

FACT SHEET ON THE COSTS AND BENEFITS OF SCHOOL HEALTH CENTERS

ILLINOIS COALITION FOR SCHOOL HEALTH CENTERS

PREPARED BY THE CENTER FOR IMPACT RESEARCH¹

FEBRUARY 2006

SCHOOL HEALTH CENTER SERVICES IN ILLINOIS

- Illinois currently has 49 operating School Health Centers (SHCs), plus three centers in the planning phase and two satellite centers.
- In Fiscal Year 2005, i.e., the 2004-2005 school year, the Illinois Department of Human Services (DHS) provided grants to 38 SHCs and an additional three planning grants. In that year, these 38 SHCs reported enrolling 81,897 students and providing over 102,600 physical, mental, dental, and health education visits.² These visit numbers are under-reported; for example, only 24 of 38 SHCs reported their mental health visits to the state.

STATE EXPENDITURES ON SCHOOL HEALTH CENTERS ³

- DHS spent \$3.987 million on SHCs in FY 2005.
- Thirty-eight operational SHCs received a state grant ranging from \$49,860 to \$178,000 each. In addition, three planning grants were awarded for \$30,000 each.
- The average state subsidy per visit across the 38 SHCs was \$38.84, for all clinical visits and health education visits combined.

THE SHORTFALL OF STATE FUNDING

- SHC staffs report that their operating budgets range from \$170,000 to \$460,000.⁴ The state subsidy currently accounts for 26% to 44% of an SHC's operating budget.⁵
- Each SHC must raise from 56% to 74% of its operating budget in the form of additional revenue from federal grants, local grants, billing, foundations, hospitals or other health providers, and donations. SHC staffs vary in their knowledge and ability to secure funding.

- Some SHCs have received the same amount of sustained funding for the last five to eight years, even as the number of students they serve and the costs of providing services have increased substantially. For example, one SHC served 350 students during its first year in 1996. In 2005, this clinic had 5,400 student visits, but received a state grant for \$62,000 less than in 1996.
- After SHCs expend their state startup grants to create new sites of service delivery, SHCs leverage state grants to obtain additional resources and services for their students. Examples include rent-free clinic space, donations of medical supplies, free testing, and pro bono services for dental, specialist, optometry, and mental health care.⁶
- Non-cash resources are not uniformly reported in SHC operating budgets. Accordingly, data for cost per visit pertain to the amount SHCs pay in operating costs. This amount is less than the full cost of delivering SHC services, which would include the value of pro bono resources and services.

SAVINGS AND BENEFITS TO ILLINOIS FROM SCHOOL HEALTH CENTERS

- A study conducted in the Bronx, New York showed that asthmatic students attending a school with a school health center are 33% less likely to be hospitalized for asthma compared to students without this access.⁷ Based on asthma hospitalization rates for children ages 5-19⁸ and hospitalization costs in Illinois in 2004,⁹ SHCs save an estimated \$233,000 to \$342,000 per year by reducing asthma hospitalizations.
- A study of school health centers in Denver, Colorado showed that students attending a school with an SHC are 37% less likely to visit the emergency room in a 12-month period compared to other students, after taking into account factors like insurance status and demographic indicators.¹⁰ Based on the most recent emergency room prevalence¹¹ and cost data,¹² SHCs save an estimated \$2.5 million per year by reducing emergency room visits.
- One recent nationwide study showed that for every one dollar spent on immunizations, society gained \$16.50 in benefits from avoided disease and death.¹³ Based on extrapolations from the number of immunizations provided at SHCs¹⁴ and the costs of providing immunizations,¹⁵ SHCs in Illinois save an estimated \$1.77 million per year by providing immunizations.
- Other benefits to Illinois of SHCs include: fewer hospitalizations for all conditions (not just asthma), decreased risky behaviors, lower drop-out rates, increased access to preventive health care, decreased student time lost from school, and decreased instances of parents losing wages from missing work to stay home with a sick child or take a sick child to the doctor.¹⁶ These benefits also provide cost savings to the state.

- In FY 2005, SHCs provided over 6,200 school physicals, helping to decrease the number of Illinois children excluded from school. Mandatory school physicals often serve as a gateway for students to begin a relationship with a health care provider. SHCs regularly conduct risk assessments and provide health education during physicals.
- In addition, SHCs also provided over 4,100 sports physicals, helping students become physically active and learn social skills through participating in school athletics.

¹ Elizabeth Bax, Lise McKean, Ph. D, Sarah Lessem.

² Visit data provided by the Illinois Department of Human Services, November 2005.

³ Cost data provided by the Illinois Department of Human Services, November 2005.

⁴ Interviews with SHC staff.

⁵ Based on case studies of the operating budgets of four school health centers.

⁶ Interviews with SHC staff.

⁷ Mayris Webber, Kelly Carpinello, Tosan Oruqariye, Yungtai Lo, William Burton, and David Appel. "Burden of Asthma in Inner-city Elementary Schoolchildren." *Archives of Pediatric and Adolescent Medicine*. 2003, Volume 157, pp. 125-129.

⁸ Asthma hospitalization rates calculated based on data from the Illinois Department of Public Health's EMS Data Reporting System Hospital Discharge Database (data from 2004), Voices for Children Kids Count Database (data from 2004), and the United States Census Bureau (data from 2004), accessed online March, 2005.

⁹ Illinois Department of Public Health's Health Statistics Hospital Discharge Database Inpatient Interactive Query (data from 2004), accessed online March, 2005.

¹⁰ David Kaplan, Claire Brindis, Stephanie Phibbs, Paul Melinkovich, Kelly Naylor, and Karin Ahlstrand. "A Comparison Study of an Elementary School-Based Health Center." *Archives of Pediatric and Adolescent Medicine*. 1999, Volume 153, pp. 235-243.

¹¹ National Center for Health Statistics. "Health, United States 2005, with Chartbook on Trends in the Health of Americans." Hyattsville, Maryland, 2005. Table 81, page 294. Available online at <http://www.cdc.gov/nchs/data/hs/hs05.pdf>.

¹² S. R. Machlin, "Expenses for a Hospital Emergency Room Visit, 2003." Statistical Brief #111. January 2006. Agency for Healthcare Research and Quality, Rockville, Maryland. Available online at <http://www.meps.ahrq.gov/papers/st111/stat111.pdf>.

¹³ Fangjun Zhou, Jeanne Santoli, Mark L. Messonnier, Hussain R. Yusuf, Abigail Shefer, Susan Chu, Lance Rodewald, and Rafael Harpaz. "Economic Evaluation of the 7-Vaccine Routine Childhood Immunization Schedule in the United States, 2001," *Archives of Pediatric and Adolescent Medicine*, Volume 159, pp. 1136-1144, December 2005.

¹⁴ Visit data, Illinois DHS.

¹⁵ Centers for Disease Control and Prevention. "CDC Vaccine Price List." December 22, 2005. Accessed online at http://www.cdc.gov/nip/vfc/cdc_vac_price_list.htm on February 1, 2006.

¹⁶ Illinois Department of Human Services, Division of Community Health and Prevention, Office of Family Health. "The Health Status of School Age Children and Adolescents in Illinois." May 2002.

WORKSHEETS ON THE COSTS AND BENEFITS OF SCHOOL HEALTH CENTERS

ILLINOIS COALITION FOR SCHOOL HEALTH CENTERS

PREPARED BY THE CENTER FOR IMPACT RESEARCH¹⁷

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BENEFIT 1: REDUCED ASTHMA HOSPITALIZATION

The purpose of this worksheet is to calculate the savings that school health centers (SHCs) provide to Illinois from reducing asthma hospitalizations, based on prevalence and cost data. To calculate the potential benefits of asthma reduction in Illinois, a study that had calculated the effect of SHCs on asthma hospitalizations was extrapolated to Illinois using data from the Illinois Department of Public Health.

This research study compared students attending a school with a SHC to students without this access in the Bronx, New York City.¹⁸ The study found that students attending schools without access to SHCs were 1.5 times more likely to be hospitalized for asthma than students attending schools with a SHC, a “statistically significant” result. Equivalently, students attending schools with a SHC are 33% less likely to be hospitalized for asthma. “Statistically significant” means that researchers have applied tests to the data to determine that a difference between two populations is not just something that could have arisen by chance due to random sampling fluctuations, but in fact shows a likely underlying difference between two populations (in this case, students with access to an SHC compared to those without access).

The Illinois Department of Public Health maintains several online databases, including the EMS Data Reporting Systems’ Hospital Discharge Database¹⁹ and the Health Statistics’ Hospital Discharge Interactive Data.²⁰ We examined this data from 1999 to 2004 for children ages 0-19. In Illinois: asthma hospitalization rates were higher for younger children; rates for all children have decreased since 1999 (with the exception of a brief spike in 2000); and asthma hospitalization costs for all children have increased since 1999. Asthma hospitalizations were also broken down by whether the child was a Medicaid/KidCare recipient or not. Hospitalizations for asthma vary in prevalence and cost based on age, county of residence, and insurance status.

From the IL Department of Public Health databases, we computed the number of asthma hospitalizations for:

- Children aged 5-19 (as the most likely age groups to attend SHCs);
- During the year 2004 (the most recent complete year of data available);
- Based on insurance status (Medicaid/KidCare recipient or not); and
- Based on geography (for Illinois statewide and for Cook County alone).

Using the total number of children in Cook County and in Illinois,²¹ and the number of children in these locales receiving Medicaid/KidCare,²² we were able to construct asthma hospitalization rates (X per 10,000 children) for four subpopulations likely to attend SHCs (see Table 1-1).

Table 1-1			
Calculation of Asthma Hospitalization Rates, 2004			
	[A]	[B]	[A]/[B]*10000
	<i>(1) Hospitalizations for asthma, children aged 5-19, in 2004</i>	<i>(2) Kids in age and insurance group, 2004</i>	<i>Asthma Hospitalization Rate, 2004</i>
IL Medicaid enrolled children	1,178	1,109,254	10.62
IL non-Medicaid children (3)	1,499	1,593,198	9.41
Cook Cty Medicaid children	755	612,696	12.32
Cook non-Medicaid children (3)	668	501,948	13.31

Notes:

(1) Illinois Department of Public Health, EMS Data Reporting System, Hospital Discharge Database, <http://app.idph.state.il.us/emsrpt/form-hospitalization.asp>

(2) Voices for Children, Kids Count Searchable Database, <http://www.voices4kids.org/kidscountdata.htm>. These figures are the number of children enrolled in Medicaid and KidCare combined.

(3) Column B for children in non-Medicaid insurance group calculated by taking the population estimates of 5-19 year olds in 2004 from www.census.gov, and subtracting the number of children receiving Medicaid or KidCare.

When estimating uncertain benefits (in this case, cost savings), it is best to consider a range of cost savings based on the upper bound and the lower bound of projected savings. Therefore we will calculate a range of savings based on varying geographic locations (see Table 1-2). The upper bound will represent the cost savings from reduced asthma hospitalizations that Illinois could expect if its statewide SHC population looked like Cook County. SHC students have a greater percentage of low income and minority children than the statewide average for Medicaid recipients. Income level and minority status may be associated with lower levels of preventive care and higher levels of emergency room use and hospitalization. Cook County has a higher proportion of low income and minority children than the state average, and the majority of SHCs are located in an urban location in Illinois. Thus, calculating cost savings as if Cook County were representative of all SHC children is a valid means of calculating an upper bound for cost savings, with the statewide averages forming the lower bound.

Table 1-2

**Calculations of Cost Savings from Avoided Asthma Hospitalizations, based on Insurance Status
Using Illinois Averages as a Proxy for the SHC Population, 2004**

	<i>Medicaid recipients</i>	<i>Non-Medicaid recipients</i>	<i>Row</i>	<i>Formula for row</i>
Asthma Hospitalizations per 10,000 children ages 5-19 (1)	10.6	9.4	[A]	
Number of Enrolled SHC Children in Illinois (2)	31,874	49,574	[B]	
Expected Asthma Hospitalizations	34	47	[C]	[A]x[B] /10,000
Asthma Hospitalizations Avoided From SHC Access	11	16	[D]	[C] * 33%
Cost per Hospitalization(3)	\$9,123	\$8,389	[E]	
Cost Savings from Avoided Asthma Hospitalizations	\$102,940	\$130,436	[F]	[D] * [E]
TOTAL	\$233,376			

**Calculations of Cost Savings from Avoided Asthma Hospitalizations, based on Insurance Status
Using Cook County Figures as a Proxy for the SHC Population, 2004**

	<i>Medicaid recipients</i>	<i>Non-Medicaid recipients</i>	<i>Row</i>	<i>Formula for row</i>
Asthma Hospitalizations per 10,000 children ages 5-19 (1)	12.3	13.3	[A]	
Number of Enrolled SHC Children in Illinois (4)	31,874	49,574	[B]	
Expected Asthma Hospitalizations	39	66	[C]	[A]x[B] /10,000
Asthma Hospitalizations Avoided From SHC Access	13	22	[D]	[C] * 33%
Cost per Hospitalization(3)	\$10,164	\$9,502	[E]	
Cost Savings from Avoided Asthma Hospitalizations	\$133,066	\$208,964	[F]	[D] * [E]
TOTAL	\$342,030			

Notes:

(1) See Table 1-1

(2) Insurance status of 81,897 SHC students extrapolated from Visit Data provided by Illinois Department of Human Services, Nov 2005.

(3) Illinois Department of Public Health. Health statistics, Hospital Discharge Database, Inpatient Interactive Query.

<http://app.idph.state.il.us/hospitaldischarge/> Cost based on discharge for children ages 5-14 only. The next available age group, 15-24, was not included because of the representation of young adults unlikely to use SHCs. The average cost of an asthma hospitalization for the 15-24 year olds was higher than for the 5-14 year olds, so by using the number for 5-14 year olds only, our savings estimate is likely lower than if we were able to use a cost figure for 5-19 year olds.

(4) This table represents the cost savings from reduced asthma hospitalizations that Illinois could expect if its statewide SHC population looked like Cook County. SHC students have a greater percentage of low income and minority children than the statewide average for Medicaid recipients. Income level and minority status may be associated with lower levels of preventive care and higher levels of emergency room use and hospitalization. Cook County has a higher proportion of low income and minority children than the state average, and the majority of SHCs are located in an urban location in Illinois. Thus, calculating cost savings as if Cook County were representative of all SHC children is a valid means of calculating an upper bound for cost savings, with the statewide averages forming the lower bound.

A study conducted in the Bronx, New York showed that asthmatic students attending a school with a school health center are 33% less likely to be hospitalized for asthma compared to students without this access.²³ Based on asthma hospitalization rates for Illinois children ages 5-19²⁴ and hospitalization costs in Illinois in 2004,²⁵ SHCs save an estimated \$233,000 to \$342,000 per year by reducing asthma hospitalizations.

BENEFIT 2: REDUCED ER VISITS

The purpose of this worksheet is to calculate the savings that school health centers (SHCs) provide to Illinois from reducing emergency room (ER) visits, based on prevalence and cost data. According to the National Center for Health Statistics' publication *Health, United States 2005, with Chartbook on Trends in the Health of Americans*, pediatric emergency room visit rates vary by insurance status.²⁶ In the following table, percentages are presented among children ages 6-17 years old, as the most likely ages attending a school-based health center.

<i>Population Group</i>	<i>Percent of Children Ages 6-17 with 1 or more Emergency Room Visit(s) in last 12 months</i>
All children ages 6-17	18.2%
Private Insurance	16.6%
Medicaid	24.5%
Uninsured	14.7%

Source: National Center for Health Statistics, "Health, United States 2005, with Chartbook on Trends in the Health of Americans."

In Illinois, insurance status was recorded for over 62% of students attending SHCs (the possible categories were Medicaid, Private Insurance, Uninsured, or Unknown).²⁷ We used the rates among children with recorded insurance status to extrapolate the insurance status of all SHC students. We then calculated the estimated number of ER visits for the 81,897 SHC students based on insurance status in Table 2-2.

<i>Insurance Status</i>	<i>[A] ER Visit rate for children ages 6-17 (1)</i>	<i>[B] Estimated number of SHC students (2)</i>	<i>{A x B} Estimated ER visits</i>
Medicaid	24.5%	34,179	8,374
Private Insurance	16.6%	14,448	2,398
Uninsured	14.7%	24,350	3,579
Unknown insurance status (3)	18.2%	8,920	1,623
Total		81,897	15,975

Notes:

(1) National Center for Health Statistics, "Health, United States 2005, with Chartbook on Trends in the Health of Americans."
 (2) Extrapolated from Visit data, Illinois DHS.
 (3) For students of unknown insurance status, the average ER visit rate for all children ages 6-17 was used.

A research study compared students attending a school with a SHC to students without this access in Denver.²⁸ This study found that students attending schools with access to SHCs were 37% less likely to have had an emergency room visit in the last year. This result was “statistically significant” at the 5% level, meaning that there is only a 5% chance of observing this lower rate for SHC students randomly. Researchers generally accept that results which are significant at the 5% level are, in fact, not random, but prove a significant difference between two populations (in this case, students with access to an SHC compared to those without). Further, this reduced likelihood of ER visits for SHC students is independent of other factors, including the student’s insurance status, whether the father lived at home, the student’s acculturation level, and whether the mother graduated high school. These factors can also influence a student’s ER use. This research study in Denver shows that for two students who have all the same background factors, but one student has access to an SHC and the other does not, the SHC student will be 37% less likely to visit the ER compared to the other student. This figure of 37% can be thought of as the contribution of SHCs after taking into account other factors.

Finally, the most recent cost estimates of an emergency room data have just been released for the year 2003 from the Medical Expenditure Panel Survey (MEPS) data.²⁹ According to this MEPS statistical brief, the following are the average costs of an emergency room visit for different population groups in the United States.

<i>Population cost category</i>	<i>Cost per ER Visit</i>
Under 18	\$423
Ages 18-44	\$500
Ages 45-64	\$823
65 and Over	\$561

Source: S. R. Machlin, "Expenses for a Hospital Emergency Room Visit, 2003."

Current Illinois data for ER prevalence and cost is not available. Given the rising cost of health care, we felt it was important to use the most recent figures for cost, which are the nationwide 2003 numbers from MEPS. The cost of a visit for persons Under 18 is the closest to the school-age population attending SHCs. The recent MEPS brief also found that ER costs did not vary significantly across regions of the country, which adds greater confidence to using the nationwide cost figures to estimate costs in Illinois.

We performed the following calculations to estimate SHCs savings from emergency room visits.

Table 2-4		
Calculation of Annual Savings due to ER Visits Avoided from SHC Access		
<i>Category</i>	<i>Number</i>	<i>Calculation</i>
Number of Children Enrolled in SHCs (1)	81,897	[A]
Expected Annual ER Visits (2)	15,974	[B]
Reduction in Likelihood of ER Visit if Attending SHC (3)	37%	[C]
Expected Annual ER Visits Avoided from SHC Access	5910	[B x C] = [D]
Average Cost per ER Visit (4)	\$423	[E]
Annual Estimated SHC Savings from ER Visits Avoided	\$2,499,930	[D x E]
Notes:		
(1) Visit data, Illinois DHS.		
(2) See Table 2-2.		
(2) David Kaplan et al, "A Comparison Study of an Elementary School-Based Health Center."		
(3) S. R. Machlin, "Expenses for a Hospital Emergency Room Visit, 2003."		

One study of school health centers in Denver, Colorado showed that students attending a school with an SHC are 37% less likely to visit the emergency room in a year-long period compared to other students, after taking into account factors like insurance status and demographic indicators.³⁰ Based on the most recent emergency room prevalence³¹ and cost data,³² SHCs save the state an estimated \$2.5 million per year from reducing emergency room visits.

BENEFIT 3: SAVINGS FROM IMMUNIZATIONS

The purpose of this worksheet is to calculate the savings that school health centers (SHCs) generate in Illinois by providing immunizations, based on reduced illness and death from preventable diseases. We calculate these savings as follows:

$$\begin{aligned} & \text{Cost per Vaccination (Part 1)} \\ & \times \text{the Number of Vaccinations Provided at SHCs (Part 2)} \\ & = \text{Cost of Vaccinations at SHCs in Illinois} \end{aligned}$$

$$\begin{aligned} & \text{Cost of Vaccinations at SHCs in Illinois} \\ & \times \text{Benefit/Cost Ratio (Part 3)} \\ & = \text{Benefits of Vaccinations at SHCs} \end{aligned}$$

Part 1: Cost per Vaccination

The United States Centers for Disease Control and Prevention (CDC) publishes the cost of vaccines purchased privately from companies and the cost of vaccines purchased through the CDC's subsidized "Vaccination for Children" (VFC) program.³³ Most Illinois SHCs participate in the VFC program or obtain vaccines from health providers who participate in VFC. However, some SHCs do purchase supplemental vaccines from private providers, which cost more. In our estimates, we have used the costs of vaccines obtained in the VFC program, which may somewhat underestimate the true cost to SHCs of obtaining their vaccines. Table 1 shows the difference between the VFC and private costs of seven vaccines that are examined in the research study cited in Part 3 of this worksheet.³⁴

<i>Vaccine (disease)</i>	<i>Cost per vaccine: VFC program</i>	<i>Cost per vaccine: Private</i>
Hepatitis B	\$9.00	\$59.09
MMR (measles, mumps, rubella)	\$16.67	\$40.37
IPV (polio)	\$10.42	\$21.80
Varicella (chicken pox)	\$52.25	\$66.81
DTaP (diphtheria, tetanus, acellular pertussis)	\$12.25	\$21.44
Td (tetanus boosters)	\$15.90	\$17.50
Hib (haemophilus influenzae type B)	\$7.64	\$22.77
Average	\$17.73	\$35.68

Source: Centers for Disease Control and Prevention, "CDC Vaccine Price List."

Part 2: Number of Vaccinations provided at SHCs

According to DHS, SHCs provided 3,832 vaccinations in FY 2005.³⁵ However, this figure is lower than the true number of vaccinations, as some SHCs reported the number of vaccinations administered, and other SHCs reported the number of children vaccinated, regardless of how many vaccines were given to each child. Six SHCs provided independent information about the specific number and type of vaccinations. When the information from these six SHCs is incorporated, the number of known vaccinations in FY 2005 increases to 6,375. However, this number still likely underestimates the true number of vaccinations administered in SHCs, given that no information about the actual number of vaccinations was provided by the other SHCs. Thus, at these other SHCs, it is unclear whether they reported total vaccines or the total number of vaccinated children as an indicator.

Part 3: Benefit/Cost Ratio

Researchers calculate benefit/cost ratios to determine the dollar amount of benefits from a program (like immunizations) that can be expected for every dollar spent on the program. Several studies have calculated benefit/cost ratios for individual immunizations, but these studies vary in method and timeframe.

One study published in December 2005 evaluated the economic impact of seven recommended immunizations in the United States, to update previous studies for single vaccinations using a consistent method.³⁶ (The seven vaccinations were Hep-B, MMR, IPV, Varicella, DTaP, Td, and Hib.) This study found a benefit/cost ratio of 16.5 to 1, i.e., for every \$1 spent on immunizations, society gains \$16.50 in direct and indirect benefits by reducing illness and death.

We performed the following calculations to estimate the savings from immunizations provided by SHCs.

Calculation of Benefits from Vaccinations in School Health Centers

First, we need to calculate the cost of vaccines in Illinois SHCs. Table 3-2 below uses the cost of vaccinations from the VFC program. The number of each vaccine administered was determined by taking the ratio of each vaccine to the total number of vaccines administered, and multiplying it by 6,375 – the total number of known vaccinations. These numbers are likely underestimated as the total number of vaccines (6,375) is likely low, due to some SHCs reporting the number of vaccinations and some reporting the number of children vaccinated.

Table 3-2			
Cost of Vaccinations in Illinois School-Health Centers, FY 2005			
<i>Vaccine (disease or brand)</i>	<i>Vaccines Administered,</i>		<i>Cost</i>
	<i>Cost per vaccine:</i>	<i>Extrapolated</i>	
	<i>VFC program (1)</i>	<i>by ratio (2)</i>	
Td (tetanus boosters)	\$15.90	1,533	\$24,375
Hepatitis B	\$9.00	1,060	\$9,540
MMR (measles, mumps, rubella)	\$16.67	1,016	\$16,937
IPV (polio)	\$10.42	981	\$10,222
DTaP (diphtheria, tetanus, acellular pertussis)	\$12.25	665	\$8,146
Varicella (chicken pox)	\$52.25	333	\$17,399
Hib (haemophilus influenzae type B)	\$7.64	194	\$1,482
Influenza	\$9.71	190	\$1,845
Meningitis (Prevnar)	\$54.12	175	\$9,471
Dtap-HepB-IPV combination (Pediarix)	\$38.34	157	\$6,019
HepB-Hib combination (Comvax)	\$24.50	25	\$613
Hepatitis A	\$12.10	19	\$230
Unspecified (price = average)	\$25.45	17	\$433
Meningitis (Menactra)	\$68.00	10	\$680
Total		6,375	\$107,391
Costs of vaccinations provided at SHCs per year		\$107,391	
Multiplied by the Benefit/Cost ratio (3)		16.5	
Equals Annual Benefits of Vaccines at SHCs		\$1,771,959	
Notes:			
(1) Centers for Disease Control and Prevention, "CDC Vaccine Price List."			
(2) Extrapolated from vaccines administered at 6 SHCs and total known vaccines from Visit Data, Illinois DHS. This column is likely less than actual vaccines administered.			
(3) Fangjun Zhou et al, "Economic Evaluation of the 7-Vaccine Routine Childhood Immunization Schedule in the United States, 2001."			

One recent nationwide study showed that for every one dollar spent on immunizations, society gained \$16.50 in benefits from avoided disease and death.³⁷ Based on extrapolations from the number of immunizations provided at SHCs³⁸ and the costs of providing immunizations,³⁹ SHCs in Illinois save an estimated \$1.77 million per year by providing immunizations.

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¹⁹ Illinois Department of Public Health. EMS Data Reporting System, Hospital Discharge Database. Accessed at <http://app.idph.state.il.us/emsrpt/form-hospitalization.asp>

²⁰ Illinois Department of Public Health. Health statistics, Hospital Discharge Database, Inpatient Interactive Query. Accessed at <http://app.idph.state.il.us/hospitaldischarge/>

²¹ United States Census Bureau, www.census.gov.

²² Voices for Children. Kids Count Searchable Database. Accessed online at <http://www.voices4kids.org/kidscountdata.htm>. These figures are the number of children enrolled in Medicaid and KidCare combined.

²³ Mayris Webber et al, "Burden of Asthma in Inner-city Elementary Schoolchildren."

²⁴ Asthma hospitalization rates calculated based on data from the Illinois Department of Public Health's EMS Data Reporting System Hospital Discharge Database (data from 2004), Voices for Children Kids Count Database (data from 2004), and the United States Census Bureau (data from 2004), accessed online March, 2005.

²⁵ Illinois Department of Public Health's Health Statistics Hospital Discharge Database Inpatient Interactive Query.

²⁶ National Center for Health Statistics. "Health, United States 2005, with Chartbook on Trends in the Health of Americans." Hyattsville, Maryland, 2005. Table 81, page 294. Available online at <http://www.cdc.gov/nchs/data/hs/hs05.pdf>.

²⁷ Visit data provided by the Illinois Department of Human Services, November 2005.

²⁸ David Kaplan, Claire Brindis, Stephanie Phibbs, Paul Melinkovich, Kelly Naylor, and Karin Ahlstrand. "A Comparison Study of an Elementary School-Based Health Center." *Archives of Pediatric and Adolescent Medicine*. 1999, Volume 153, pp. 235-243. See especially Table 4, page 240.

²⁹ S. R. Machlin. "Expenses for a Hospital Emergency Room Visit, 2003." Statistical Brief #111. January 2006. Agency for Healthcare Research and Quality, Rockville, Maryland. Available online at <http://www.meps.ahrq.gov/papers/st111/stat111.pdf>. See especially Figure 3.

³⁰ David Kaplan et al, "A Comparison Study of an Elementary School-Based Health Center."

³¹ National Center for Health Statistics, "Health, United States 2005, with Chartbook on Trends in the Health of Americans."

³² S. R. Machlin, "Expenses for a Hospital Emergency Room Visit, 2003."

³³ Centers for Disease Control and Prevention. "CDC Vaccine Price List." December 22, 2005. Accessed online at http://www.cdc.gov/nip/vfc/cdc_vac_price_list.htm on February 1, 2006.

³⁴ Fangjun Zhou, Jeanne Santoli, Mark L. Messonnier, Hussain R. Yusuf, Abigail Shefer, Susan Chu, Lance Rodewald, and Rafael Harpaz. "Economic Evaluation of the 7-Vaccine Routine Childhood Immunization Schedule in the United States, 2001," *Archives of Pediatric and Adolescent Medicine*, Volume 159, pp. 1136-1144, December 2005.

³⁵ Visit data, Illinois DHS.

³⁶ Fangjun Zhou et al, "Economic Evaluation of the 7-Vaccine Routine Childhood Immunization Schedule in the United States, 2001."

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