number Students
1. Verbalized increased knowledge of pathophysiology of illness	2,205
2. Maintained normal blood sugar 90% or more of times checked	1,027
3. Improved ability to correctly count carbohydrates	1,773
4. Improved skill in testing own blood sugar	2,083
5. Calculated and correctly drew own dose of insulin 100% of time	1,223

School Nurse and Student Management for Weight Counseling

Student Outcome	Number Students
1. Verbalized increased knowledge of pathophysiology of illness / condition	1,520
2. Kept a daily food diary for at least 30 days	106
3. Increased participation in PE, sports or after school physical activity	934
4. Improved ability to correctly count calories, or equivalent (e.g., points, carbs, fats)	439

Health Care Treatments and Procedures at School

Some students with chronic illnesses, physical handicaps and/or disabilities require health care procedures to be performed during the school day. The nurses reported processing orders for at least 30,092 individual medical treatments or procedures.

Specified Health Care Procedures

The chart that follows lists the number of medical orders for students for the listed treatments or procedures. In some, a medication is administered to treat a sudden emergency in a student with an underlying condition, and in others, such as administering a tube feeding, a nurse or a person to whom the nurse has delegated the nursing care performs a daily procedure. Among all the listed procedures, only the epinephrine may be used by the student without adult assistance.

Health Care Procedure	Total
Central venous line management	47
Diastat® administration	1,710
Glucagon injection	2,752
Nebulizer treatments	1,832
Shunt care	219
Tracheostomy suctioning & cleaning	110
Tube feeding	626
Administration of epinephrine (Epi-pen® and others)	13,032
Bladder Catheterizations	314

For each of the listed procedures except nebulizer treatments, the numbers increased again from the previous year. For each of the procedures or treatments, an individual health plan, and in some cases also an emergency action plan, are often developed by the school nurse.

Emergency Care

Injuries and illnesses are common occurrences in the school-aged population. Because the majority of school nurses cover more than one school building, few schools have a school nurse on duty during the entire school day. Therefore, school nurses must assure that school personnel are trained to provide first aid in emergencies. Seventy-three percent (84 of 115) of the N.C. LEAs reported having staff identified as first responders available daily in each school building.

Currently, 109 LEAs reported having at least one AED (Automated External Defibrillator) on one or more school campuses. During 2010-2011, the AEDs were used eight times: three times for students, twice for staff, and three times for visitors. Five of those eight victims of sudden cardiac arrhythmias survived; three of the events were fatal. An elementary age student and a middle school student were two of those fatalities. The third death was of a staff member.

Many minor incidents occur to students and staff during the course of the school day and are often handled by teaching and office staff. School nurses are frequently required to assist with major injuries, of which there were more than 23,022 this past year, a slight decrease of 761. Serious injuries are defined as medical emergencies requiring an emergency medical service (EMS) call or immediate medical care plus the loss of one-half day or more of school.

Of the serious injuries reported, most occurred on the playground or school sports fields (32%) and in physical education (26%), and another 21 percent occurred in the classroom. For a complete breakdown of type and place of injury, refer to Appendix B.

No students died from their school-related injuries this past school year. Ten students, though, were permanently disabled by their injuries, and those permanent disabilities included: traumatic brain injury, decreased use of limb, neck fracture, punctured cornea and orthopedic disability. Almost one thousand of the injuries required the involvement of law enforcement: 948 of the injuries resulted from an incident in which police (or resource officers) were called to respond or investigate.

The two students who died of football-related injuries during the fall of 2008 provided impetus for passage of the Gfeller-Waller Concussion Awareness Act. It made North Carolina the 21st state with a concussion law. The law, which takes effect for the 2011-2012 school year, stipulates certain safety measures for high school and middle school sports.

Local Outcome

We have now placed AEDs in all the schools, with first responders trained. Eighty percent of our nurses are now certified to teach American Heart Association and American Red Cross CPR and First Aid.

Medications at School

Administration of medications to students by school staff is a serious responsibility, requiring

conscientious attention to giving the correct medication in the correct dose to the correct student every time. Secretaries, classroom teachers, and teacher assistants are primarily the school staff members who administer routine medications on a daily basis in the majority of school systems in North Carolina. To ensure that school staff members perform this task with safety and accuracy, it is essential that a school nurse be available to review and participate in the development of school policy and procedures; train and supervise teachers and other staff about all aspects of giving medications correctly; and serve as coordinator among parents, medical providers, and the school. In nearly all of the LEAs, school nurses provided formal training programs for school employees who were designated to administer medications. They also conducted periodic audits of medication charts and records to assure compliance with all physician and parent orders and to assess the students' responses to medication therapy.

During the 2010-2011 school year, nurses reported that 28,014 medications were given daily to students while at school. Some students received medication daily on a long-term basis (19,954) for chronic conditions, and others for a shorter duration (8,060), such as to treat an infection or injury. Medications received most frequently on a daily basis included psychotropic controlled substances, including Ritalin®, Dexedrine®, and Lithium®.

During the 2010-2011 school year, there was a small (3%) increase, from 83,677 to 86,390 in the number of medications ordered on an "as-needed basis." A physician order for a medication that is directed to be used "as needed" rather than regularly and routinely may mean that the student does not need that drug at all during any given school year. Students whose conditions are properly managed in school may never need such additional drugs or treatments. For example, an order for an Epi-pen® may not be needed if the student's allergens are avoided through directed staff and student education. A student whose daily anti-seizure medications are managing the condition may not have a prolonged seizure requiring Diastat. A student with diabetes whose blood sugar levels are frequently monitored and treated before they get dangerously low may not ever need a dose of Glucagon. Yet having the medication and physician order (and parent request) to provide medication should a situation arise is a necessary responsibility that school health nurses manage.

Medication	Number 2008-2009	Number 2009-2010	Number 2010-2011
Number of students on long term medications (more than 3 weeks)	20,766	20,322	19,954
Number of students on short term medications (less than 3 weeks)	9,268	9,207	8,060
Number of students on emergency, as needed, medications	17,265	51,412	51,511
Number of students on non-emergency, as needed, medications	32,191	32,265	34,879

The number of orders for non-emergency medications ordered PRN, or as needed, increased slightly during the 2010-2011 school year, at 34,879 from 32,265. School nurses across the state, as well as physicians and other health care providers who can prescribe medications, carry out the recommendations of the American Academy of Pediatrics to limit school-dosed medications only to those absolutely necessary to maintain the student during the school day. (American Academy of Pediatrics, October 2009, position statement) Because a number of over-the-counter drugs can cause side effects or mask serious illnesses or conditions, state recommendations are to discourage unlimited use of non-prescription medications for school children and require not only parental authorization but also medical provider authorization for any medications given in school during the school day, whether or not a prescription is required for the product. Determining whether the student needs the medication involves interviewing the student, assessing the symptoms, and deciding on a course of action. In the school setting, such assessment and intervention is best handled by a registered nurse.

Without a nurse at every school, school nurses in North Carolina must delegate the administration of medication to other school personnel. The school nurse provides training and oversight to these non-health care professional, also called "Unlicensed Assistive Personnel," (UAP) to handle those student medication situations. Most commonly, those persons are teachers, teaching assistants, coaches or school secretaries. School administrators also commonly administer medications. UAP may continue to need school nurse direction, such as when a medication is ordered with parameters, such as "one or two pain relievers depending on pain level," or two types of allergy medications depending on relief obtained by the primary medication.

Administration of epinephrine

Epi-Pen® is an auto-injection device that delivers a dose of epinephrine in order to treat severe allergies. Although the student may administer the medication to himself or herself, there is a statutory process requiring physician orders and nurse assessment of the student's ability to do so. Medical orders for Epi-Pens rose 16 percent during the 2010-2011 school year, and have risen every year since the state instituted the law allowing school children to carry and self-administer this drug. Between 2007 and 2011, orders for epinephrine nearly tripled, from 3,847 in 2007 to 11,239 by the end of the 2010-2011 school year. Even with state legislation allowing students to self-carry and self-inject epinephrine, only about 38 percent of the students with an order to have epinephrine available, and only 20 percent of all students with severe allergies, also had orders allowing self-administration of the drug. Self-carry legislation requires that physician and parent both find the student willing and especially able, both cognitively and physically, to know when and how to use the medication and to demonstrate this knowledge to school health staff before the emergency arises. Some students do not meet those conditions and in many cases, parents want adult management of their child's emergency situation, so in the majority of students with severe allergies, it has been agreed that it is safest to involve school staff.

Administration of Glucagon

Glucagon® is a concentrated dose of glucose (sugar) administered by injection for a student with diabetes who is experiencing a dangerously low blood glucose level. Insulin, by contrast, is a drug used to treat elevated blood glucose levels. Of the two extremes, low blood glucose is the most immediately life-threatening and needs to be treated

immediately with a source of glucose, either oral or injectible.

Administration of Diastat®

Diastat® is a drug with the generic name of diazepam, which is the active ingredient in Valium®, and is given through the rectum to treat an intractable (continuous) seizure.

Administration of Versed®

Versed is a form of anesthesia that some physicians prescribe for a student with intractable seizures to be given through the inhalation route (nasal spray). The N.C. School Health Unit advises school districts to seek medical orders for a different drug other than Versed for school-day administration for a number of reasons, including the rare but extremely serious risk of depressing a student's respiratory status quickly, leading to respiratory arrest and death.

According to the National Library of Medicine (NLM), Versed, also known by its generic name of midazolam, is given to children before medical procedures or before anesthesia for surgery to cause drowsiness, relieve anxiety, and prevent memory of the event. It works by slowing activity in the brain to allow relaxation and sleep. Because potent inhaled anesthetics can cause patients to stop breathing, their use is recommended to physicians who are expert in the management of airway and breathing.[14] The NLM warns parents that the drug should only be given in a hospital or doctor's office that has the equipment that is needed to monitor heart and lungs and provide life-saving medical treatment quickly, with trained staff to closely monitoring and respond. No public school outside of possibly the state's residential schools is equipped or staffed to provide that level of emergency respiratory treatment.

The high number of non-licensed school staff who had administered Versed during school year 2009-2010 led the state's school nurse consultants to issue strong advisories to school nurses not to accept requests to administer that drug. That advisory from the state's school nurse consultants led to a dramatic decrease in the number of times Versed was administered in N.C. public schools between those two years, from 89 times to only once, and by a licensed nurse.

The following chart identifies how many times per year the following drugs were given in N.C. public schools during the past two years.

Name of Medication	Medication 2009-2010	Medication 2010-2011
Diastat		
☐ Administered by licensed nurse	65	79
☐ Administered by non nurse	233	121
Glucagon		
☐ Administered by licensed nurse	4	7
☐ Administered by non nurse	23	12
Versed		
☐ Administered by licensed nurse	2	1
☐ Administered by non nurse	87	0

School nurses routinely audit the medication logs of students to assure that students are receiving their medications safely and accurately. Most frequently, these audits occur quarterly during the school year.

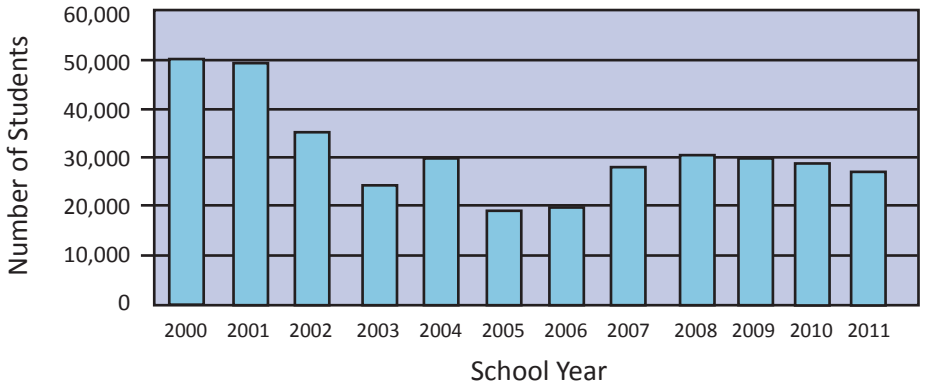
[14] http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000482/

The following table and graph provide a 10-year overview of the numbers and percentage of students receiving medications as reported by school nurses. There is a notable decrease in numbers of daily medications during this decade, by nearly 50 percent, and an increase in those given intermittently for episodes or symptoms. This shift can be attributed to a change in dosage from short-acting to longer-acting formulas for a variety of conditions and to a rise in the numbers of medications for episodic conditions such as asthma, seizure, allergy, or chronic conditions that flare up. This change has held steady over the past few years.

Number and Percent of Students Receiving Medications Administered at School

School year	# Students	Daily Medications (% of all students)	Medications for Emergencies (% of all students)
2001-2002	1,271,995	35,319 (3%)	N/A
2002-2003	1,279,468	24,477 (2%)	N/A
2003-2004	1,311,163	29,321 (2%)	N/A
2004-2005	1,332,009	19,541 (2%)	N/A
2005-2006	1,363,695	19,772 (1%)	N/A
2006-2007	1,386,363	27,990 (2%)	N/A
2007-2008	1,404,957	30,433 (2%)	39,985 (2.8%)
2008-2009	1,410,497	29,814 (2%)	49,456 (2.1%)
2009-2010	1,402,269	29,529 (2%)	51,412 (3.7%)
2010-2011	1,409,895	28,014 (2%)	86,390 (6.1%)

Number of Students Receiving Daily Medications at School



Health Counseling

Students seek a school nurse for accurate, confidential advice on issues ranging from normal growth and development to serious emotional and mental health concerns. They expect a registered nurse to provide medically-accurate and non-judgmental information related to their health and concerns. The chart that follows lists some of the health counseling provided by school nurses, defined as any encounter with a student where direct service, instruction and advice for health promotion, health improvement and health maintenance were discussed. During the 2010-2011 school year, the numbers of such encounters reported by school nurses totaled 232,658, 55,360 more than the previous year's activities in this broad category. The single most frequent topic for school nurse counseling was asthma. Second most frequent was personal body issues, including hygiene, puberty, and sexual and reproductive health. The school nurse is frequently engaged in conversations with students about menstruation, hygiene, body odor, acne and other issues related to puberty. Students also confide in a school nurse about instances of violence or bullying, and over possible neglect or abuse within their family or their concerns over a friend or neighbor. School nurses must report suspicions of child abuse/neglect whether observed or given credible suspicion by another person. Students also sought the advice of school nurses about substance abuse and tobacco use. Individual discussions around depression/suicide occurred in all grade levels.

Individual Health Counseling Sessions[15]

Health Counseling	Elementary School	Middle School	High School	Total
ADD/ADHD	9,379	4,913	3,505	17,797
Asthma	27,693	10,955	8,185	46,833
Child Abuse/Neglect	2,355	849	546	3,750
Chronic Illness (not otherwise listed)	7,800	5,208	7,057	20,065
Depression/Suicide/Other	1,422	1,816	3,422	6,660
Diabetes	11,229	9,280	5,783	26,292
Grief/Loss	1,183	906	1,571	3,660
Hygiene	19,796	7,738	4,381	31,915
Mental Health Issues	3,448	5,361	6,546	15,355
Pregnancy	31	1,360	7,327	8,718
Puberty; Reproductive Health	3,350	4,080	7,761	15,191
Seizure Disorders	2,757	1,608	1,555	5,920
Severe Allergies	6,086	3,025	1,951	11,062
Sickle Cell	334	286	189	809
Substance Abuse	137	907	2,400	3,444
Tobacco Use	582	658	1,711	2,951
Violence/Bullying	2,014	2,366	1,664	6,044
Totals	103,853	6,3251	65,554	232,658

[15] Most but not all LEAs reported within these categories in the annual survey.

Pregnancy

For the third year in a row, there was a decrease in the number of pregnancies among public school students across all grade levels, as reported by the school nurses. Although routine prenatal care is not a school nurse function, some school nurses help manage a student's pregnancy as part of intense case management or on physician orders, or may provide health education and health promotion through group teaching regarding care of the current pregnancy, anticipatory guidance of labor and delivery and infant care, and instruction on avoidance of additional early pregnancies. The number of students reported by school nurses to be known to have been pregnant during 2010-2011 school year is 3,887 – 390 fewer than the previous year – and 773 fewer than two years ago. This represents more than 1,000 fewer student pregnancies from the recent high of 4,904 during school year 2007-08. The latest figure represents a 21 percent decrease since 2008. This trend is also reflected in national statistics. The Center for Disease Control and Prevention (CDC) reported that during the 2010, the teen birth rate in the United States fell to its lowest in recorded history.[16] Across the most recent year, the known pregnancies among middle school students in North Carolina decreased by 19 percent and 8 percent among high school females.

With assistance from school nurses, the majority of students managed their pregnancies well enough to remain enrolled in their normal school location. For about 25 percent of students, at some time during either the prenatal or postpartum period, or both, they received home-bound instruction instead of school-located instruction.

Local Outcome

Over the past couple of years, we have really put a lot of time and effort into teen pregnancy prevention. We formally educated grades 7 through 9 regarding the reproductive system, sexually transmitted diseases, etc. We believe it's making a difference as we had 13 teens pregnant last year and only two this year.

Status of School Enrollment for Students Known to be Pregnant

	Elementary School	Middle School	High School	Total
Known pregnancies	2007 -2008: 14 2008-2009: 7 2009-2010: 3 2010-2011: 2	2007-2008: 409 2008-2009: 300 2009-2010: 278 2010-2011: 226	2007-2008: 4,481 2008-2009: 4,353 2009-2010: 3,996 2010-2011: 3,659	2007-2008: 4,904 2008-2009: 4,660 2009-2010: 4,277 2010-2011: 3,887
Students receiving homebound instruction due to pregnancy 2010-2011	1	50	936	987

Known Pregnancies by Year and Percent Change from Previous Year

School Year	Pregnancies reported to school staff	% increase or decrease from previous year
2001-2002	2,919	+ 0.1%
2002-2003	2,697	- 7.6%
2003-2004	3,131	+ 16%
2004-2005	3,406	+ 9%
2005-2006	4,072	+ 20%
2006-2007	4,422	+ 9%
2007-2008	4,904	+ 11%
2008-2009	4,660	- 5%
2009-2010	4,277	- 8%
2010-2011	3,887	- 9%

Tobacco Use by Students

Since Aug. 1, 2008, all schools must adopt, implement, and enforce tobacco-free[17] school campus policies. In addition to state law and school policy, schools communicate tobacco-free messages to young people through health education programs, social marketing messages, cessation classes for students or staff, and through the day-to-day modeling and interactions among staff and students. In some LEAs, the school nurses offer classes and programs to reinforce restrictions against smoking and to encourage cessation and provide mentoring to youth groups advocating against tobacco use.

Data from the 2009 N.C. Youth Tobacco Survey (NCYTS) show that since the N.C. Health and Wellness Trust Fund began their Tobacco Initiatives in 2003, the state has at least 53,000 fewer students who smoke cigarettes, reaching the lowest point ever in 2009.[18] As of spring 2010, 218 youth groups across North Carolina are actively engaged in tobacco use prevention efforts, the largest number in the state's history. The TRU media campaign appears to be reaching youth at greatest risk of smoking. The 2009 NCYTS shows that youth have historically low levels of exposure to secondhand smoke. Additional reductions

Local Outcome

The school health program received a grant from the Systems of Care to implement a drug awareness curriculum for our 8th to 12th graders in the amount of $5,710.

[17] School policy totally prohibits tobacco use for all students, staff, and visitors in the school buildings and extends to the entire campus, vehicles, and all school events including outdoor events. The policy extends to hours after regular classroom schedules, 24-hours-a-day, seven-days-a-week and includes off-campus school sponsored student events.

[18] NC DHHS, Division of Public Health, Tobacco Prevention Program, October 2011

in secondhand smoke exposure occurred since January 2010 with the implementation of the NC Smoke-free Restaurants and Bars law.

Since the inception of the N.C. Teen Tobacco Prevention Initiative, the local school/community grantees have focused on providing opportunities to educate and empower youth. Of all events targeted to the prevention of youth tobacco initiation, 86 percent were conducted within the area of youth empowerment. Grantees also focus on providing opportunities for youth to become leaders in conducting prevention activities across the Teen Initiative. Further, the school/community grantees work to increase awareness and adoption of evidence-based tobacco curriculums and to educate parents and caregivers about tobacco use prevention and cessation.

Suicide and Homicide

Intentional death of students, either through suicide or homicide, is a public health emergency. Although the number is small by comparison against the adult population, the loss of a student through homicide or suicide is a traumatic event for the entire community.

According to reports from the LEAs, suicide was reported to be attempted by 373 public school students, an increase of 18 percent (from 347) from the prior year, and 23 of those suicides resulted in death. Suicide cases decreased slightly, from 26 the previous year to 23 in 2010-2011, according to school health reports. Ten students died through homicide. None of the deaths through either suicide or homicide occurred at school.

Death by Suicide/Homicide: School year 2010-2011

	Elementary	Middle School	High School	Total
Suicide attempts by grade level	25	113	235	373
Deaths from suicide	0	3	20	23
Suicides occurring at school	0	0	0	0
Death from homicide	1	2	7	10
Homicides occurring at school	0	0	0	0

Health Teaching

School nurses were involved in a variety of health teaching and instructional sessions to groups and in classrooms. Classroom instruction included short presentations on such topics as hygiene, first aid, wellness and fitness promotion, *Open Airways* and other asthma management programs, AIDS peer education, smoking prevention and cessation, violence prevention, puberty, and prenatal and parenting programs.

Instruction to faculty and staff included the topics of medication administration, infection control, OSHA blood-borne pathogen regulations, CPR, use of AEDs, first aid, and chronic disease management, including general training on the signs and symptoms and first aid for diabetes, and intensive training for the care of individual students with diabetes. The nurses also conducted health fairs and made presentations to parent

organizations, school boards, and civic and community groups. School nurses reported providing a total of 28,842 programs and presentations during the 2010-2011 school year.

- 90 LEAs (78%) present asthma education programs for staff.
- 86 LEAs (75%) provide asthma education programs for students.
- 109 LEAs (95%) provide diabetes education programs for staff

Local Outcome

We suffered several wrecks involving high school students. As a result, we partnered with community leaders to develop automobile safety awareness programs in the high schools. We hope to see fewer wrecks next school year.

Often, the school nurse is the first health care provider that the student sees for a specific problem. In some cases, the nurse is the only health care provider the student sees for minor illnesses and injuries. During the 2010-2011 school year, school nurses assessed and managed 192,767 students for illness or injury that originated at home. Issues such as the student's health insurance status, access to care, family economics or transportation contribute to the number of illnesses and injuries treated at school. In addition to providing care and guidance, nurses assist families by locating medical and dental resources and referring students to providers for the diagnosis and treatment of a wide variety of health problems.

Local Outcome

The health department gave us enough hand sanitizers so that there was one bottle for every classroom in our county. This was very generous and it helped us tremendously during the cold and flu season.

Health Screening, Referral, Follow-up, and Securing Care

Voluntary mass screenings by grade or school are often conducted with the assistance of trained volunteers or other health professionals.

Vision screenings are conducted by school nurses as well as by other school staff and volunteers. School nurses follow up on those referred for vision examination and in many cases are the persons who locate sources of low-cost or free care for those unable to afford treatment.

Significant numbers of students who were referred to a dentist or doctor based on the screening process did not or were not able to secure that care from a health professional. Additional staff to provide appropriate follow-up and care management services for students may reduce this gap in the completion of the screening process. In some situations, securing additional health care providers may also reduce the gap.

The following table lists the results of some of the mass screening projects that were conducted during the 2010-2011 school year.

Number of Students Screened by School Health Services Staff

Screening	Screened	Referred	% Referred	Secured Care	% Secured Care
Body Mass Index (BMI)	78,660	5,309	7%	345	6%
Hearing	139,509	3,434	2%	2,460	72%
Vision	519,149	41,552	8%	30,032	72%

The goal of any mass screening program is to assess the condition, and treat if indicated. One indicator of the success of a school health screening program is the percent who secured care, defined as: the number of students who did not pass a screening, were referred for further evaluation, and were evaluated by another health care provider who could diagnose and determine the appropriate way to treat the condition. Among the health conditions for which school nurses screened during the 2010-2011 school year, screening for vision and for hearing each achieved a 72 percent rate of successfully securing care, completing the screening process.

Screening for Obesity

North Carolina's children and youth are among the most overweight in the nation, with the state ranking 11th nationally for childhood obesity[19]. In North Carolina, nearly one-third of children aged 10 – 17 are overweight or obese. The N.C. General Assembly responded to what is called an epidemic of obesity in 2009 by creating the Legislative Task Force on Childhood Obesity. This task force conducted all-day meetings on topics related to obesity, including access to good nutrition and encouraging physical activity. Nearly all school districts have instituted programs to screen at least some students for overweight/obesity by measuring height and weight and obtaining the Body-Mass Index (BMI). Some of these programs are operated as part of the physical fitness measurements taken in physical education or wellness classes. Some school districts measure growth in height and weight but do not convert those figures to a BMI. These screenings are conducted in a variety of settings: health fairs, physical education classes, or routine collecting of height and weight data. In some cases, the screenings are conducted in collaboration with other health partners. Data from 2010-2011 are limited in that they do not distinguish between mass screening of all students or occasional screening of students referred for overweight, and they do not distinguish between referral for overweight or underweight. Some students with results indicating lower than expected growth in either height or weight may have been referred for medical evaluation. The percentage of public school students screened

Local Outcome

We saw our obesity rate decrease 4 percent and that success may be related to our walking and fitness trail and our fruit and vegetables grant for all elementary schools.

[19] N.C. Legislative Task Force on Childhood Obesity, Dec. 13, 2010

for BMI in North Carolina by the school health services staff is generally small, 6 percent of the total school population, and routine screening for BMI is not universally accepted as a school health services activity. During 2010-2011, 78,660 students were screened for BMI. About 7 percent of those students who were measured received referrals for either overweight or underweight. The referral rate of 7 percent is much lower than the expected 33 percent if the screening had encompassed the entire student population, but the sample of students screened was not representative of the entire student population. Six percent of those students identified as needing follow up were able to secure care, a very low rate of completing the screening process.

Because the presence of childhood overweight significantly increases a child's risk for adult obesity, the public health, health care and school health communities have joined forces to develop and provide interventions. According to the North Carolina Alliance for Athletics, Health, Physical Education, Recreation and Dance (NCAAPHERD), each of the state's 115 school systems were ready to implement In-School Prevention of Obesity and Disease (ISPOD) by the opening of the 2011-2012 school year, the final year of a four-year project funded by the Kate B. Reynolds Charitable Trust. The funding for the project will conclude during spring of 2012.

ISPOD is a comprehensive program designed to improve physical activity and eating habits in order to reduce the incidence of obesity and overweight among children in grades kindergarten through eight. During the 2010-2011 school year, ISPOD staff with NCAAPHERD had trained 3,400 teachers (nearly all of the K-8 health and physical educators), who reach nearly all of the approximately 750,000 students in the state, utilizing SPARK, a research-based curriculum specifically addresses childhood obesity by teaching ways to increase more moderate to vigorous activity by means of small group play, dance and individual skill level attention. NCAAHPERD (ISPOD) also provided each school with a license for FITNESSGRAM – a fitness testing and reporting program. Part of the FITNESSGRAM program requires the collection of height and weight in order to calculate BMI. Many school nurses participated in the taking these measurements for the program through the physical education classes. In schools where nurses participated in the screenings, those screening results were reported for the purposes of this annual report. NCAAHPERD also collects data on students in K-8 through teacher and student surveys and fitness tests scores. To learn more about ISPOD and the data collected go to: www.ispod.info.

Vision Screening

There is no mandate in North Carolina for schools to routinely screen for vision, although rules and regulations exist related to screenings required for students needing additional academic support. Physicians and other health care providers who examine children prior to entry into kindergarten are required to screen for vision as part of that exam and to report those findings on the state-created Kindergarten Health Assessment (KHA) form.

Many schools, however, follow state recommendations to screen all students periodically through elementary age and once more in middle or high school. Screening for vision is the most frequent school screening program in North Carolina. More than half a million North Carolina school children (37%) had their vision checked for possible eye problems. Training for that screening is offered by the Prevent Blindness North Carolina Vision Screening Certification Program, working under contract with the N.C.

Division of Public Health in collaboration with the Children and Youth Branch to deliver vision screening certification training to all 100 counties. The PBNC program is the Division of Public Health's primary means of assuring consistent screening practices and referral criteria across all schools in North Carolina. Prevent Blindness is a non-profit organization dedicated to reducing the incidence and impact of vision deficits. The school vision screening program is an example of the highly collaborative intersections among school health professionals, non-profit organizations, volunteers and health care providers.

School nurses often coordinate the vision screening conducted in schools and report their results both to Prevent Blindness and to the Division of Public Health.

Hearing Screening

As with vision screening, there is no mandate in North Carolina for schools to routinely screen for hearing, although the same rules and regulations apply related to screenings required for students needing additional academic support. Physicians and other health care providers who examine children prior to entry into kindergarten are required to screen for hearing as part of that exam and to report those findings on the KHA form.

Not all school nurses are trained in and authorized to conduct hearing screenings. School nurses assist in hearing screenings, especially related to referrals and follow-up.

STOP

Health Policies

Policies are essential to guide the development and implementation of coordinated school health programs. All local health departments in the state develop an agreement, the Memorandum of Agreement (MOA), with each school district in their jurisdiction. These MOAs are locally developed and provide an avenue for collaboration on school and health policies and procedures.

School policies guide school nursing practice, provide parents a consistent method of communicating those policies, and provide students and staff assurance of attention to health and safety. The School Health Unit of the Division of Public Health provides guidelines regarding policy development at the local level, and recommends, at minimum, that school boards study and develop written policies on the topics listed on the chart below.

The percentage column in the table that follows indicates the percent of LEAs that have written policies on those topics. An emerging policy addresses maintenance of electronic health records in school. The trend in the health care industry is greater reliance on electronic medical records (EMR) and electronic documentation of health care provided. This school year, 40 LEAs (35 percent) reported that the school nurses document at least some of the nursing care they provide onto computer systems.

School Health Policy	% of LEAs with written, board-approved policy
Prevention and control of communicable disease	99%
Provision of emergency care	97%
Screening, referral and follow-up	82%
Medication administration	78%
Identification of students with acute or chronic health care needs/conditions	75%
Maintenance of student health records	70%
Non-school bus transportation for students with health care needs	70%
Special health care services (State Board Policy GCS-G-006 -.0402)	56%
Reporting student injuries	38%
Response to Do Not Resuscitate (DNR) order	36%

Community Involvement in School Health Services

Community involvement contributes to the quality and effectiveness of school health programs and services. School nurses encourage and promote community involvement through:

- Establishment of school health advisory councils;
- Development of inter-agency planning and written agreements;
- Recruitment of local physician advisors; and,
- Development of parent-teacher organization (PTA/PTO) health subcommittees.

Four of the more visible activities reflecting school and community involvement include:

SHAC (School Health Advisory Council);

Cooperative Agreements with Local Health Departments;

School Located Influenza Clinics; and,

School-Based School-Linked Health Centers (SBSLHC).

School Health Advisory Council (SHAC)

All of the local education agencies (LEAs) have School Health Advisory Councils (SHACs). These multi-disciplinary councils are required by State Board of Education Policy #GCS-S-000. Nearly all of the SHACs have a school nurse among the council members (113 of 115) and 51 SHACs have a physician serving on the council. According to the policy, each SHAC must include representatives from physical education, health education, nutrition, school staff wellness, health services, mental/behavioral health, safe school environment, parents/community members, the local health department, and school administration. The SHACs advise LEA leadership, superintendents, and local boards of education on health policies, programs, and practices. The SHACs build collaborative trust and knowledge around health and academics, and can disseminate relevant information to the schools. There are currently 112 SHACs representing the 115 LEAS (three city LEAs have joint city/county SHACs).

Cooperative Agreements With Local Health Departments

In every county in the state, a Memorandum of Agreement between the local health department and the school district is a required action in order for the health department to receive state funds. These annually reviewed agreements outline the relationships and specific activities each agency will undertake to support the health of children in public schools. They delineate the responsibilities of each regarding epidemics and other community emergencies and the specific consultations that each will provide the other, while respecting student privacy. In addition to consultation with health department experts, more than half (57%) of the LEAs are able to consult with a physician regarding the school health program. Most (50 of the physicians, or 76%) who serve in that capacity are either family practice physicians or pediatricians.

School-Located Influenza Clinics

During school year 2010-2011, 29 percent of the school districts hosted school-located influenza clinics (SLIC). During the previous school year when the novel influenza virus

H1N1 was present and counties implemented mass vaccination clinics throughout the state, 87 of the LEAs had hosted a school-located influenza clinic. Influenza season in 2010-2011 experienced a more normal outbreak with no new (novel) strains present in any great numbers. In addition, during the previous year, there was a large source of federal funding that supported a Division of Public Health – led effort to implement SLIC. School nurses and administrators, in cooperation with state and local health departments, hospitals and others, made it possible for more than 15,005 doses of flu vaccine to be given to students and/or staff at school for protection against influenza. Parental permission was required to administer doses to students.

School-based, School-linked Health Centers

In about one fifth of the state's counties, coalitions of local health care providers have established school health centers in the schools using grants, local funding and some state funding assistance. During school year 2010-2011, there were 62 school-based or school-linked health centers operating in 22 counties.[20] The clinics primarily serve students in middle and high schools due to the significant need of adolescents for access to medical care, including care for mental health or behavioral health issues. Centers provide primary care and preventive clinical services during the school day, minimizing interruption of the student's time in class. These sites increase the school nurse's ability to refer a student or his family for medical care, especially in areas of low resources.

The school-based or school-linked centers provide clinical health services and may bill for the services to the parent's insurance, other insurance providers and Medicaid.

Parental permission is required for receipt of school health center services, including required and optional (recommended) immunizations, physical exams for sports, diagnosis and treatment for medical conditions, behavioral or mental health counseling, and nutrition counseling.

Nurses employed by school-based health centers function similarly to those in a physician's office or clinic. Since they do not meet the definition of nor provide the population-based functions of school nurses, those registered nurses working in the school health centers are not counted among the state's school nurse positions nor in the school nurse ratio.

School Health Centers depend on a combination of state funds, patient revenues, private foundation funds/donations and in-kind resources to support the health services that they provide. Twenty-six centers are partially funded by the N.C. Division of Public Health. These funds are used to leverage additional resources at the local level. Partners in these centers include N.C. Department of Public Instruction, N.C. Division of Medical Assistance, families, private medical practices, local health departments, universities and the N.C. School Community Health Alliance (NCSCHA).

Additional information on school based health centers may be obtained from the NCSCHA website, **www.ncscha.org**.

Conclusion

School health services are just one component of a Coordinated School Health Program. By working with multiple partners in health and education, including the North Carolina Division of Public Health, North Carolina

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[1] http://www.ncscha.org/about.php

Division of Medical Assistance, North Carolina Department of Public Instruction, North Carolina Pediatric Society, North Carolina Dental Society, Prevent Blindness North Carolina, North Carolina School and Community Health Alliance, and more, school nurses are working to help students achieve at levels they might not otherwise reach. An increase in the number of school nurses in North Carolina could positively impact overall student health and well-being, resulting in improved student attendance and academic outcomes.

Appendix A: Chronic Health Conditions, School Year 2010-11

Condition	Elementary	Middle	High	Total	Total with IHP for condition
ADD/ADHD	33175	17741	12773	63689	3850
Addison's Disease	27	8	84	119	75
Allergies (Severe)	15018	5005	4783	24806	16679
Anorexia/Bulimia	15	79	182	276	34
Asthma	54999	25324	21276	101599	51858
Autistic Disorders (ASD) including Asperger's Syndrome, PDD	5449	1914	1694	9057	803
Blood Disorders not listed elsewhere: (e.g. Chronic Anemia, Thalassemia)	415	217	266	898	363
Cancer, including Leukemia	670	155	259	1084	287
Cardiac Condition	2489	1167	1649	5305	1909
Cerebral Palsy	1326	537	631	2494	752
Chromosomal Conditions: including Down's Syndrome, Fragile X, Trisomy 18	1264	441	541	2246	500
Chronic Encopresis	381	92	58	531	225
Chronic infectious diseases: including Toxoplasmosis, Cytomegalovirus, Hepatitis B, Hepatitis C, HIV, Syphilis, Tuberculosis	57	45	66	168	40
Cystic Fibrosis	156	78	113	347	185
Diabetes Type I	1190	1060	1519	3769	3653
Diabetes Type II	279	372	717	1368	765
Emotional/Behavior and/or Psychiatric Disorder other than ADD/HD	4865	3423	4339	12627	1297
Endocrine/Metabolic Conditions (Not otherwise listed)	382	205	328	915	362
Fetal Alcohol Syndrome	92	29	38	159	9
Gastrointestinal Disorders (Crohn's, etc.)	2195	1103	1444	4742	1392
Hearing Loss	2074	978	859	3911	563
Hemophilia	227	118	137	482	271
Hydrocephalus	366	124	138	628	368
Hypertension	326	391	812	1539	372
Hypo/Hyperthyroidism	290	262	356	908	171
Kidney/Renal Condition	1177	600	732	2509	774
Migraine Headaches	2904	2957	4228	10089	2425

Condition	Elementary	Middle	High	Total	Total with IHP for condition
Multiple Sclerosis	10	12	23	45	13
Muscular Dystrophy	401	296	87	784	115
Obesity (> 95th% BMI)	6465	3634	2190	12289	473
Orthopedic Disability (Permanent)	1153	589	777	2519	663
Other Neuromuscular or Neurological Condition	827	470	554	1851	638
Other	6	2	10	18	2
Rheumatological Conditions (including Lupus)	283	200	301	784	298
Seizure Disorder/Epilepsy	4960	2093	2529	9582	6966
Sickle Cell Anemia	574	306	305	1185	774
Sickle Cell Trait (only)	495	198	196	889	61
Spina Bifida	248	98	127	473	255
Substance Abuse	25	123	1089	1237	175
Traumatic Brain Injury	206	126	184	516	179
Visually Impaired	1980	824	1057	3861	404
Total	149441	73396	69451	292288	100998

Appendix B: Reported Injuries in North Carolina Public Schools Requiring EMS Response or Immediate Care by Physician/ Dentist AND Loss of 1/2 Day or More of School, School Year 2010-11

Type of Injury	Bus	Hallway	Classroom	Playground	PE Class	Shop	Restroom	Lunchroom	Other	Total #	Total %
Abdominal/Internal Injuries	5	24	82	162	106	5	6	5	20	415	**2%**
Abrasion	0	1	1	3	2	0	1	0	0	8	**0%**
Anaphylaxis	5	11	92	22	22	0	2	33	18	205	**1%**
Back Injuries	9	34	62	162	166	2	9	13	30	487	**2%**
Chest Pain	0	0	1	0	4	0	0	0	0	5	**0%**
Dental Injury	13	62	132	364	172	3	17	44	44	851	**4%**
Dislocation	0	0	1	0	4	0	0	0	0	5	**0%**
Drug Overdose	9	9	87	2	3	1	16	4	57	188	**1%**
Eye Injuries	17	67	329	309	192	32	8	23	35	1012	**4%**
Fracture	18	129	138	1450	799	10	26	16	244	2830	**12%**
Head Injuries	82	232	370	969	788	12	87	70	309	2919	**13%**
Heat Related Emergency	7	3	41	130	99	6	4	2	20	312	**1%**
Laceration	51	187	567	765	386	107	74	60	156	2353	**10%**
Neck Injuries	6	9	17	63	45	5	9	6	9	169	**1%**
Other	69	160	573	3069	333	19	51	95	278	1884	**8%**
Psychiatric Emergency	7	69	540	48	25	0	27	22	99	837	**5%**
Puncture Wound	0	0	1	0	0	0	0	0	0	1	**0%**
Respiratory Emergency	25	53	633	358	324	0	5	22	52	1472	**6%**
Seizure	42	115	858	113	60	1	21	58	98	1366	**6%**
Sprain or Strain	53	272	361	2189	2471	30	28	57	246	5707	**25%**
Total #	418	1437	4886	7415	5997	233	391	530	1715	**23022**	
Total %	**2%**	**6%**	**21%**	**32%**	**26%**	**1%**	**2%**	**2%**	**7%**		**100%**

Appendix C: North Carolina School Nurse-to-Student Ratio by Local Education Agency, School Year 2010-11

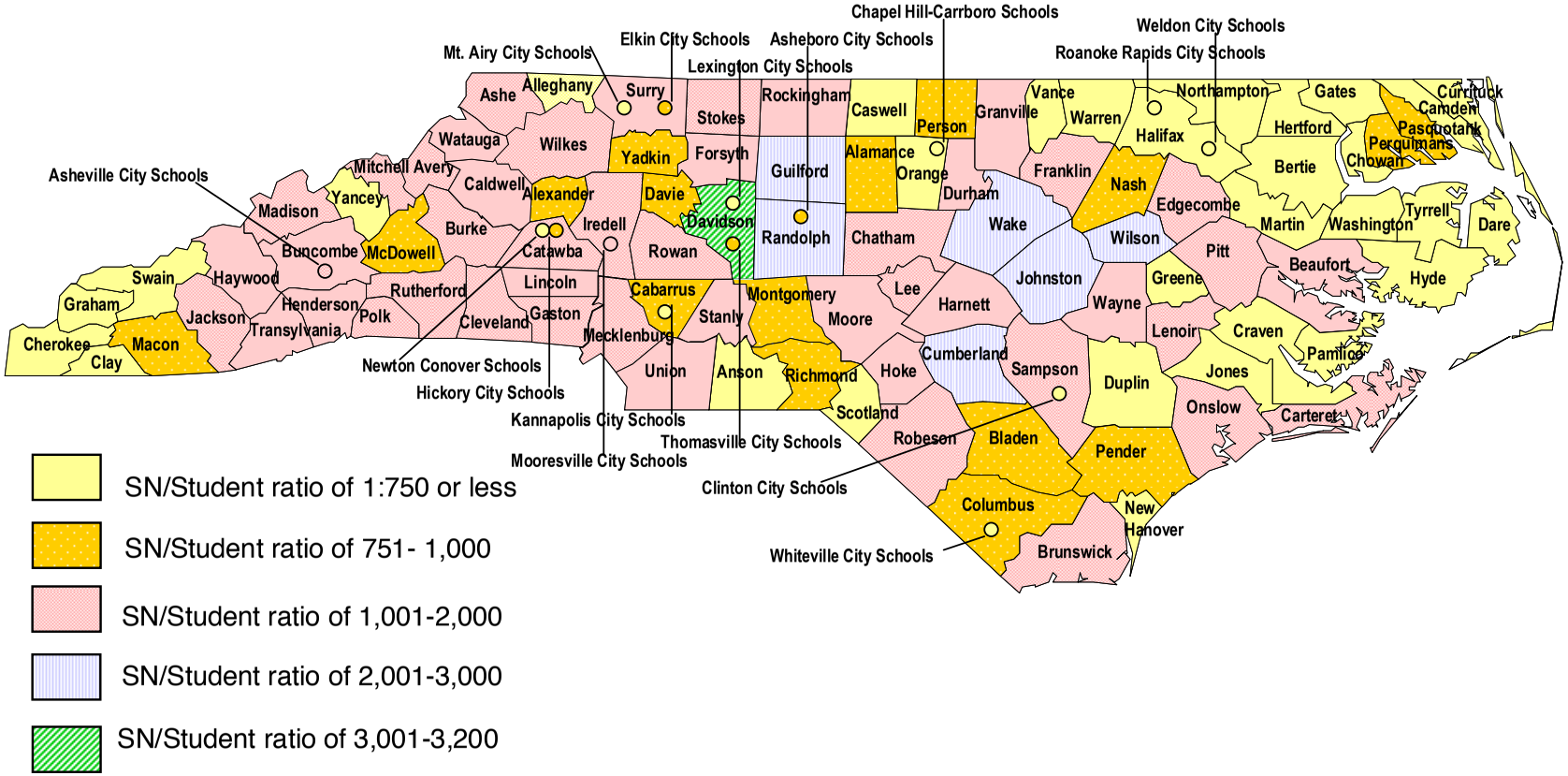
County/LEA Name	Ratio (Nurse:Student)	County/LEA Name	Ratio (Nurse:Student)
Alamance-Burlington	902	Forsyth	1,815
Alexander	986	Franklin County	1,105
Alleghany +	724	Gaston	1,471
Anson +	469	Gates +	601
Ashe	1,048	Graham +	496
Avery	1,095	Granville County	1,709
Beaufort	1,381	Greene +	435
Bertie +	683	Guilford	2,249
Bladen	916	Halifax County +	478
Brunswick	1,197	Roanoke Rapids City +	724
Buncombe	1,425	Weldon City +	512
Asheville City	1,134	Harnett	1,847
Burke	1,208	Haywood	1,181
Cabarrus	921	Henderson	1,464
Kannapolis City +	688	Hertford +	619
Caldwell	1,141	Hoke	1,002
Camden +	635	Hyde +	575
Carteret	1,204	Iredell-Statesville	1,428
Caswell	720	Mooresville City	1,084
Catawba	1,139	Jackson	1,007
Hickory City	848	Johnston	2,104
Newton Conover +	722	Jones +	569
Chatham County	1,336	Lee County	1,131
Cherokee +	740	Lenoir	1,304
Edenton/Chowan +	572	Lincoln	1,459
Clay +	664	Macon	854
Cleveland	1,123	Madison	1,275
Columbus	916	Martin +	624
Whiteville City Schools +	566	McDowell +	753
Craven +	710	Charlotte-Mecklenburg	1,159
Cumberland	2,054	Mitchell	1,028
Currituck +	651	Montgomery County	821
Dare +	482	Moore County	1,768
Davidson	3,118	Nash-Rocky Mount	869
Lexington City Schools +	592	New Hanover +	745
Thomasville City Schools	803	Northampton County +	582
Davie	927	Onslow	1,113
Duplin +	639	Orange County +	629
Durham County	1,292	Chapel Hill/Carrboro +	649
Edgecombe County	1,013	Pamlico +	316

Appendix C: North Carolina School Nurse-to-Student Ratio by Local Education Agency, School Year 2010-11

County/LEA Name	Ratio (Nurse:Student)	County/LEA Name	Ratio (Nurse:Student)
Pasquotank	981	Surry County	1,055
Pender	843	Elkin City Schools	769
Perquimans	860	Mount Airy City Schools +	536
Person County	985	Swain +	333
Pitt	1,276	Transylvania	1,170
Polk	1,166	Tyrrell +	565
Randolph County	2,041	Union	1,190
Asheboro City	913	Vance County +	687
Richmond	755	Wake County	2,517
Robeson	1,013	Warren County +	615
Rockingham County	1,691	Washington +	583
Rowan-Salisbury	1,677	Watauga	1,074
Rutherford	1,461	Wayne	1,111
Sampson	1,085	Wilkes County	1,044
Clinton City +	601	Wilson County	2,006
Scotland +	473	Yadkin County	968
Stanly	1,494	Yancey +	501
Stokes County	1,369	**North Carolina**	1,201

+ School districts that meet or exceed the recomended student to nurse ratio of 1:750

School Nurse/Student Ratio SY 2010 - 2011



Note: The standard school nurse to student ratio of 1:750 has been adopted by the N.C. Public Health Task Force, the N.C. Department of Public Instruction and the N.C. Division of Public Health and is based on recommendations made by the American Academy of Pediatrics, the Centers for Disease Control and Prevention, and the National Association of School Nurses.

Source: NC Annual Survey of School Health Services NC DHHS August 2011

State of North Carolina | Beverly Eaves Perdue, Governor
Department of Health and Human Services | Albert A. Delia, Acting Secretary
Division of Public Health | Laura Gerald, MD, MPH, State Health Director
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