Use of The School Health Acuity Model

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Disclosure

We disclose the absence of personal financial relationships with commercial interests relevant to this educational activity within the past 12 months.

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Objectives

• Discuss the challenges of School Nursing Service Provision when resources are limited

• Apply the Acuity model formula components to data from schools currently served

• Identify related educational and health outcomes to track resource allocation decisions

The Problem

• Most school districts do not have enough positions to assign a nurse to every school

• Deciding how to assign allocated positions is a challenge

• Algorithms for staffing that have been developed for acute care may not apply to school nursing

• There is no specific model related to school nurse workload
School Nurse Workload: Staffing for Safe Care
NASN Position Statement, 2015

In order to achieve adequate school nurse staffing, NASN recommends:

Using a multifactorial health assessment approach that includes not only acuity and care of, but also social determinants of health to determine effective school nurse workloads for safe care of students

Factors Affecting Staffing

• Student Acuity/Conditions
  – Chronic Illnesses
  – Medications
  – Procedures

• Social Determinants
  – Poverty
  – Language Barriers
  – Access to Care
What do you include in a workload measure?

• Key Characteristics:
  – Measureable
  
  – Easily Accessible
  
  – Consistent from year to year and across schools
  
  – Has an impact on nursing care

Wake County Public School System Population Growth 2011-2015

- Student population growth show a 10% increase in the past 5 years
- Projected student population growth is 16% in the next 5 years
Wake County School Facilities
Growth 2011 to 2017

Twenty new school facilities will open from 2011 to 2017

Acuity Business Model: Key Components

- Identification of shared outcomes for students, staff, and our school environment
- Identification of School Health Service priorities
- Provision of essential nursing services
- Allocation of nursing resources for each school and each region
- Address health disparities
Wake County Human Services
Wake County Public School System
Shared Goals

1. Ensure health and safety of students in our Wake County Public Schools

2. Maximize the potential for success for all children and youth by promoting health, wellness, and educational success

Process for Using the Acuity Model

• Identify Acuity Level for each school based on the formula
• Stratify by elementary, middle, and high school
• Each school gets an Acuity Score
• Rank school by Acuity Score- High to Low or score 1 to 3 for each school

• Acuity 1: 8 hours of nursing service
• Acuity 2: 16 hours of nursing service
• Acuity 3: 24 hours of nursing service
History of the Acuity Model

• 2010-2011 Academic Year (Acuity 1)
  o Doctors orders (25%)
  o Emergency/Health Care Plans (15%)
  o Invasive Procedures (10%)
  o Attendance (25%)
  o Free/reduced lunch (25%)

Acuity Evaluation

What did we learn?
• Acuity percentages were weighted too heavily on our nursing process.
• A large percentage of students identified were connected to medical homes.
• Improvement needed in addressing health and educational disparities.

Missed Opportunities
• Identification of student’s without medical homes
• Identification of student’s with undiagnosed health conditions
Evaluation of Formula Revision

1. Continue with Acuity Service Priorities
2. Additional Goals FY-2015:
   • Increase nursing service hours to schools with student populations with limited access to health care
   • Increase nursing service hours to schools with large student populations with health, educational, and, socio-economic disparities
   • Maximize cost effectiveness to achieve health and educational outcomes for students
   • Increase Case Management Services

Acuity Formula Revision 2014 thru 2016

• 30% - Free and Reduced Lunch
• 30% - NC ABC Results Performance Composite
• 10% - Limited English Proficiency
• 10%   English as a second language (ESL)
• 10% - Identified Health Conditions
• 10% - Invasive Medical Procedures
Acuity Formula Revision 2016 thru 2017

- 30% - Free and Reduced Lunch
- 30% - NC ABC Results Performance Composite
- 10% - Limited English Proficiency
- 20% - Identified Health Conditions
- 10% - Invasive Medical Procedures

Evaluating Outcomes

- Development of the Logic Model
  - Identify key outcomes
  - Establish Priorities
    - Student safety
    - Students with chronic illness
    - Addressing social determinants
- Collaboration to evaluate outcomes
Evaluating Outcomes

• Development of the Logic Model
  – Identify key outcomes
  – Establish Priorities
    • Student safety
    • Students with chronic illnesses
    • Addressing social determinants
• Collaboration to evaluate outcomes

Acuity: The Logic Model

• Systematic and visual way to present and share the relationships among the resources, the activities you plan, and the changes or results you hope to achieve

Activities ➔ Outputs ➔ Outcomes
Goal 1: Promoted Health and Safety of Students in 2014-2015 Medication/Procedures

- 95% of students that receive medication at school will receive the correct dose at the correct time
- 95% of students requiring emergency medication at school will receive it as prescribed
- 95% of student requiring invasive procedures on a daily basis will receive procedures as prescribed on the physician order and plan of treatment

Goal 1 – Goal 2: Evaluation

- Medication Audits
- Procedure Audits
- Data Collection
- Achieve Goal
Data Collection and Tracking

- Excel School Health Workbook: 1 per school, data collected quarterly
- Excel Case Management Tracking Log: 1 per school, data collected quarterly
- Excel Medication Audit: 1 per school, data collected quarterly
Medication Audit

Evaluation of Goal 1
(based on 2014/15 academic year)

- School nurses train school personnel, provide oversight and audits

<table>
<thead>
<tr>
<th></th>
<th>24 Hour Acuity Schools (N=41)</th>
<th>16 Hour Acuity Schools (N=55)</th>
<th>8 Hour Acuity Schools (N=73)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Medications</td>
<td>2213</td>
<td>3161</td>
<td>5595</td>
</tr>
<tr>
<td>Verified within 5 days</td>
<td>2176</td>
<td>3024</td>
<td>5440</td>
</tr>
<tr>
<td>% Verified within 5 day</td>
<td>98%</td>
<td>96%</td>
<td>97%</td>
</tr>
</tbody>
</table>

- Outcome achieved. Audits are consistently above 95% for medications at all staffing levels
Evaluation of Goal 1
(based on 2014/15 academic year)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures</td>
<td>251</td>
</tr>
<tr>
<td>Observed Invasive Procedure Performed</td>
<td>1394</td>
</tr>
<tr>
<td>Invasive Procedure Done Correctly</td>
<td>1352</td>
</tr>
<tr>
<td>Percent Done Correctly</td>
<td>97%</td>
</tr>
</tbody>
</table>

Outcome achieved. Procedures are consistently performed above 95% as prescribed on the physician order and plan of treatment.

Goal 2: Students with limited or no access to health care will be linked to permanent medical homes

- 85% of targeted students, identified without insurance, will be with an insurance program
- 75% will be linked to and access health services
- 100% of students identified as having limited/no access to care and/or an undiagnosed medical condition will be referred to school health case management
Evaluation of Goal 2
(based on data from 2014-2015 academic year)
Increased nursing hours = more identification of students but securing care is challenging

<table>
<thead>
<tr>
<th></th>
<th>24 Hour Acuity Schools (N=41)</th>
<th>16 Hour Acuity Schools (N=55)</th>
<th>8 Hour Acuity Schools (N=73)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Students without a medical home</td>
<td>116</td>
<td>143</td>
<td>49</td>
</tr>
<tr>
<td># Students referred to medical home</td>
<td>105</td>
<td>145</td>
<td>46</td>
</tr>
<tr>
<td># Students with secured medical home</td>
<td>86</td>
<td>87</td>
<td>27</td>
</tr>
<tr>
<td>% of students with secured medical home</td>
<td>82%</td>
<td>60%</td>
<td>59%</td>
</tr>
<tr>
<td>Ratio secured care/school</td>
<td>2.1</td>
<td>1.6</td>
<td>.37</td>
</tr>
</tbody>
</table>

Goal 3: Students that receive Case Management Services meet or show improvement in health and/or education outcomes in 2014-2015

- 90% of students receiving CM improve in 2 or more outcomes
- 95% of students demonstrate they are more confident in managing their illness
- 95% with parent satisfaction
- 95% with teacher satisfaction
Case Management Tracking Log

Evaluation of Goal 3 in 2014-2015

• Main focus of the evaluation

Increased nurse hours = Increased case management

<table>
<thead>
<tr>
<th></th>
<th>24 hour schools</th>
<th>16 hour schools</th>
<th>8 hour schools</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Schools</td>
<td>41</td>
<td>55</td>
<td>71</td>
</tr>
<tr>
<td># Students Receiving CM</td>
<td>732</td>
<td>649</td>
<td>90</td>
</tr>
<tr>
<td>Average CM/school</td>
<td>17.9</td>
<td>11.8</td>
<td>1.3</td>
</tr>
</tbody>
</table>
### Goal Attainment for Students with Asthma in 2014-2015

<table>
<thead>
<tr>
<th></th>
<th>24 Hour Schools</th>
<th>16 Hour Schools</th>
<th>8 Hour Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># with goal</td>
<td># (%) met goal</td>
<td># with goal</td>
</tr>
<tr>
<td>Demonstrates accurate knowledge</td>
<td>354</td>
<td>320 (90%)</td>
<td>229</td>
</tr>
<tr>
<td>Demonstrates correct use of inhaler and or spacer.</td>
<td>343</td>
<td>314 (92%)</td>
<td>244</td>
</tr>
<tr>
<td>Accurately lists triggers</td>
<td>339</td>
<td>300 (88%)</td>
<td>241</td>
</tr>
<tr>
<td>Student is better able to manage their illness.</td>
<td>153</td>
<td>146 (95%)</td>
<td>90</td>
</tr>
</tbody>
</table>

### Goal Attainment for Students with Diabetes in 2014-2015

<table>
<thead>
<tr>
<th></th>
<th>24 Hour Schools</th>
<th>16 Hour Schools</th>
<th>8 Hour Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># with goal</td>
<td># (%) met goal</td>
<td># with goal</td>
</tr>
<tr>
<td>Demonstrates accurate knowledge of their condition</td>
<td>40</td>
<td>34 (85%)</td>
<td>43</td>
</tr>
<tr>
<td>Normal blood sugar on 90% checks</td>
<td>28</td>
<td>20 (71%)</td>
<td>32</td>
</tr>
<tr>
<td>Improved ability to count carbs</td>
<td>34</td>
<td>28 (82%)</td>
<td>24</td>
</tr>
<tr>
<td>Improved HgA1c (if available)</td>
<td>17</td>
<td>14 (82%)</td>
<td>16</td>
</tr>
<tr>
<td>Student is better able to manage illness.</td>
<td>17</td>
<td>11 (65%)</td>
<td>21</td>
</tr>
</tbody>
</table>
Surveys

• Student (survey by nurse)

• Parent / Guardian (survey by mail and survey monkey)

• Teacher (survey by survey monkey)

Results of Parent Survey in 2014-2015
Positive but unable to link responses to acuity level

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Disagree</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My child has learned to manage his/her illness better during this school year</td>
<td>129 (76%)</td>
<td>12 (7%)</td>
<td>29 (17%)</td>
</tr>
<tr>
<td>2. My child has missed fewer days of school this year due to illness when compared to last year</td>
<td>81 (48%)</td>
<td>48 (28%)</td>
<td>40 (24%)</td>
</tr>
<tr>
<td>3. The school nurse has been very helpful to my child this year</td>
<td>147 (86%)</td>
<td>8 (5%)</td>
<td>15 (9%)</td>
</tr>
<tr>
<td>4. The school nurse has been very helpful to me and other family members this year</td>
<td>138 (81%)</td>
<td>8 (5%)</td>
<td>24 (14%)</td>
</tr>
<tr>
<td>5. I would recommend the school nurse program to other parents who have children with a chronic illness.</td>
<td>152 (89%)</td>
<td>2 (1%)</td>
<td>15 (9%)</td>
</tr>
</tbody>
</table>
Results of Teacher Survey in 2014-2016
Unable to link survey to acuity but comments suggest better satisfaction with more hours

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Disagree</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have noticed an improvement in how this student manages their illness at school</td>
<td>243(55%)</td>
<td>43(10%)</td>
<td>152(33%)</td>
</tr>
<tr>
<td>This student has improved their academic performance over the school year</td>
<td>282(65%)</td>
<td>103(23%)</td>
<td>52(12%)</td>
</tr>
<tr>
<td>The school nurse has helped me to understand this student's illness</td>
<td>291(66%)</td>
<td>94(22%)</td>
<td>53(12%)</td>
</tr>
<tr>
<td>The school nurse has helped me to be confident in managing this student in my classroom</td>
<td>277(63%)</td>
<td>95(22%)</td>
<td>66(15%)</td>
</tr>
<tr>
<td>I feel that the case management program provides a valuable service to our students and staff</td>
<td>307(77%)</td>
<td>27(7%)</td>
<td>103(23%)</td>
</tr>
</tbody>
</table>

Future Plans

Revision of the Formula
- ESL (10%) and low literacy (10%) are highly correlated
- Need to consider diabetes when the student is dependent as a specific indicator

Examine Cost Effectiveness
- Collaboration with ??

Continue Partnership (Academic/Service)
Allocation of Services

<table>
<thead>
<tr>
<th>School Year</th>
<th>13-14</th>
<th>14-15</th>
<th>15-16</th>
<th>16-17</th>
<th>17 thru 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses:</td>
<td>64</td>
<td>73</td>
<td>82</td>
<td>93</td>
<td>103</td>
</tr>
<tr>
<td>Schools:</td>
<td>166</td>
<td>167</td>
<td>171</td>
<td>176</td>
<td>183</td>
</tr>
</tbody>
</table>

- 24 Hour High Need Schools
- 16 Hour Med Need Schools
- 8 Hour Low Need Schools
For more information please contact:

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