COST-BENEFIT STUDY OF
SCHOOL NURSING SERVICES OVERVIEW

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Development of a Spreadsheet-Based Model for Use by States and Districts to Assess the Cost-Benefit of School Nursing Services

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None of the authors have any financial interest in the subject matter or materials discussed in this study.
“Many school districts have cut or reduced the hours of school nurses in recent years, and nationwide less than half of public schools have a full-time nurse, the authors of the report note.” ~ Reuters, 2014

“The new study, he added, “may change these conversations. It may put getting a full-time school nurse back on the priority list.” ~ Reuters, 2014

**BACKGROUND AND PURPOSE**

- The cost-benefit study of the Massachusetts Essential School Health Services program was published in 2014 (JAMA Pediatrics 2014;168(7): 642-8)
- The publication drew strong interest from the media and legislators
- Other states and districts want to replicate this study, including Iowa school nurses
- A spreadsheet-based model and data collection instruments were developed so that other states or districts can replicate the study
MODEL DESCRIPTION OVERVIEW

A spreadsheet-based model typically includes a set of **inputs** and a set of **outputs**.

- For example, let's look at the equation: $2 + 5 = 7$
- Numbers **2** and **5** are the **inputs**
- And number **7** is the **output**

Step 1. **Inputs**

Step 2. **Formula**

Step 3. **Outputs**
Major model inputs:

- Number of Schools (Business Office)
- Number of Students (Business Office)
- Number of Nurses (Business Office)
- Number of Teachers (Business Office)

Major model inputs:

- Average Teacher Salary With Fringe Benefits (Business Office)
- Average School Nurse Salary With Fringe Benefits (Business Office)
- Percentage of Students in the district on Medicaid (State or District Information)
- Average Medical Equipment and Supply Costs Per Student (Business Office)
### Major model inputs:

- Number of early dismissals (school calendar)
- Number of medical procedures performed (school nurse collects the numbers)
- Number of medications administered (Scheduled Medications)
- Number of 911 calls (Step Up, Be Counted Data)

### Teacher Survey Information Returned To You

1. DOES YOUR SCHOOL HAVE A FULL-TIME NURSE?
   - YES
   - NO

   If "YES", please answer Question 2. If "NO", please answer Question 3 and 4.

2. HOW MANY MINUTES DO YOU SPEND EACH DAY ADDRESSING STUDENT HEALTH CONCERNS?
   ___________ MINUTES

3. HOW MANY MINUTES DO YOU SPEND EACH DAY ADDRESSING STUDENT HEALTH CONCERNS ON THE DAYS WHEN THERE IS NO NURSE PRESENT IN YOUR SCHOOL?
   ___________ MINUTES

4. HOW MANY MINUTES DO YOU SPEND EACH DAY ADDRESSING STUDENT HEALTH CONCERNS ON THE DAYS WHEN THERE IS A NURSE PRESENT IN YOUR SCHOOL?
   ___________ MINUTES

**Teacher Survey Questions**
SCHOOL NURSE DATA COLLECTION
(22 DATA POINTS FOR STAFF OR STUDENT CARE)

- Administer Immunizations
- Auscultate Lungs
- Blood Glucose Testing
- Blood Pressure Monitoring
- Carbohydrate/Insulin Calculation
- Catheter Care
- Central Line Care
- Check Ketones
- Device Adjustment
- Insulin Pump Care
- IV Infusion Care
- Nebulizer Treatment
- Dantum Care
- Oxygen Administration
- Oxygen Saturation Check
- Peak Flow Monitoring
- Physical Therapy
- Suctioning
- Tracheostomy Care
- Tube Care or Usage
- Weight measurement
- Wound Care

STEP 1: COLLECT DATA FROM ALL OF THE INPUTS

“You’ve Done The Work... Let’s Start To Show The Results.”

Top of Sheet One

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Method used with a detailed explanation of the source</th>
</tr>
</thead>
<tbody>
<tr>
<td># of students</td>
<td>300 State or district information system</td>
</tr>
<tr>
<td># of teachers</td>
<td>200 State or district information system</td>
</tr>
<tr>
<td>Teacher salary and fringe benefits ($)</td>
<td>5,000 State or district payroll system</td>
</tr>
<tr>
<td>Average teacher salary ($)</td>
<td>50,000 State or district payroll system</td>
</tr>
<tr>
<td>% of students enrolled in Medicaid program</td>
<td>31.2 State or district information system</td>
</tr>
<tr>
<td>% of students eligible for free / reduced lunch</td>
<td>42.5 State or district information system</td>
</tr>
<tr>
<td>% of students with special education needs</td>
<td>42.5 State or district information system</td>
</tr>
<tr>
<td>% of students with 504 plan</td>
<td>30.0 State or district information system</td>
</tr>
<tr>
<td>% of students with IEP</td>
<td>30.0 State or district information system</td>
</tr>
<tr>
<td># of free and reduced lunch students</td>
<td>4,200 State or district information system</td>
</tr>
<tr>
<td># of students with IEP</td>
<td>4,200 State or district information system</td>
</tr>
<tr>
<td># of students with 504 plan</td>
<td>4,200 State or district information system</td>
</tr>
<tr>
<td># of students with special education needs</td>
<td>4,200 State or district information system</td>
</tr>
</tbody>
</table>
Once Your Data is Entered, Go to Page 3 to See the Results....
Page 2 includes annual medical procedures costs if performed by physicians or nurses in a medical setting (DO NOT MAKE CHANGES TO PAGE 2)

Major model outputs:

- Costs of school nursing services
- Medical procedure costs
- Teachers' and parents' productivity loss costs
- Net benefit and benefit cost ratio
### Top of Sheet 3: Productivity loss costs and costs of school nursing services

#### Sheet 3. Productivity loss costs and costs of school nursing services

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Number of schools</td>
<td>904</td>
</tr>
<tr>
<td>Number of students</td>
<td>87387</td>
</tr>
<tr>
<td>Number of nurses</td>
<td>3307</td>
</tr>
<tr>
<td>Number of teachers</td>
<td>3490</td>
</tr>
<tr>
<td>Nurse salary and fringe benefits ($)</td>
<td>82569</td>
</tr>
<tr>
<td>Teacher salary and fringe benefits ($)</td>
<td>5146</td>
</tr>
<tr>
<td>Productivity loss costs and costs of school nursing services</td>
<td></td>
</tr>
<tr>
<td>Number of student health interventions due to illness/injury</td>
<td>4262800</td>
</tr>
<tr>
<td>% of students absent due to illness/injury when nurse is present</td>
<td>9.2</td>
</tr>
<tr>
<td>Minutes teachers spent per day on dealing with illness/injury when nurse is present</td>
<td>6.34</td>
</tr>
<tr>
<td>Minutes teachers spent per day on dealing with illness/injury when nurse is not present</td>
<td>35.26</td>
</tr>
<tr>
<td>Number of medication doses administered</td>
<td>119880</td>
</tr>
<tr>
<td>Medical equipment and supply costs per student ($)</td>
<td>9.53</td>
</tr>
<tr>
<td>% of students absent due to illness/injury</td>
<td>16.7</td>
</tr>
</tbody>
</table>

#### Costs of school nursing services

| School nurse salary and fringe benefits ($)               | 75,962,289 |
| Medical equipment and supply costs ($)                   | 2,145,785  |
| Subtotal                                                | 78,108,074 |

#### Parent productivity loss costs

| With nurse                      | 78,108,074 |
| Without nurse                   | 17,017,846  |
| Difference                      | 61,090,228  |

#### Teacher productivity loss costs

| With nurse                      | 45,676,245 |
| Without nurse                   | 121,384,639 |
| Difference                      | -75,708,394 |

| Total Benefits ($)              | 176,492,889 |
| Net Benefits ($)                | 135,794,585 |
| Benefit cost ratio              | 2.37      |
Massachusetts Results From 2009-2010

Let's look at Massachusetts 2009-2010 Study

Student Population: 477,163 Students
Districts: 78
Schools: 933
School Nurses Who Provided Interventions: All Full Time Employees (1,157)
Costs and Benefits: All were in US dollars
Student Health Encounters: 4,946,757
Staff Health Encounters: 99,903
Medical Procedures: 1,016,140
Medication Administered: 1,191,060

What Did The Massachusetts Survey Show?

- Provided $79.0 million in Essential School Health Services
- Prevented $20.0 million in medical care costs
- Prevented $28.1 million in parents' productivity loss
- Net Benefit to Society was $98.2 million
- For every $1.00 invested in the program, society would gain $2.20

89% of simulation trials resulted in a net benefit
Massachusetts Results From 2009-2010

The results of this study demonstrated that school nursing services provided were a cost-beneficial investment of public money, warranting careful consideration by policy makers and decision makers when resource allocation decisions are made about school nursing positions.

School Nurse Consideration:

“How can I tell the school district that what I do makes a difference?”

“How do I show the community the impact on having a school nurse would be on healthcare costs?”

KEEP CALM AND SHOW US YOUR DATA
RESOURCES

 Reuters Article:
 http://www.reuters.com/article/us-school-nurses-cost-idUSKBN0DZ1TW20140519

 Pediatric (JAMA) Article:

 Cost Benefit Analysis:
 http://www.nasn.org/Research/CostBenefitAnalysis

 Thank you!!!

 Further Questions or Assistance, please contact:

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 Thank you!!