

# Alaska School Nurse Data Collection Report 2013

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## Acknowledgements

School Health Nurse Advisory Committee

**Special thanks to all of the Alaska School Nurses  
who contributed their time and data to this project.**



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# Alaska School Nurse Data Collection Report 2013

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## 1. Introduction

School nurses serve as an extension of the public health system. They provide comprehensive health services including case management and care for students with chronic conditions (e.g., asthma, diabetes, life-threatening allergies and seizures), counseling, health and wellness promotion, health education and administration of immunizations. They provide assessment of minor health complaints, medication administration and care for special health care needs as well as handle emergencies and other urgent situations. State-mandated services, including screenings, verification of immunization and tuberculosis (TB) status and infectious disease reporting are other roles of the school nurse. School nurses help students come to school and stay in school where they can learn.

In Alaska, school nurses work in 17 of the 54 school districts in varying capacity and staffing ratios. There are currently 235 school nurses serving the approximately 123,000<sup>i</sup> public school students attending school in the 468 school buildings in Alaska. Of the 123,000 students who traditionally attend a school, 91,900 (75%) currently receive nursing services that meet the *minimum* standard of one nurse per 750 students recommended by the American Academy of Pediatrics, the National Association of School Nurses and Healthy People 2020. In eight of the 17 Alaska districts providing school nursing services, the ratios are insufficient; these districts represent 15,900 underserved students. Another 15,800 students receive no school nursing coverage at all. Although public health nurses often play an important role in these districts operating as the defacto school nurse and providing some school health services (such as TB screening), their capacity to provide planning and staff training for individual student health needs is limited.

School nurses, like their colleagues, live and function in a data-driven world. Collecting, analyzing and sharing data with stakeholders are critical responsibilities for improving health services, school nursing practice and interpreting their importance to others.

## 2. Executive Summary

This report summarizes findings of the School Nurse Data Collection Pilot Project that took place in February, March, and April of 2013 and repeated in September, October, and November of 2013. The project had dual purposes. First, data from school nurses had not been comprehensively collected before at the state-level, therefore the project was a test ground for implementing statewide procedures in collecting, analyzing and sharing data with stakeholders. Second, school nurses at the school and district level have unique opportunities to collect and use data in a variety of capacities affecting the health and education of children and adolescents in their schools and districts. The School Nursing/School Health Program in the

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<sup>i</sup> Total statewide public school population for 2014 was 131,577 including homeschooled students and those in the juvenile justice system. Approximately 123,000 students attended school in a public school building. These traditionally enrolled students are those most likely served by district school nursing services.

Alaska Division Public Health looks to support these opportunities and the use of data findings for evidence-based practice and advocacy.

The information collected through the School Nurse Data Collection Pilot Project 2013 provides a snapshot of school nursing services that assist in keeping students in the classroom healthy and ready to learn.

- School nurses from 11 districts around the state voluntarily submitted data over the course of six months; three months in the spring and three months in the fall of 2013. A total of 591 reports were received. About 180 school nurses participated representing 75% of school nurses statewide. Not all nurses participated during all six months.
- School size ranged from 19 to 2,268 students; total students represented each month ranged from 33,645 to 47,055. The total population of public school students statewide is 131,577. The breakdown for types of schools in the submitted reports was 346 elementary, 72 middle, 71 high, 43 K-12 and 59 other combination.
- A total of 205,817 student encounters were reported by the school nurses over the course of the six month study. The average number of daily student encounters was 23. Thirty-six percent of the encounters were for illness assessment followed by 26% for injury/first aid. Scheduled medications represented 17% of the encounters while 10% were for mental health or behavioral support. The final 10% of encounters were for scheduled procedures (7%) and individual health education (3%).
- Among elementary school nurses, the percent of student encounters was almost equal for illness assessment and injury/first aid (32% and 29%, respectively). The proportion of encounters for injury/first aid and for medications decreased as the age of the student population increased; for high school nurses almost half (49%) of all encounters were for illness assessment while only 19% were for injury/first aid. High school nurses also reported the largest percentage of encounters for mental health, behavioral, social assessment and support (15%).
- The vast majority of the reported encounters resulted in the student being returned to scheduled activities. School nurses in this study returned students to the classroom, after assessment and intervention, 95% of the time. Encounters due to injury and mental health had slightly higher return-to-class rates than encounters due to illness (98% of injury and mental health encounters vs. 89% of illness encounters). School nurses utilize their assessment skills to determine whether a student should remain in school with a mild illness or should be excluded for a more serious or potentially contagious condition that might cause further student and or staff absences. The return-to-class rates were consistent regardless of the amount of time the school nurse worked in the school (measured by nurse FTE).
- A total of 68,775 medication doses were given over the six month period. The majority were prescription medication doses (55%), followed by non-prescription doses (44%).

Six hundred and five doses of emergency medications (e.g., epinephrine, glucagon, albuterol, rectal diazepam) were given to students (1% of total number given). Total reported medications given per student population was highest for middle school nurses (415/1,000 students) and lowest for K-12 school nurses (77/1,000 students). However, elementary school nurses reported the highest number of prescription medication and emergency medication doses given per 1,000 students, while middle school nurses reported the highest number of non-prescription medication doses.

- During the six month study period, school nurses provided a total of 66,062 state mandated screenings aimed to improve student access to their education and eliminate barriers to learning. Vision screenings totaled 19,335 with 1,012 having a completed referral, while 14,133 hearing screenings were administered, with 489 having a completed referral. School nurses reviewed 18,414 immunization records for compliance and 9,535 student records for needed physical examinations. Screening for tuberculosis by administering either a PPD skin test or questionnaire totaled 4,645.
- School nurses provide case management for individual students to address their specific health needs at school. Case management involves countless hours of planning which includes numerous communications with family members, healthcare providers and staff as well as attendance at meetings and conferences to discuss student health needs. School nurses also provide trainings for staff specific to individual students which include medication administration and emergency care. In total, 83,427 case management interactions were provided by school nurses during the six months of the pilot project.

### **3. Review of Literature**

A review of the literature reveals school nursing interventions have a significant impact on student attendance, thus influencing achievement and graduation rates. Multiple studies have indicated school attendance predicts student dropout and achievement.<sup>1</sup>

School nurses support attendance by providing needed health services in school. They also provide assessments of illness and injuries. In addition, school nurses provide psychosocial support and crisis management for such student needs such as increased stress, anxiety, substance use and depression which often cause increased absenteeism when not addressed. Psychological problems often present as physical complaints. Thus, school nurses are in an appropriate position to identify many at-risk students.

Nurses also have been found to impact school performance through health instruction, targeting specific high-risk populations for educational interventions.<sup>2,3,4</sup>

In two studies, school nurses were shown to return students to class at a higher rate than a non-nurse. School nursing assessment and interventions reduced avoidable early release from school for illness and injury, thereby increasing student class attendance and academic success.

In the first study, analysis of the data indicated that 57% fewer students left school early with school nurse contact compared with those who left school early without such contact.<sup>5</sup> The second study found that 5% of students seen by the school nurse were sent home and 18% of students seen by an unlicensed school employee were sent home.<sup>6</sup>

The state of Massachusetts analyzes health services program data on an annual basis. In the most currently accessible report for the 2011-12 school year, after assessment and/or treatment by a school nurse, 93.1% of the students visiting the nurse's office with an illness or injury complaint were returned to the classroom to continue their studies.<sup>7</sup>

Screening and referral for student health conditions is an important role of the school nurse. Health screenings, such as vision and hearing assessments, allow for early identification of potential underlying medical problems and referral and follow up for treatment as appropriate. School nurses are responsible for screening students and making referrals for a more comprehensive examination and care when needed. Parents are responsible for making appointments for the follow-up care and ensuring that students keep the appointments. School nurses may assist in this process by providing further information for parents, providing reminders as needed and facilitating access to the needed health care. Remediation of barriers to learning by completion of referrals (i.e., examination by the healthcare provider with recommendations for treatment when applicable) is the goal so students are not only in class but, additionally, that their learning potential is optimized.<sup>3,4</sup>

School nurses provide immunization oversight and tuberculin screening for state compliance. In Alaska, vision and hearing screenings are required upon entry into the school district and at regular intervals specified by the governing body of the school district (AS 14.30.127). Immunizations, tuberculin testing and an entry physical examination are other state mandates that apply to Alaska school children (AS 14.30.045, AS 14.30.65-AS 14.30.125, AS 18.05.040, AS 44.29.020). School districts are required to exclude any child who has not been immunized in compliance with 4 AAC 06.055. School districts are also required to suspend a student under AS 14.30.045 if the tuberculin testing or referral follow-up requirements described in 7 AAC 27.213 (e) (1)-(2) are not met. Studies have shown that registered nurses in schools are correlated with increasing immunization rates<sup>8</sup>, reducing the incidence of communicable diseases and thus student absences.

School nurses provide case management services for students to access their education and to be safe and successful in school.<sup>3,4,9</sup> There are significantly more children in special education and more children in school with medically fragile conditions and chronic illnesses than there were 10-20 years ago. Nationally from 2002 to 2008, the percentage of children in special education with health impairments due to chronic or acute health problems increased 60%.<sup>10</sup> The prevalence of pre-diabetes and diabetes has increased from 9% to 23% in U.S. adolescents between 1999 and 2008.<sup>11</sup> The prevalence of food allergies among children under the age of 18 increased 18% from 1997 to 2007.<sup>12</sup> Seven million U.S. children, age 17 and under, have asthma, 9.4% of all children.<sup>13</sup> Health services must be provided for students who qualify for services under the Individuals with Disabilities Education Improvement Act (IDEIA) or the Rehabilitation Act Section 504 to meet requirements of federal law. Case management for

these students includes development and implementation of an Individualized Healthcare Plan (IHP) for students whose healthcare needs affect or have the potential to affect safe and optimal school attendance and academic performance. These plans are the professional responsibility of the school nurse in collaboration with the student, family and healthcare provider(s).<sup>14</sup>

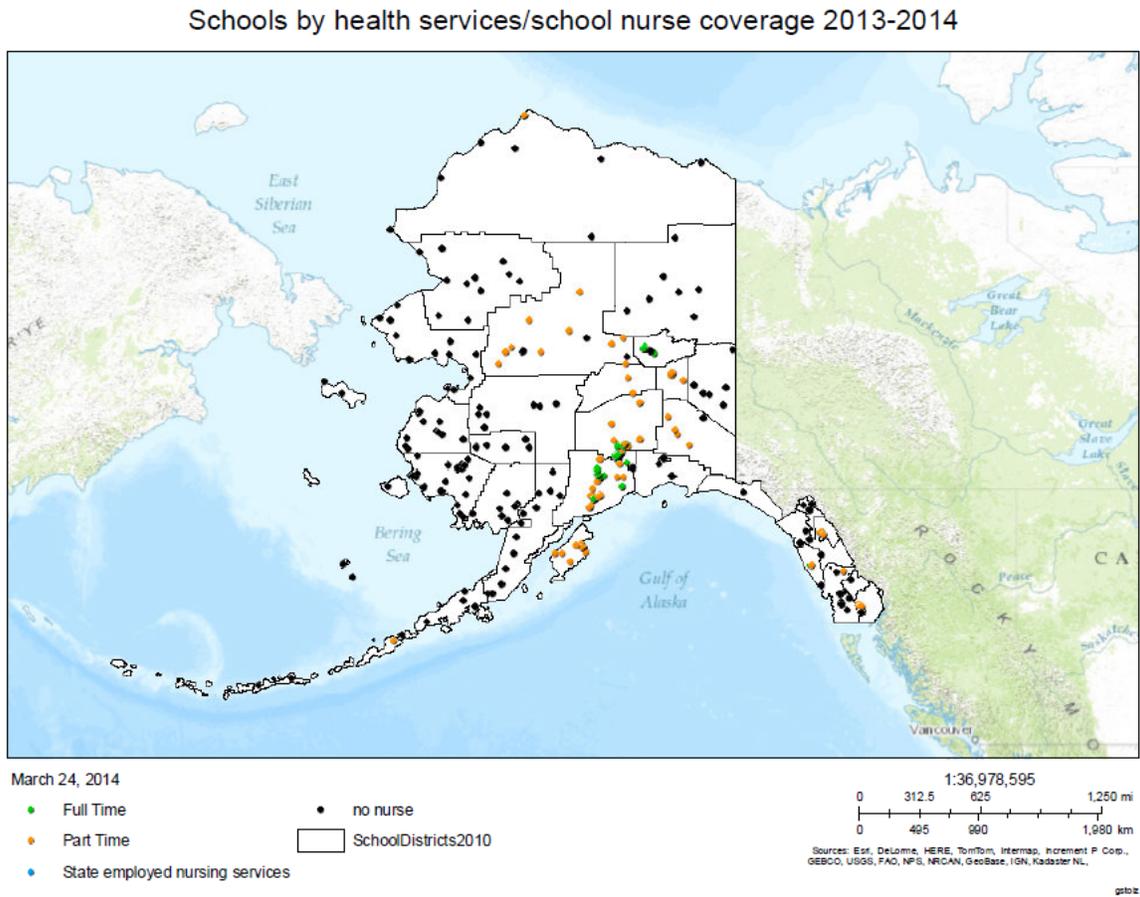
Medications and specialized nursing procedures are often prescribed for children with chronic conditions and special health care needs. Medication administration to students is one of the most common health services performed at school allowing for students to attend school while enhancing their overall health and/or stabilizing their chronic condition.<sup>15</sup> The school nurse has the knowledge and skills required for the delivery of medication, the clinical knowledge and understanding of the student's health and the responsibility to protect the health and safety of students.<sup>16</sup> Medication non-adherence at school has been linked to a variety of poor educational, social/emotional and physical outcomes.<sup>17</sup> In addition, the immediate access to emergency medication, such as epinephrine, is a high priority and is crucial to the effectiveness of these life-saving interventions.<sup>16</sup>

#### **4. Background and objectives of the project**

The School Nursing/School Health Program in the Alaska Division of Public Health supports comprehensive school health and nursing services via the School Health Nurse Consultant who offers consultation, technical assistance and research of evidence based practices to set practice standards as guidance for school nurses and school districts statewide. In 2009, the School Health Nurse Advisory Committee (SHNAC), facilitated by the School Health Nurse Consultant, was established to support the program in its goals. The committee consists of school nurses and school district nursing coordinators/directors from both urban and rural districts. Districts without school nursing services are represented by the Section of Public Health Nursing within the Alaska Division of Public Health. The committee meets regularly to address current issues in school nursing practice; to attain consistent school nursing practice across Alaska via the development of guidelines for practice and trainings that reflect best practice and national standards; and to increase the understanding of the role of the school nurse in student success.

**Figure 1. Map of Alaska schools and school districts indicating presence of school nurse**

Data source: Alaska Division of Public Health. Note: "State employed nursing services" are those health services offered at juvenile justice youth facilities.



In school year 2011-12, the SHNAC discussed the important role data plays in improving nursing practice and interpreting its importance for others. School nurses have unique opportunities to collect and use data in a variety of capacities affecting the health and education of children and adolescents. These include surveying chronic illness, monitoring utilization, relating health to educational outcomes, developing policies, monitoring performance improvement, and measuring client (parent) satisfaction.<sup>18</sup> The SHNAC recognized the importance of having data to share at local and district level meetings with administrators, school committees, school board members and other critical stakeholders especially at a time when school district budgets were dwindling and school nursing staffing in some districts was being cut. Collecting and sharing data with these stakeholders was viewed as being proactive in objectively identifying the impact these cuts might have on the health and safety of students and facilitate the understanding of the school nurse role and the nursing interventions that could impact student academic success. At a state level, school nursing data could provide a snapshot of school nursing services statewide, as well as be used to plan, implement and evaluate school health and nursing programs to better meet needs for guidance and professional development. Based

on this knowledge, the SHNAC made the decision to establish an ad hoc committee to research and suggest a data pilot project for initial standardization and voluntary collection of school nursing data in Alaska districts with school nursing services.

The committee researched other known school nursing data collection projects, including the methods and procedures in place in other states. Through review of the literature, the committee learned there is no national clinical database describing school children's health. At the time of this data pilot project, there were no specific national data indicators or standardized coding to describe school health consistently across the states collecting data. Some states have mandatory and comprehensive data systems in place whereas others rely on voluntary data. Still others, like Alaska, do not have an ongoing data and evaluation system in place for identifying gaps in school health and nursing services.

The National Association of School Nurses (NASN) offered a 2012 position statement on the *Nursing Minimum Data Set for School Nursing Practice*.<sup>19</sup> In it the NASN supported collection of essential nursing data as listed in the Nursing Minimum Data Set (NMDS). The NMDS provides the formal structure and identification of data elements, including nursing care delivered in all settings, for Electronic Health Records (EHRs). NASN suggested that although it has not been tested in the school setting and may not capture all the data elements unique to school nursing, the NMDS provided the *initial* structure to identify the data needed to delineate nursing care delivered to clients as well as relevant characteristics of those clients.

In another study researching the standardization of school nursing data indicators, the authors recommended that entities that report on school nursing data should begin to build a consensus around data collection that will contribute to a national school health database (in place as of July 2014). The common variables (and eventually codes) that should be included in any data collection instrument were identified as 1) data around staffing (i.e., education, licensing, caseload), 2) risk management (i.e., health policies/procedures, staff trainings, system of data collection), 3) health promotion (i.e., school nurse prevention activities), 4) episodic care (i.e., numbers seen in the health room and those referred for screenings), and 5) care coordination (i.e., number of students with chronic conditions, number of students with Individualized Healthcare Plans).<sup>20</sup>

The *Alaska School Health and Safety Framework*, a strategic framework identifying essential steps to guide statewide stakeholders addressing health and safety issues in schools, was published in September 2011 by the Alaska Department of Education and Early Development.<sup>21</sup> In it, an ongoing data and evaluation system for identifying gaps in school health and nursing services was recommended and supported as an essential step.

## 5. Methodology

Based on the review of literature and further committee discussion, and in collaboration with the Alaska Division of Public Health, Section of Women's, Children's, & Family Health's MCH Epidemiology Unit, the SHNAC ad hoc committee developed an Excel spreadsheet data

collection instrument and instruction guide to offer as a tool for school districts interested in collecting data regarding nursing services. The original intent was for the data to be collected monthly at the school nurse and school district level and later shared with state school nurse consultant for state level analysis.

The tool, guide and a cover letter were emailed to school nurses statewide in August of 2012 encouraging the nurses to participate in a pilot process testing out the new instrument to better develop a subsequent data collection system. Through support from three of the larger school district nursing coordinators/directors who required their nurses to collect data using the tool, participation was robust in the Anchorage School District, Matanuska-Susitna Borough School District and the Kenai Peninsula Borough School District. The feedback from these nurses and others throughout the fall of 2012 guided the data collection committee to revise the project. Nurses were overwhelmed with the number of indicators for collection, the time involved and the logistics of capturing the needed data on the Excel spreadsheet given the use of electronic health records in these districts.

The ad hoc committee went back to the drawing board in November-December of 2012 and devised a smaller pilot project with fewer, more specific indicators for the purpose of identifying data supporting and improving “student seat time” and educational access for students. This revised pilot project was not intended to capture data related to ALL roles and responsibilities of a school nurse. Rather, its focus was geared toward the role of the school nurse in addressing and improving the physical and social/emotional needs of students which allows them to be present in school and ready to learn.

The updated tool fit on one Excel spreadsheet page and contained 5 main headings, 1) Number of Student Encounters, 2) Number of Dispositions, 3) Number of Mandated Screenings, 4) Number of Medication Doses Given and 5) Number of Case Management Interactions  
**(Appendix A)**

Both the new tool and the School Nursing Data Collection Pilot Project Guide (**Appendix B**) specifying the definition and measurement for each of the indicators were sent via email to school nurses statewide by the state school health nurse consultant in January 2013. Nurses were requested to keep track of their indicators daily using the tool for the months of February, March and April and to send their completed monthly spreadsheets to the state school nurse health nurse consultant electronically via email at the end of each month. Entry into a raffle for a \$100 gift certificate to a school health catalog was offered as an incentive to participate each month.

Three of the districts with school nursing coordinators (Anchorage School District [ASD], Kenai Peninsula Borough School District [KPBSD] and Matanuska Susitna Borough School District [MSBSD]) again required their school nurses to send their data directly to the state as well as to the district. However, the Anchorage School District, which employs one hundred school nurses, chose to rotate the requirement over the three months so that each individual nurse would only have to turn in one spreadsheet during the three month period. The coordinators from these three districts also worked on identifying those indicators that the school nurses

could retrieve from electronic records. In the MSBSD, the nurses were able to retrieve all of the indicators from their EHRs, so they did not rely on daily data entry but provided totals from a monthly EHR special report. Kodiak Island Borough School District worked with their district IT director to set up a system where the nurses would input their data into a Filemaker Pro file and the IT department would run the report each month and send it to the state school health nurse consultant.

In the first month of data collection, there were many questions from school nurses clarifying where to document a particular encounter. The SHNAC data collection committee met numerous times to discuss the questions, determine the solution and update the project guide accordingly. The state school nurse consultant sent the revised guide to school nurses statewide each time it was updated.

As a further incentive and in celebration of School Nurse Day, celebrated in May, the SHNAC data collection committee developed a monthly report that could be generated with the nurses' data and shared with the school administrator. An additional narrative section was added for the school nurse to elaborate on injuries/illnesses of note; meetings, trainings, classes for students, staff, community; professional development and mandated reports/activities completed. Several nurses utilized the School Nurse Administrator Report to advise their administrator of school nursing activities with positive response. One school administrator was so impressed; he shared the report with School Board members and other stakeholders.

In May 2013, the SHNAC data collection committee met to review the process and the data collected so far. The decision was made to continue the data collection project for three additional months in the fall, as many of the mandated screenings actually take place in the fall so this data had not adequately been captured in the first three month collection period.

In August 2013, an updated copy of the tool and the guide was redistributed statewide and school nurses were again requested to submit their data. An incentive of a raffle for a \$50 gift certificate to a school nurse supply catalog was offered. In the first three month collection, we learned that some formulas embedded in the tool were inadvertently erased by school nurses because appropriate cells were not locked. The updated tool was subsequently modified to prevent this outcome.

The MCH Epidemiologist imported the monthly totals from each individual report received into a Microsoft Access database that consolidated all of the information into one data set. The database contained fields for the monthly totals for each indicator, as well as demographic and identifying information associated with the reports (nurse name, school, nurse FTE, school student population, month of data collection, number of nurse days with students). The reports did not contain any information that could identify specific students. Information on school type and school district was added for each report so that the data could be summarized in these categories. Data entry errors were detected and corrected through multiple reiterations of sorting and filtering the records and looking for anomalies after data entry was completed.

Data analysis was conducted in SPSS Statistics software version 16.0 (SPSS Inc. SPSS: Version 16.0 for Windows. Chicago: SPSS Inc.; 2008), using descriptive statistics statements and cross tabs. For each section of analysis (e.g., encounters, dispositions, etc.) all reports were excluded from analysis if the total number indicated did not equal the sum of each of the options in that section because we could not determine which number was accurate. In calculating return-to-class rates, we also excluded any reports where the total number of encounters did not equal the total number of dispositions.

## **6. Summary of nurse and school characteristics**

Data was submitted voluntarily by school nurses from 11 school districts around the state. Nurses submitted monthly reports for each school at which he or she worked that month. During February-March and September-November 2013, 591 reports were received (average of 99 reports per month), representing about one-third of all schools serviced by nurses statewide.

About 180 school nurses submitted a report for at least one month during the data collection period. This represents about 75% of all 235 (estimated) school nurses statewide. Most reports (70%) were from full time school nurses (0.8 to 1.0 FTE), while 18% were from nurses whose position was  $\leq 0.4$  FTE, and 12% were from nurses whose position was  $>0.4$  to  $<0.8$  FTE.

The total number of students represented by the reports each month (based on the student population at each school for which a nurse submitted a report) ranged from 33,645 to 47,055, depending on the month of data collection. Not all schools are represented each month. The total population of public school students statewide for school year 2013-14 was 131,577.

The majority of reports came from school nurses in the Anchorage School District (ASD), the Kenai Peninsula Borough School District (KPBSD) and the Mat-Su Borough School District (MSBSD) (**Table 1**). These three districts are also where the majority of school-aged children in Alaska reside.

**Table 1.**

School District	Number of reports
Anchorage School District	160
Denali Borough School District	5
Fairbanks North Star Borough School District	18
Juneau Douglas School District	7
Kenai Peninsula Borough School District	165
Ketchikan Gateway Borough School District	17
Kodiak Island Borough School District	29
Lower Kuskokwim School District	6
Matanuska-Susitna Borough School District	173
Petersburg City School District	2
Unalaska City School District	9
TOTAL	591

During the 6 month period, 346 reports were submitted for elementary schools, 72 for middle schools, 71 high schools, 43 K-12, and 59 other categories of school. The majority of reports (59%) were for schools with 201-500 students. Twenty-five percent were for schools with less than 200 students and 17% were for schools with more than 500 students.

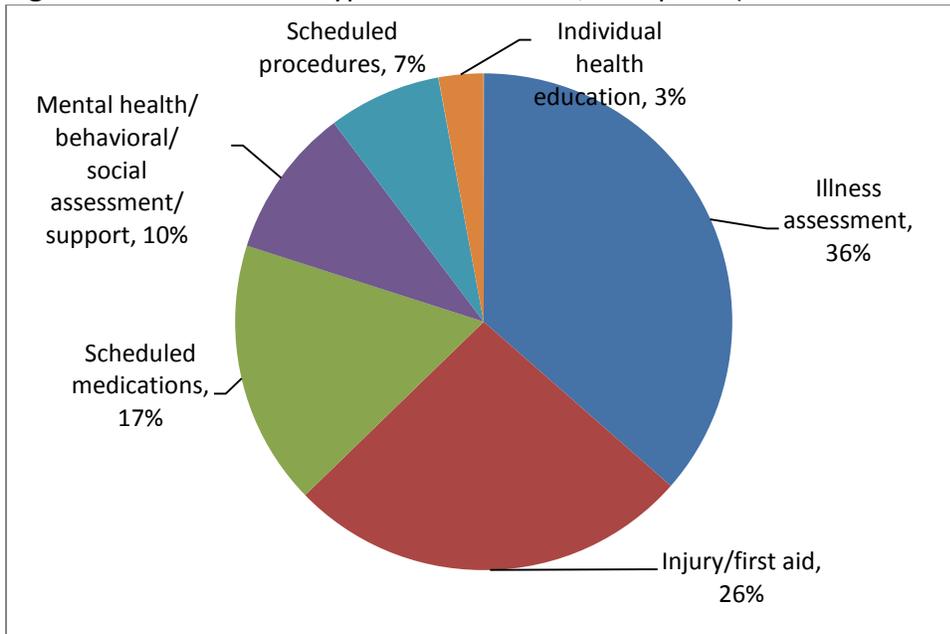
## **7. Findings**

### *Encounters and dispositions*

Alaska school nurses reported an average of 23 student encounters per day. This understandably varied by nurse FTE; nurses working  $\leq 0.4$  FTE reported an average of 6 daily encounters, those working more than 0.4 but less than 0.8 FTE reported an average of 17 daily encounters, and full time nurses reported an average of 27 daily encounters.

Overall, most reported encounters were for illness assessment (36%), followed by injury/first aid (26%) and scheduled medications (17%) (**Figure 2**). Less than a quarter of all reported encounters were for mental health/behavioral/social assessment/support, scheduled procedures and individual health education combined.

**Figure 2:** Distribution of types of encounters, all reports (total encounters reported = 205,817)



Nurses in each FTE category reported different distributions of types of encounters (**Table 2**). In the smallest FTE category ( $\leq 0.4$ ), nurses reported a greater percent of all encounters for injury/first aid and individual health education compared to nurses in the higher FTE categories. Nurses with higher FTE had a larger proportion of encounters for mental health, behavioral, social assessment and support and scheduled procedures compared to those working  $\leq 0.4$  FTE. The percent of encounters for illness assessment was similar across all FTE categories.

**Table 2.** Distribution of types of encounters, by nurse FTE category

Encounter Type	FTE Category 1	FTE Category 2	FTE Category 3
Illness assessment	35%	34%	37%
Injury/first aid	38%	24%	26%
Scheduled medications	6%	22%	17%
Mental health/behavioral/social assessment/support	6%	11%	10%
Scheduled procedures	1%	7%	8%
Individual health education	14%	2%	3%

The distribution of types of encounters also varied by school type (**Table 3**). Elementary school nurses reported almost an equal percent of student encounters for illness assessment and injury/first aid (32% and 29%, respectively). The proportion of encounters for illness assessment increased with student age while the proportion of encounters for injury/first aid decreased as student age increased; for high school nurses almost half (49%) of all encounters were for illness assessment while only 19% were for injury/first aid. The percent of all encounters that were for scheduled medications also decreased as students got older, from 20% of encounters

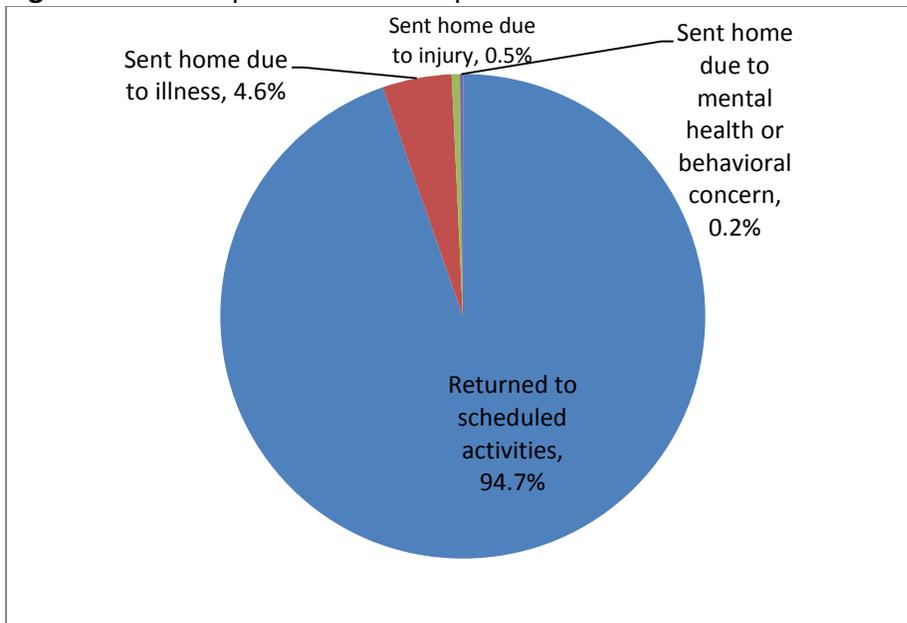
reported by elementary school nurses to 10% of encounters of high school nurses. High school nurses reported the largest percentage of encounters for mental health, behavioral, social assessment and support (15%).

**Table 3.** Distribution of types of encounters, by school type

	Elementary	Middle	High	K-12	Other
Illness assessment	32%	44%	49%	24%	40%
Injury/first aid	29%	23%	19%	35%	21%
Scheduled medications	20%	15%	10%	17%	12%
Mental health/behavioral/social assessment/support	9%	8%	15%	5%	9%
Scheduled procedures	7%	9%	4%	1%	10%
Individual health education	2%	2%	3%	16%	9%

The vast majority of reported nurse encounters resulted in the student being returned to scheduled activities (95%, **Figure 3**).

**Figure 3.** Final dispositions of all reported encounters



We calculated return-to-class rates for each encounter reason using the following formula:

$$1 - \frac{\# \text{ of students sent home}}{\# \text{ of student encounters}}$$

The overall return-to-class rate for all reports received was 95%. Encounters due to injury and mental health had slightly higher return-to-class rates than encounters due to illness (98% of injury and mental health encounters vs. 89% of illness encounters).

### Medications

Almost all (92%) of the monthly reports submitted included the report of some type of medication given to students at least once. When incorporating information on the total student population represented by each report, the total medications given over the entire 6 month study period translated to 336 medication doses provided per 1,000 students. Total medications given per student population was highest for middle school nurses (415/1,000 students) and lowest for K-12 school nurses (77/1,000 students) (**Table 4**). However, elementary school nurses reported the highest number of prescription medication and emergency medication doses given per 1,000 students, while middle school nurses reported the highest number of non-prescription medication doses.

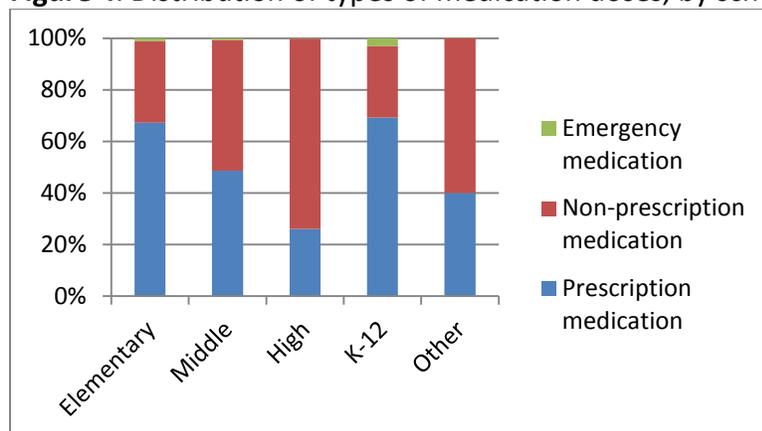
**Table 4.** Number of medications given per 1,000 students, by school type

Type of Medication	Elementary	Middle	High	K-12
Total medications	367	415	272	77
Prescription medication	247	202	71	53
Non-prescription medication	116	211	201	21
Emergency medication*	4	3	0.5	2

\*Defined as medications such as epinephrine, glucagon, albuterol, and diazepam, given during an emergency (e.g., for life-threatening allergy, diabetes, asthma, seizure emergencies).

Overall, over half (55%) of the reported medications were prescription medication doses, 44% were non-prescription medication doses, and 1% were emergency medication doses. Sixty-seven percent of the medication doses given by elementary school nurses were prescription medications and 32% were non-prescription (**Figure 4**). This shifted to almost the opposite for high school nurses, who reported only 26% of doses given for prescription medication and 74% for non-prescription.

**Figure 4.** Distribution of types of medication doses, by school type



### *Mandated Screenings*

During the six month study period, school nurses provided a total of 66,062 state mandated screenings aimed to improve student access to their education and eliminate barriers to learning (**Table 5**). Vision screenings totaled 19,335 while 14,133 hearing screenings were administered. School nurses reviewed 18,414 immunization records for compliance and 9,535 student records for needed physical examinations. Screening for tuberculosis by administering either a PPD skin test or questionnaire totaled 4,645. Some of the screenings reported may represent multiple screenings for the same student, as nurses were asked to report each screening separately. When abnormal screening results are identified, nurses provide parents with healthcare provider referrals for their child and follow-up with phone calls or written reminders.

The numbers of completed referrals represent mostly unique students who received the needed care that had been identified through the school nurse screening. During the six months of the data collection, 1,834 students completed immunization referrals, 1,253 completed TB referrals, 1,012 completed vision referrals, 803 completed physical exam referrals, and 489 completed hearing referrals. The numbers for screening referrals and follow-up and the completion of referrals were not linked to the number of screenings reported, as data was collected in separate school years, so we could not calculate a percentage of screenings that resulted in referral/follow-up or the percent of referrals that were completed. For unknown reasons, more completed referrals for physical exams were reported than actual referrals made.

**Table 5.** Number of Screenings done, referral and follow-up, and completed referrals, by type of screening

	Vision	Hearing	TB (PPD)	Physical Exam	Immunization
# Screenings done	19,335	14,133	4,645	9,535	18,414
Referral and Follow-up	2,124	527	1,810	521	3,092
Completion of Referral	1,012	489	1,253	803	1,834

### *Case Management*

School nurses provide case management for individual students to address their specific health needs at school. Case management involves planning and communication with family members, healthcare providers and staff, as well as attendance at meetings and conferences to discuss student health needs. Case management may also include trainings for school staff specific to individual students, such as medication administration and emergency care. In total, 83,427 such case management interactions were provided by school nurses over the months of the pilot project (**Table 6**).

**Table 6.** Number of case management meetings and communications, by school type

	All	Elementary	Middle	High
Total	83,427	57,903	9,983	9,265
Meetings	8,554	6,113 (11%)	562 (6%)	862 (9%)
Communications	74,873	51,790 (89%)	9,421 (94%)	8,403 (91%)

## 8. Outcomes

### *Limitations*

We identified several factors that limited our ability to draw conclusions from the data collected. These included:

- Because the fall data collection period didn't start until September, we likely did not capture the majority of screenings, particularly for immunizations, conducted prior to the start of the school year.
- The screening referrals and follow-up or completion of referrals were not linked to the screenings reported, as data was collected in separate school years, so we could not calculate a percentage of screenings that resulted in referral/follow-up or the percent of referrals that were completed.
- Follow-up screenings were counted twice, so individual students could be counted more than once in the number of screenings reported. Therefore we were unable to calculate a percentage of all students who were screened.
- Not all nurses/schools participated every month, so the total number of students represented was different each month.
- We did not collect data from schools that did not have a school nurse, so we had no comparison schools to enable us to measure the impact of having a school nurse.

### *Conclusions and lessons learned*

Our data supported the findings of prior studies that the presence of school nurses was associated with **high return-to-class rates**. In our study, **95% of all student-nurse encounters** resulted in the student being returned to their classroom. While we did not have data on return-to-class rates from Alaska school districts without a school nurse, we expect that they likely have lower return-to-class rates based on the findings of other national studies.<sup>5,6</sup>

The data also highlighted several differences by school type (an indicator of student age) in school nurse usage, illustrating that the burden on nurses and the types of treatment and support they provide is not the same across all school types. School nurses at elementary and K-12 schools reported the highest percentages of encounters due to injury/first aid compared to other school types, while high school and middle school nurses had the highest percentages

of encounters for illness assessment. The percent of encounters for scheduled medications reported by elementary school nurses was twice that reported by high school nurses. Elementary school nurses also reported the highest number of prescription medication and emergency medication doses given per 1,000 students. High school nurses reported only 10% of their encounters for scheduled medications (the lowest of all school types), which correlates with the additional finding that 74% of the medications provided by high school nurses were non-prescription.

The 180 school nurses who participated in this project for at least one month during the six month period reported conducting an impressive **66,062** state-mandated screenings for vision, hearing, tuberculosis, physical exams, and immunizations. Many of the students who were referred for follow-up with a healthcare provider based on the screening would not have had their health need identified and addressed had the school nurse not conducted the screening.

Since this pilot project was developed and implemented, a national school nursing uniform dataset was established by a joint collaboration between the National Association of School Nurses (NASN) and National Association of State School Nurse Consultants (NASSNC) and is being promoted for the 2014-2015 school year. The initial objective of the Alaska pilot project was to test a system for comprehensively collecting school nursing data at the state-level for analysis and distribution to stakeholders. Though there were several “lessons learned” in collecting the data for this project, we were successful in demonstrating that it can be done, that the data is useful, and school nurses were willing to participate. This knowledge coupled with the experience of fine-tuning a data system should provide confidence and expertise in fulfilling the national dataset request for the 2014-15 school year.



**Appendix B**  
**Alaska School Nursing Data Collection Pilot Project Guide**  
**Updated 8-21-13**

**Objective:** To collect data to assess the role of the school nurse in improving student “seat time” in the classroom and educational access. This project is not intended to capture data related to ALL roles and responsibilities of a school nurse. Rather, its focus is geared toward the role of the school nurse in addressing and improving the physical and social/emotional needs of students which allows them to be present in school and ready to learn.

**Identification Information:** Double click in the left header section and enter school nurse name, school name, amount of FTE school nurse spends in this school and the school student population. Double click in the middle header box to enter the month. Double click on the right header and enter the number of nurse days with students for the month.

INDICATOR	DEFINITION	MEASUREMENT
<b>Student Encounters</b>	Line 1 - Students seen for provision of nursing services. TOTAL should be equal to the sum of the individual encounters <b>(lines 2-7)</b> .	Count each student face-to-face encounter as one regardless of location (one encounter type per visit). It is assumed that each encounter type will include nursing assessment and health education. Do not counting screenings as they are counted separately. Select only one option for each encounter from 6 visit types below. <b>TOTAL ENCOUNTERS (LINE 1) AND TOTAL DISPOSITIONS (LINE 8) SHOULD ADD UP TO THE SAME NUMBER.</b>
	Line 2 - Injury/first aid	Count each encounter for acute first aid type of injuries such as head injuries, abrasions, contusions, lacerations, burns, lost tooth, nosebleeds, sprains. Include previous injuries (sprains etc.) occurring the evening before or over the weekend as well as injuries occurring on the way to school. After the initial assessment and acute treatment, if the student is seen in subsequent days for the injury, record it in illness as chronic pain management. If it is a re-injury of, for example a sprained ankle, count the initial assessment as an injury and any subsequent encounters as an illness. Any PRN medication given for relief of acute pain would be counted here. If crutches or wheelchair is given for an acute injury, count the instructions here; if later needing crutch walking instructions and it is the primary purpose of the visit, count it under health education.
	Line 3 - Illness assessment	Count each encounter to evaluate an acute health condition and subsequent plan of action. Include assessment, triage, reassessment for illnesses such as colds, fever, sore throat, abdominal pain, and chronic health conditions such as asthma, diabetes, etc. Unscheduled glucose checks and subsequent

		<p>treatment would be counted here as they are part of the assessment for chronic illness. Include assessment or exclusion for head lice here. If immunizations are out of compliance and a student excluded, count here. Include any assessment or treatment for eczema, hiccoughs, dysmenorrhea, asthma (unscheduled inhaler use). When a PRN medication is given due to a headache, cramps, stomachache, allergies, etc. count that here as assessment of the illness was the primary reason of the encounter. If the visit was for pain of a chronic nature (i.e., ongoing back pain, any injury after the initial acute encounter becomes a chronic assessment) count it here. If unscheduled medication is given for chronic pain management, count it here. Count stress management techniques utilized to deal with illness in lieu of or in addition to medications. Count STI assessment here unless primarily giving counseling (line 4) or STI education (line 7).</p>
	<p>Line 4 -Mental health/behavioral/social health support</p>	<p>Count each encounter presenting with issues related to anxiety, depression, behavior modification, time out, stress management, self-injury, de-escalation, physical restraint, verbal consultation intended to help the student adjust to surroundings or improve interpersonal skills. Include scheduled and unscheduled counseling sessions. Include hunger management here. Include any support given for “mental anguish” here (e.g., incontinence, wet clothes, lost shoe in a snow bank, etc.). If the primary interaction for an STI or pregnancy is reassurance, consoling/counseling, then count that here.</p>
	<p>Line 5 - <b>Scheduled</b> medications</p>	<p>Count each encounter for daily or more frequent medication administration. Do not include PRN administrations as they would be counted in illness or injury assessment. ALL medication DOSES should also be recorded in lines 30, 31, or 32.</p>
	<p>Line 6 - <b>Scheduled</b> procedures (defined further below)*</p>	<p>Count each encounter for daily or more frequent procedures performed such as glucose check, catheterization, tube feeding, etc. Unscheduled glucose checks are counted in illness assessment. Count scheduled blood glucose check, carb count and insulin administration accomplished in one encounter here; if student checks BG before lunch then receives insulin after lunch, count as 2 encounters... the first as a procedure, the second as a scheduled medication.</p>

	Line 7 - Individual health education	Count each encounter <i>specifically</i> for health instruction (not related to acute injury or illness) such as asthma instruction, medication instruction, menstruation (include encounters for initial instructions for use of sanitary pads or other menstrual instructions; dysmenorrhea, count in illness), nutritional instructions/follow up, tobacco cessation, explanation of disease process, hygiene, infection control, crutch walking/wheelchair instructions (if primary reason for visit), student with breast pump (if engage her in discussion regarding infant care, coaching, support count here; if primary encounter is for fever, infection related to breast feeding, count in illness; if only using office for privacy reasons and no interaction, do not count as an encounter), etc. STI or pregnancy education, if it is primary reason for visit.
<b>Differentiate student encounters by disposition</b>	Line 8 - Student disposition after encounter. TOTAL should be equal to the sum of the individual encounters (lines 9-12).	Each encounter should result in ONE disposition only. <b>TOTAL ENCOUNTERS (LINE 1) AND TOTAL DISPOSITIONS (LINE 8) SHOULD ADD UP TO THE SAME NUMBER.</b>
	Line 9 - Return to scheduled activities	Count each student who returned to scheduled activities (even if rested in health office).
	Line 10 - Left school due to illness	Count each student who was dismissed from school by the school nurse due to illness.
	Line 11 - Left school due to injury	Count each student who was dismissed from school by the school nurse due to injury.
	Line 12 - Left school due to mental health/behavioral concern	Count each student who was dismissed from school by the school nurse for a mental health/behavioral concern. Count drug assessments here that result in a student being suspended, going directly to jail or to the hospital here.
<b>State Mandated Screenings</b>	Line 13 - Identify the number of required and recommended health screenings. TOTAL should be equal to the sum of the individual screenings.	Count each individual screening as one for each type of screening. Do not count screenings in encounters.
	Line 14 - <b>Vision Screenings Done</b>	Count each vision screen (no matter the number of various vision screening tests) as one; count each rescreening as one.
	Line 15- Referral and Follow up	Count each referral to an ophthalmologist or optometrist as one. Count each reminder regarding the referral as one. All referrals and follow up reminders prior to completion of an examination is counted here.
	Line 16 - Completion of	Count the vision exam by an ophthalmologist or

	Referral	optometrist as a completed referral.
	<b>Line 17 - Hearing Screenings</b>	Count each hearing screen with an audiometer as one; count each rescreening as one.
	Line 18 - Referral and Follow up	Count each referral to an audiologist as one. Count each reminder regarding the referral as one. All referrals and follow up reminders prior to completion of an examination is counted here.
	Line 19 - Completion of Referral	Count the hearing exam by an audiologist as a completed referral.
	<b>Line 20 - TB Screenings</b>	Count each PPD or questionnaire given as one.
	Line 21 - Referral and Follow up	Count each PPD read as one. Count each referral to a health care provider for follow up of a positive PPD as one. Count each reminder regarding the referral as one. All referrals and follow up reminders prior to completion of an examination is counted here.
	Line 22 - Completion	Count each examination by a health care provider for TB communicability as one.
	<b>Line 23 - Physical Exam Screening</b>	Count each review of individual student record for state mandated school entry physical exam as one. The screening is of the student record for compliance. The student may not need referral/follow up.
	Line 24 - Referral and Follow up	Count each referral for a state mandated school entry physical exam to be completed by a health care provider as one. Count each reminder regarding the referral as one. All referrals and follow up reminders prior to completion of an examination is counted here.
	Line 25 - Completion of Referral	Count each examination by a health care provider for the purpose of school physical exam compliance as one. Count the nursing assessment done for statute compliance (until physical examination by a health care provider) as one.
	<b>Line 26 - Immunization Screening</b>	Count each review of a student's IZ record for school attendance as one. The screening is of the student record for compliance. The student may not need referral/follow up.
	Line 27 - Referral and Follow up	Count each referral for a needed (for school attendance) immunization as one. If more than one immunization is needed <i>at the same time</i> for this student, count them as one referral. Count each reminder regarding the referral as one. All referrals and follow up reminders prior to completion of an examination is counted here.

	Line 28 - Completion of Referral	Count each documentation of immunizations received as a result of a referral as one. If more than one immunization was needed and received <i>at the same time</i> for this student, count it as one completion. If vaccination is given at school by school nurse, count that here.
<b>Medications</b>	Line 29 - Doses of medications given. ALL doses of medication are counted here (separate from encounters). TOTAL should be equal to the sum of the individual medications given.	Count each dose as one even if given by other school personnel or was supervised self-administration by student.
	Line 30 - Prescription medications	Count each dose of prescription medication such as Ritalin, insulin, antibiotics given as one.
	Line 31 - Non-prescription	Count each dose of medication such as Tylenol, TUMS, Benadryl that are given as one.
	Line 32 - Emergency medications	Count each dose of medications that are given for an emergency such as epinephrine, glucagon, or diazepam rectal gel. Emergency medications may also include Benadryl and a rescue inhaler if administered in an emergency situation.
<b>Case Management</b>	Line 33 - Number of case management interactions. TOTAL should be equal to the sum of the individual case management activities.	Count the number of case management interactions (as defined by below).
	Line 34 - Number of trainings/meetings/conference (IEP, 504) re: individual students	Count the number of meetings attended regarding any student health issue (count each student discussion as one meeting, i.e., if nurse attends weekly Intervention meeting discussing 4 students count that as 4 meetings); includes any training specific to an individual student (i.e., epinephrine, glucagon, medication administration, procedure.
	Line 35 - Communications with parents, health care provider and/or staff about individual student health issues	Count each email, phone call, written or in-person conference separately; count follow up conversations separately. Do not count communications with parents, health care providers about referrals for the above 5 mandated screenings here, count under follow up for the screening. Count communications to complete an IHP, 504, SPED report here. Count communications with parents, health care provider or staff regarding a student's BG result, carb count, insulin administration here. Communication with a staff

		member regarding individual student screening results and accommodations, count here. Count communications to manage and follow up a concussion here.
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<b>DEFINITION of PROCEDURES</b>	Respiratory	peak flow monitoring, nebulizer, oxygen sat check, oxygen administration, suctioning, tracheostomy care, lung auscultation.
	Diabetes	blood glucose testing, insulin pump care (check function, change administration set), carbohydrate/insulin calculation, ketone check.
	Cardiovascular	blood pressure, IV infusion, central line care (site care, flushing).
	GI/GU Procedures	NG or gastrostomy feeding or tube care, ostomy care, catheterization or catheter care, bathroom assist or diapering.
	Orthopedic procedures	orthotic or prosthetic device adjustment, wheelchair assistance, crutch walking instructions, physical therapy (ROM exercises).
	Other procedures TOTAL	wound care, head check for pediculosis.

## APPENDIX C

### SHNAC committee members 2013-2014

<b>Name</b>	<b>School District/Affiliation</b>
Patricia Barker	Anchorage School District, Alaska School Nurses Association
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## References

1. National Association of School Nurses, [Case for School Nursing. A composite of research.](#) Accessed July 2014.
2. Maughan E. (2003) The Impact of School Nursing on School Performance: A Research Synthesis. *Journal of School Health*. 2003; 19: 163-171. doi: 10.1177/10598405030190030701
3. National Association of School Nurses. [Position Statement: Role of School Nurse. 2011.](#) Accessed July 2014.
4. American Academy of Pediatrics. Role of the School Nurse in Providing Health Services. Council on School Health. *Pediatrics*. 2008; 121; 1052-1057. doi: 10.152/peds.2008-0382.
5. Wyman L. Comparing the Number of Ill or Injured Students Who Are Released Early From School by School Nursing and Non-nursing Personnel. *JOSN*. 2005; 21: 350-355. doi: 10.1177/10598405050210060901.
6. Pennington N, Delaney E. The Number of Students Sent Home by School Nurses Compared to Unlicensed Personnel. *JOSN*. 2008; 24: 290-297. doi: 10.1177/1059840508322382.
7. [Massachusetts Department of Public Health, 2012 Program Update: Essential School Health Services.](#) Accessed July 2014.
8. National Association of School Nurses. [Case for School Nursing. 2012.](#) Accessed July 2014.
9. National Association of School Nurses. [Position Statement: Chronic Health Conditions Managed by School Nurses. 2012.](#) Accessed July 2014.
10. National Center for Education Statistics. (2011a). [Chapter 2: Elementary and secondary education. Digest of Education Statistics, 2010 \(NES 2011-105\),](#) Washington DC: U.S. Department of Education, nation Center for Education Statistics, Institute of Education Science. Accessed July 23, 2014.
11. May AL, Kuklina EV & Yoon PW. Prevalence of Cardiovascular Disease Risk Factors Among U.S. Adolescents, 1999-2008. *Pediatrics*. 2012; 129(6): 1035-1041. doi: 10.1542/peds.2011-1082.
12. Branum AM, Lukacs SL. [NCHS Data Brief, Food allergy among U.S. Children: Trends in prevalence and hospitalizations. 2008; 10.](#) Accessed on July 23, 2014.
13. Bloom B, Cohen RA, Freeman G. [Summary health statistics for U.S. children: National Health Interview Survey, 2010.](#) National Center for Health Statistics. Vital Health Statistics. 2011;10 (250). Accessed July 23, 2014.

14. National Association of School Nurses. [Position Statement: Individualized Healthcare Plans. 2013.](#) Accessed July 23, 2014.
15. National Association of School Nurses. [Position Statement: Medication Administration in the School Setting. 2012.](#)
16. American Academy of Pediatrics. Policy Statement – Guidance for the Administration of Medications in School. *Pediatrics*. 2009; 124; 1244-1251. doi: 10.1542/peds.2009-1953.
17. Clay D, Farris K, McCarthy AM, Kelly MW, Howard R. Family Perceptions of Medication Administration at School: Errors, Risk Factors, and Consequences. *JOSN*. 2008; 24; 95-102. doi: 10.1177/10598405080240020801.
18. Sheetz A. How May the School Nurse Use Data Effectively? *NASN School Nurse*. 2012; 27: 42-46. doi: 10.1177/1942602X11426459.
19. National Association of School Nurses. [Position Statement: Nursing Minimum Data Set. 2012.](#) Accessed July 23, 2014.
20. Johnson K, Bergren M, Westbrook LO. The Promise of Standardized Data Collection: School Health Variables Identified by States. *JOSN*. 2012; 28:95-107. doi: 10.1177/1059840511426434.
21. Alaska Department of Education and Early Development. [Alaska School Health and Safety Framework. 2011.](#) Accessed on July 23, 2014.