Appendix A

Guide to Community Preventive Services

The systematic review in this report was conducted under the oversight of the independent, nonfederal, unpaid Community Preventive Services Task Force (the Task Force). The Task Force continues to develop, expand, and update the Guide to Community Preventive Services (The Community Guide) with the support of DHHS in collaboration with public and private partners. CDC provides staff support to the Task Force for development of The Community Guide. Previous topics reviewed, as well as background information on methods and development of The Community Guide, are available at www.thecommunityguide.org.

The Systematic Review Development Team

The review team was made up of three subgroups: (1) The coordination team, which drafted the analytic framework for reviews; managed the data collection and review process; and drafted evidence tables, summaries of evidence, and reports; (2) The consultation team, which reviewed and commented on materials developed by the coordination team and set priorities for this review; and (3) The abstraction team, which collected and recorded data from studies for possible inclusion in the systematic review.
Appendix B

Search Strategy

This literature search was performed to provide a systematic review of the evidence to The Community Guide.

Eight databases (PubMed, Embase, CINAHL, ERIC, Google, NTIS, Web of Science [WOS], and WorldCat) were searched in March 2013 and again in July 2014, using the search terms listed below. The databases searched covered publications in biomedical sciences, education, and behavioral sciences. The types of documents searched in the databases included journal articles, books, book chapters, reports, websites, and conference papers. Search results are combined in the search tree figure (see Search Results, below).

Search terms and search strategies were adjusted to each database, based on controlled and uncontrolled vocabularies and search software. Plurals, hyphenated, non-hyphenated, and British spellings were searched for each term.
Search Results

This figure (which also appears in the main document as Figure 2) shows the results of the search process.

<table>
<thead>
<tr>
<th>Broad search of all potentially relevant articles from electronic databases (Beginning of database–July 2014)</th>
<th>10,371</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrelated to school based health clinics</td>
<td>9817</td>
</tr>
<tr>
<td>Papers potentially relevant to this topic</td>
<td>554</td>
</tr>
<tr>
<td>Not evaluating an intervention</td>
<td>324</td>
</tr>
<tr>
<td>Candidate intervention studies</td>
<td>230</td>
</tr>
<tr>
<td>Not meeting inclusion criteria</td>
<td>180</td>
</tr>
<tr>
<td>Intervention studies meeting inclusion/exclusion criteria</td>
<td>50</td>
</tr>
<tr>
<td>Limited quality of execution</td>
<td>4</td>
</tr>
<tr>
<td>Included studies</td>
<td>46</td>
</tr>
</tbody>
</table>

Descriptions of Databases Searched

**CINAHL (EBSCOHOST)**

- indexing for more than 3,000 journals from the fields of nursing and allied health
- more than 2.3 million records
- years covered: 1981 – current

**Embase (OVID)**

- indexing for more than 3,500 international journals in the following fields: drug research, pharmacology, pharmaceutics, toxicology, clinical and experimental human medicine, health policy and management, public health, occupational health, environmental health,
drug dependence and abuse, psychiatry, forensic medicine, and biomedical engineering/instrumentation

- selective coverage for nursing, dentistry, veterinary medicine, psychology, and alternative medicine
- Years covered: 1974 – current

**ERIC (ProQuest)** - The ERIC (Education Resources Information Center) database

- sponsored by U.S. Department of Education to provide extensive access to educational-related literature
- provides coverage of journal articles, conferences, meetings, government documents, theses, dissertations, reports, audiovisual media, bibliographies, directories, books and monographs

**Google**

- web search engine (includes Google Scholar, which covers journal articles)

**NTIS (ntis.gov)**

- largest central resource for government-funded scientific, technical, engineering, and business related information available
- years covered: 1964 – current
PubMed (pubmed.gov)

- comprises more than 22 million citations for biomedical literature from MEDLINE, life science journals, and online books
- Citations may include links to full-text content from PubMed Central and publisher websites
- Years covered: 1946 – current.

Web of Science (Web of Knowledge – Thomson Reuters)

- comprises world’s leading scholarly literature in the sciences, social sciences, arts, and humanities and examine proceedings of international conferences, symposia, seminars, colloquia, workshops, and conventions.

WorldCat (worldcat.org)

- world's largest library catalog
- contains millions of books, reports, conferences, dissertations, theses, audiovisuals, electronic publications, and articles from the past few centuries
Search Strategies Used in Each Database

Database: PubMed

Searched on 7/9/2014

Results: 1,578

PubMed search strategy

(((("2013/03/12"[Date - Entrez] : "3000"[Date - Entrez]) AND ( "2013/01/01"[PDat] : "2015/12/31"[PDat]))) AND (((((("School Health Services"[Mesh] AND (English[lang]))) AND "united states"[mesh] AND (English[lang]))) OR (((((((((((((((((((("school located immunization programs" OR "school located influenza vaccination" OR "school located mass influenza" OR "school located mass vaccination")) AND (English[lang]))) OR ("school located vaccination" AND (English[lang]))) OR ((("school dental care" OR "school dental clinic" OR "school dental clinics" OR "school dental health" OR "school dental hygiene" OR "school dental inspection" OR "school dental inspections" OR "school dental medicine" OR "school dental nurse" OR "school dental nurses" OR "school dental personnel" OR "school dental program" OR "school dental programme" OR "school dental programmes" OR "school dental programs" OR "school dental scheme" OR "school dental screening" OR "school dental screenings" OR "school dental sealant program" OR "school dental service" OR "school dental services" OR "school dental therapist" OR "school dental therapists" OR "school dental treatment" OR "school dentist" OR "school dentistry" OR "school dentists")) AND (English[lang]))) OR ((("school dentist" OR "school dentistry")) AND (English[lang]))) OR ("council on school health" AND (English[lang]))) OR ("sbhcs" AND (English[lang]))) OR ("sbhcs" AND (English[lang]))) OR ((("school clinic" OR "school clinics")) AND (English[lang]))) AND ((("school health based" OR "school health based parasite control" OR "school health care")) AND (English[lang]))))

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AND ("school mental" AND (English[lang]))) AND ((("school nurse" OR "school nurses")) AND (English[lang]))) OR ((("school physician" OR "school physicians")) AND (English[lang]))) OR ((("school wellness" OR "school wellness policies" OR "school wellness policy" OR "school wellness policy implementation")) AND (English[lang]))) OR ((("school based adolescent health" OR "school based adolescent health care" OR "school based adolescent health care program" OR "school based adolescent hepatitis" OR "school based adolescent hepatitis b" OR "school based adolescent hepatitis b vaccination")) AND (English[lang]))) OR ("school based health" AND (English[lang]))) OR ((("school based adolescent health" OR "school based adolescent health care program" OR "school based adolescent hepatitis" OR "school based care" OR "school based caries prevention" OR "school based caries preventive" OR "school based centers" OR "school based cervical cancer education" OR "school based cessation program" OR "school based chemotherapy" OR "school based child sexual abuse prevention" OR "school based childhood obesity" OR "school based chlamydia control program" OR "school based chlamydia screening" OR "school based clinic" OR "school based clinical practice" OR "school based clinicians" OR "school based clinics" OR "school based community intervention" OR "school based condom availability" OR "school based condom distribution" OR "school based condom education" OR "school based control program" OR "school based dental care" OR "school based dental clinic" OR "school based dental clinics" OR "school based dental health" OR "school based dental program" OR "school based dental screening" OR "school based dental sealant" OR "school based dental services" OR "school based depression prevention program" OR "school based depression screening" OR "school based deworming" OR "school based diabetes care" OR "school based diabetes mellitus"
prevention program" OR "school based dietary intervention") AND (English$lang)) OR
("school-based asthma" AND (English$lang)) OR ("school-based care" AND (English$lang))
AND (English$lang) AND (English$lang)) NOT (((("Developing Countries"[Mesh]) OR
"Latin America"[Mesh]) OR "Asia"[Mesh]) OR "Mexico"[Mesh]) OR "Central
America"[Mesh]) OR "South America"[Mesh]) OR "Africa"[Mesh] AND (English$lang)) AND
(English$lang))) NOT (brazil OR brasil AND (English$lang))

Database: ERIC

Searched on 7/10/2014

Results: 54

ERIC search strategy:

2013-2014

"school based health center*" OR SBHC or SBHCs OR "school based health clinic*" OR
"school clinic" OR "school clinics" OR "school health clinic*" OR "school health centre*" OR
"school health center*"

Database: Embase (OVID)

Searched on 7/9/2014

Results: 46

(school-based-health-center* or school-based-health-centre* or school-based-health-clinic* or
sbhc or sbhcs or school-health-service*).ti,kw,tw.

AND

("201312" or "201313" or "201314" or "201315" or "201316" or "201317" or "201318" or
"201319" or "201320" or "201321" or "201322" or "201323" or "201324" or "201325" or
"201326" or "201327" or "201328" or "201329" or "201330" or "201331" or "201332" or "201333" or "201334" or "201335" or "201336" or "201337" or "201338" or "201339" or "201340" or "201341" or "201342" or "201343" or "201344" or "201345" or "201346" or "201347" or "201348" or "201349" or "201350" or "201351" or "201352" or "201401").em.
Database: CINAHL
Searched on 7/9/2014
Results: 21

CINAHL search strategy:
S9 S7 AND S8
S8 Limiters - Published Date: 20130401-20151231
S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6
S6 (TX "school located")
S5 TX (sbhc or sbhcs)
S4 TX ("school based health centre" or "school based health centres" or "school health centre" or
"school health centres")
S3 TX ( "school based health clinic" or "school based health clinics" or "school based clinic" or
"school based clinics" or "school based clinical" or "school health clinic" or "school health
clinics")
S2 (TX "school based primary care")
S1 TX ("school based health center" or "school based health centers")

Database: Google
Searched on: 7/10/2013
Results: 5

"school based health centers" +2014

Database: NTIS
Searched on 7/10/2014
Results: 0
Google search strategy:

[Advanced Search - exact phrase searches – each run separately]

Since 2013

school based health center
school based health centers

SBHC

SBHCs

school based health clinic
school based health clinics

school clinic
school clinics

school health clinic
school health clinics

school health centre
school health centres

school health center
school health centers

school health service
school health services

*Database: WoS (Web of Science)*

Searched on 7/10/2014

Results: 209
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WOS search strategy:
# 33 #32 OR #31 OR #27 OR #26 OR #23 OR #21 OR #17 OR #16 OR #15 OR #14 OR #13
OR #9 OR #8 OR #1
# 32 #31 OR #27 OR #26
# 31 #28 AND #11
# 30 #29 AND #28
# 29 #28 OR #11
# 28 TI=(strateg*)
# 27 #25 AND #24
# 26 TS=(("school based health service"*))
# 25 #19 OR #11
# 24 TS=(study or studies)
# 23 #22 AND #19
# 22 TS=(eval* or success* or assess* or improv* or efficac* or combat* or recommend* or prevent* or interven* or trial or trials or program* or utility or progress* or solve or solving or result* or outcome* or predict* or benefi* or analys* or analysz* or pilot or random* or protect* or impact* or reduc* or lessen* or increas* or decreas* or amerliorat* or promis*)
# 21 #20 AND #19
# 20 TI=(eval* or success* or assess* or improv* or efficac* or combat* or recommend* or prevent* or interven* or trial or trials or program* or utility or progress* or solve or solving or result* or outcome* or predict* or benefi* or analys* or analysz* or pilot or random* or protect* or impact* or reduc* or lessen* or increas* or decreas* or amerliorat*)
# 19 Topic=("school health service\*")

# 18 Topic=("school health service\*") AND Title=(truant\* or truancy or attendance or absent\* or "missed school" or "missing school" or "miss school")

# 17 Topic=("school nurse\*" or "school physician\*" or "school based doctor\*" or "school based primary care" or "school based primary health care" or "school doctor\*") AND Title=(truant\* or truancy or attendance or absent\* or "missed school" or "missing school" or "miss school")

# 16 #15 OR #14

# 15 TS=("school dental care")

# 14 TS=("school dental clinic\*" or "school dental health" or "school dentist\*" or "school based dental" or "school based dentist\*")

# 13 Topic=("school nurse\*" or "school physician\*" or "school based doctor\*" or "school based primary care" or "school based primary health care" or "school doctor\*") AND Title=(eval\* or success\* or assess\* or improv\* or efficac\* or combat\* or recommend\* or prevent\* or interven\* or trial or trials or program\* or utility or progress\* or solve or solving or result\* or outcome\* or predict\* or benefi\* or analys\* or analysz\* or pilot or random\* or protect\* or impact\* or reduc\* or lessen\* or increas\* or decreas\* or amerliorat\*)

# 12 Topic=("school nurse\*" or "school physician\*" or "school based doctor\*" or "school based primary care" or "school based primary health care" or "school doctor\*") AND Topic=(eval\* or success\* or improv\* or efficac\* or combat\* or recommend\* or prevent\* or interven\* or trial or trials or program\* or utility or progress\* or solve or solving or result\* or outcome\* or predict\* or benefi\* or analys\* or analysz\* or pilot or random\* or protect\* or impact\* or reduc\* or lessen\* or increas\* or decreas\* or amerliorat\*)
# 11 Topic=("school nurse*" or "school physician*" or "school based doctor*" or "school based primary care" or "school based primary health care" or "school doctor*")

# 10 Topic=("school located nurse*" or "school located physician*" or "school located health care" or "school located healthcare")

# 9 Topic=("school based nurse*" or "school based physician*" or "school based health care" or "school based healthcare")

# 8 #7 OR #6 OR #5 OR #4 OR #3 OR #2

# 7 Topic=("school clinic")

# 6 Topic=("school located health centre*") OR Topic=("school located health center*") OR Topic=("school health clinic*" or "school health centre*" or "school health center*")

# 5 Topic=("school located health clinic*")

# 4 Topic=("school based health clinic*")

# 3 Topic=("school-based health clinic*")

# 2 Topic=("school-based health centre*")

# 1 Topic=("school-based health center*")

**Database: WorldCat**

Date Searched: 7/10/2014

Results: 3

Since 2013

WorldCat search strategy:

"school based health center*" or "school based health clinic*" or sbhc or sbhcs or "school based dental clinic*" or "school dental clinic*" or "school based dental care"
Appendix Figure 1.

Effects of School-Based Health Centers on Academic Outcomes:
High School Non-completion Rates

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Outcome/Measure</th>
<th>Baseline %</th>
<th>Study Type</th>
<th>Effect Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edwards</td>
<td>77</td>
<td>(Postpartum dropout rate, 45.0%)</td>
<td></td>
<td>Pre-post SBHC</td>
<td>-</td>
</tr>
<tr>
<td>Kerns</td>
<td>11§</td>
<td>Dropout, NR</td>
<td></td>
<td>SBHC users vs non-users</td>
<td>-29.1%</td>
</tr>
<tr>
<td>McCord</td>
<td>93</td>
<td>Dropout rate, 72.1%</td>
<td></td>
<td>SBHC users vs Community users</td>
<td></td>
</tr>
<tr>
<td>Barnett</td>
<td>03</td>
<td>(Dropout rate pregnancy and post-pregnancy school yr, 19.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setzer</td>
<td>92</td>
<td>(Dropout rate among pregnant students, 57.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

§All data points collapsed to calculate one effect estimate for that study

Relative Percent Change or Difference

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40

Median: -29.1%
IQR: -53.9%, -14.8%
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Appendix Figure 2.

Effects of School-Based Health Centers on Health-Related Outcomes: Immunization

- Author Year, Vaccine (Baseline%)
  - Klosterman00 (67)
  - Zimmer-Gembeck97 (34)
  - Allison07$, HepB (20.1)
  - Federico10$, HepB (83.9)
  - Federico10$, HepA (50.3)
  - Federico10$, Td (53.4)
  - Federico10$, Tdap (61.7)
  - Allison07$, Td booster (21.5)
  - Federico10$, IPV (84.9)
  - Federico10$, varicella (12.9)
  - Federico10$, MMR (82.9)
  - Federico10$, MCV4 (61.1)
  - Allison07$, flu (20.1)
  - Federico10$, HPV 12,15 (18.1)
  - Federico10$, HPV 16,18 (12.1)

- $All data points collapsed to calculate one effect estimate for that study

- Td: Tetanus, Diphtheria
- Tdap: Tetanus, Diphtheria, Pertussis
- IPV: Inactivated Polio Vaccine
- MCV4: Meningococcal
- Pertussis: Conjugated Vaccine
- MMR: Measles, Mumps, and Rubella
- HPV: Human Papillomavirus

- Before-after
- Cross-sectional

- SBHC vs. Non-SBHC
- SBHC Users vs. Community Users

- Median: 15.5 pct pts
  Range: -22, 26.1 pct pts

- Childhood Vaccines
- Pre-Teen/Teen Vaccines

- Favors Intervention

Absolute Percent Point Change or Difference

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Appendix Figure 3.

Effects of School-Based Health Centers on Health-Related Outcomes: Other Recommended† Preventive Screening/Counseling

<table>
<thead>
<tr>
<th>Author Year (Outcome, BL)</th>
<th>MDD Screen</th>
<th>STI Screen/ Counsel</th>
<th>Tobacco Ed/ Counsel</th>
<th>SB violence programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gibson 13§ (S/C Emotions, 12%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santell 96 (S/C Emotions, 18%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gibson 13§ (S/C Sex and/or birth control, 20%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnett 03§ (S/C Depression/suicide, 7%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan 98§ (S/C Emotional health, 2.9%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein 07§ (S/C Feeling sad or hopeless, 18.1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnett 03§ (S/C Consistent condom use, 15%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan 98§ (S/C Sexual activity, 31%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Etcher 11 (S STI, 19.3%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan 98§ (S/C STD risk, 12%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein 07§ (S/C Pregnancy and STDs, 68.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan 98§ (S/C Tobacco use, 17.2%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein 07§ (S/C Cigarettes/smoking, 49.8%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan 98§ (S/C Violence, 0.2%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein 07§ (S/C Violence prevention, 38.7%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

General Information

- Median: 12.0 pct pts
- IQR= 5.7, 45.1 pct pts

**All data points collapsed to calculate one effect estimate for that study**

† US Preventive Services Task Force and Community Preventive Services Task Force

(Intervention includes service, or equivalent to recommendation)

S/C, screening/counseling

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Appendix Figure 4.

Effects of School-Based Health Centers on Health-Related Outcomes:
Having Regular Source of Health Care

Author Year (Baseline %)

- Kisker 96 (76.0%)
- Gibson 13 (70.0%)
- Hutchinson 12† (71.7%)
- Lewin 97$ (usual medical care)
  Elementary school, 78.5%
- Lewin 97$ (usual dental care)
  Elementary school (78.5%)
  Middle/high school (78.5%)
- Lurie 01 (97.0%)
- Silberberg 08§
  Usual medical care (89.4%)
  Usual dental care (80.3%)
  Usual mental health care (64.4%)
- Wade 05 (96.9%)
- [Gibson 13 (84.0%)]
- [Lewin 97 (usual dental care)]
  Middle/high school (78.5%)
- [Wade 05 (98.8%)]

SBHC vs. Non-SBHC

Median: 2.2%
IQR: -1.8%, 12.4%

Favors Intervention

Relative Percent Change or Difference

†Adjusted results
§All data points collapsed to calculate one effect estimate for that study
[] Not included to calculate median
Appendix Figure 5.

Effects of School-Based Health Centers on Asthma-related Outcomes: Hospitalization, Emergency Department (ED) Use, and Morbidity

<table>
<thead>
<tr>
<th>Author Year (Baseline%)</th>
<th>Relative Percent Change or Difference</th>
<th>SBHC vs non-SBHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webber 03 (17.1%)</td>
<td>Hospitalization</td>
<td></td>
</tr>
<tr>
<td>Lurie 01 (14.9%)</td>
<td>Pre-post SBHC Implementation</td>
<td></td>
</tr>
<tr>
<td>Guo 05 (7.1%)</td>
<td>SBHC users vs Community users</td>
<td></td>
</tr>
<tr>
<td>Silberberg 08 (NR)</td>
<td>ED Use</td>
<td>SBHC vs non-SBHC</td>
</tr>
<tr>
<td>Webber 03 (44.4%)</td>
<td>Pre-post SBHC Implementation</td>
<td></td>
</tr>
<tr>
<td>Lurie 01 (35.6%)</td>
<td>SBHC users vs Community users</td>
<td></td>
</tr>
<tr>
<td>Guo 05 (32.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Webber 03 (72.6%)</td>
<td>Morbidity</td>
<td>SBHC vs non-SBHC</td>
</tr>
<tr>
<td>Lurie 01 (4.8 days/night)</td>
<td>Favors Intervention</td>
<td></td>
</tr>
</tbody>
</table>

*Number of days or nights in past 4 weeks child had asthma symptoms.
Appendix Figure 6.

Effects of School-Based Health Centers on Other Morbidity-Related Outcomes:
Self-Reported Health Status

<table>
<thead>
<tr>
<th>Author Year (Outcome, BL)</th>
<th>SBHC vs non-SBHC</th>
<th>User vs Non-user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britto 01§</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% no chronic illness† (65.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% health status excellent (28.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kisker 96 (% very good or excellent health, 55.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewin 97§</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary School (% no physical health problems 26.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle/high school (% no physical health problems 51.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silberberg 08§</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% no medical condition‡ (72.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% no dental problems (89.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Lewin 97§]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary School (% no physical health problems 31.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle/high school (% no physical health problems 61.0%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Median: -1.2%
Range: -17.4% to 5.6%

Relative Percent Change or Difference

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Appendix Figure 7.

Effects of School-Based Health Centers on Other Morbidity-Related Outcomes:
Self-Reported Mental Health

<table>
<thead>
<tr>
<th>Author Year, (Outcome, Baseline%)</th>
<th>Before-after w/ Comparison</th>
<th>Cross-sectional</th>
<th>4 studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hutchinson12 (feeling sadness last yr; 29.3%)</td>
<td>□</td>
<td></td>
<td>SBHC vs. Non-SBHC</td>
</tr>
<tr>
<td>Lewin97§ (feeling sad/worried/stressed)</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary schools (67.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle/high school (74.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gance-Cleveland05 (1-4 mental health stressors; 16.9%)</td>
<td>▲</td>
<td></td>
<td>SBHC Users vs. Non-Users</td>
</tr>
<tr>
<td>Warren03 (depression symptoms; 20%)</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Lewin97 (feeling sad/worried/stressed)]</td>
<td>▲</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary schools (77.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle/high school (42.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

§All data points collapsed to calculate one effect estimate for that study
[] Not included in calculation of median

Relative Percent Change or Difference
-60 -50 -40 -30 -20 -10 0 10 20 30 40 50
Favors Intervention

Median: -5.7%
Range: -31.6%, 8.9%
Appendix

School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
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Appendix Figure 8.

Effects of School-Based Health Centers on Other Morbidity-Related Outcomes: Non-Asthma-Related Emergency Department (ED) Utilization and Hospitalization

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Outcome</th>
<th>ED Utilization</th>
<th>Hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britto</td>
<td>01</td>
<td>(with ED visit) (29.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gance-Cleveland</td>
<td>05</td>
<td>(with ED visit) (18.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gance-Cleveland</td>
<td>05</td>
<td>(Hospitalization) (0.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hutchinson</td>
<td>12</td>
<td>(with ED visit) (35.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan</td>
<td>99</td>
<td>(with ED visit) (13.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key</td>
<td>02</td>
<td>(avg # ED visit) (0.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby59/91</td>
<td></td>
<td>(avg # ED visit) (0.45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kisker</td>
<td>96</td>
<td>(avg # ED visit) (0.28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santelli</td>
<td>96</td>
<td>(with ED visit) (37.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santelli</td>
<td>96</td>
<td>(Hospitalization) (18.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silberberg</td>
<td>08</td>
<td>(with ED visit) (23.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wade</td>
<td>05</td>
<td>(with ED visit) (NR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>01</td>
<td>(# of non-urgent ED visit) (44.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>01</td>
<td>(# of urgent ED visit) (18.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juszczak</td>
<td>03</td>
<td>(with ED visit) (NR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaplan</td>
<td>98</td>
<td>(with ED visit) (55.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allison</td>
<td>07</td>
<td>(with ED visit) (33.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewin</td>
<td>97</td>
<td>(with ED visit) (26.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Wade 05]</td>
<td></td>
<td>(with ED visit) (25.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All data points collapsed to calculate one effect estimate for that study
[] Not included in calculation of median

ED Median: -14.5%
IQR: -33.8% to 4.6%
Hospitalization Average: -51.6%
Values: -86.9%, -16.3%

Favors Intervention

Relative Percent Change or Difference

American Journal of Preventive Medicine
Appendix Figure 9.

Effects of School-Based Health Centers on Risk Behaviors: Smoking

- Before-after w/ Comparison
- Before-after
- Cross-sectional

<table>
<thead>
<tr>
<th>Author Year, (Baseline%)</th>
<th>SBHC vs. Non-SBHC</th>
<th>SBHC Users vs. Non-Users</th>
<th>SBHC Users vs. Community Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hutchinson 12 (6.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby 91$†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallas, TX (8.0%)</td>
<td></td>
<td></td>
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<tr>
<td>Gary, IN (21.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jackson, MS (14.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quincy, FL (6.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kisker 96 (9.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewin 97 (36.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robinson 03‡ (1.0 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren 03 (30.8%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein 07 (14.3%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Median: 21%
IQR: -24.1%, 32.4%

$All data points collapsed to calculate one effect estimate for that study
†Calculated from % never used
‡# of days in past month used

Relative Percent Change or Difference

American Journal of Preventive Medicine
Appendix

School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
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Appendix Figure 10.

Effects of School-Based Health Centers on Risk Behaviors: Alcohol Use

Author Year, (Baseline%)
Hutchinson12 (70.5%)
Kirby 91$†
Dallas, TX (41%)
Gary, IN (52%)
Jackson, MS (38%)
Quincy, FL (36%)
Kisker96 (36.0%)
Robinson03‡ (1.2 days)
Warren03
% beer, past 2 mon (37.2%)
% liquor, past 2 mon (36.7%)
Klein07
% drank past mon (29.1%)
% w ≥5 drinks in a row, past month (42.0%)

SBHC vs. Non-SBHC
Before-after w/ Comparison
Before-after
Cross-sectional
6 studies

SBHC Users vs. Non-Users
Median: -14.8%
IQR: -19.8% - 9.5%

SBHC Users vs. Community Users
Favors Intervention

%All data points collapsed to calculate one effect estimate
†Calculated from % never drank
‡ # of days drank in past month
Appendix
School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
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Appendix Figure 11.

Effects of School-Based Health Centers on Risk Behaviors: Substance Use

Author Year, (Baseline%)
- Hutchinson12 (marijuana, 38.3%)
- Kiser96† (5%)  
- Robinson03‡ (1.4 days)  
- Kirby 91§† (Illegal Drugs)  
  - Dallas, TX (10%)  
  - Quincy, FL (4%)  
- Warren 03 (marijuana, 19.7%)  
- Warren 03 (illegal drugs, 4%)

§All data points collapsed to calculate one effect estimate
†Calculated from % never used
‡ # of days in past month used

Before-after w/ Comparison ▲ Before-after ▲ Cross-sectional  5 studies

SBHC vs. Non-SBHC

SBHC Users vs. Non-Users

Favors Intervention

Relative Percent Change or Difference

Median: -27.2%
IQR: -48.2%, 13.6%
Appendix Figure 12.

Effects of SBHC on Contraception Use

Author Year (Baseline %)
- Kisker 96  (39.0%)
- Zimmer-Gembeck 97  (15.0%)
- Warren 03  (62.3%)
- Klein 07  (70.6%)
- Ethier 11 females†
  - % using condom (12.4%)
  - % using hormonal contraception (12.4%)
  - % using emergency contraception (1.8%)
- Hutchinson 12 females†  (34.0%)
- Kirby91 females§  (28.0%)
- Ethier 11 males†  (71.1%)
- Hutchinson 12 males†  (38.8%)
- Kirby91 males§  (40.0%)

§All data points collapsed to calculate one effect estimate
†Adjusted change

Favors Intervention

Relative Percent Change or Difference

Females and males
Females, Median: 17.8%
Males, Median: -3.1%
Females and Males
Median: 7.8%
Range: -21.2%, 46.7%
Appendix Figure 13.

Effects of SBHC on Sexual Activity

- Kisker 96 (% had sex in past month: 18.0%)
- Warren 03 (% ever had sex: 30.9%)
- Klein 07 (% ever had sex: 37.1%)
- Hutchinson 12 (% ever had sex: 48.9%)
- Kirby 91 (times had sex past 4 weeks: 2.6 times)
- Hutchinson 12† (% ever had sex: 74.3%)
- Kirby 91† (times had sex past 4 weeks: 3.3 times)

Favors Intervention

Females and males

Females only

Males only

Relative Percent Change or Difference

5 All data points collapsed to calculate one effect estimate
†Adjusted change
Appendix Figure 14.

Effects of SBHC on Pregnancy Outcomes

Author Year (Outcome, BL)  ● Before-after w/ Comparison  ● Before-after  ▲ Cross-sectional  5 studies

- Ricketts06 (Births/100 AA girls, 160/1000)
- Kiker96 (% ever pregnant, 5.0%)
- Kirby93† (birthrate/1000 students)(22/1000)
- Kirby91§ (% pregnant, past yr, 14.0%)
- Edwards77 (fertility rate/1000 students)(80/1000)
- Kirby91§ (% caused pregnancy, past yr, 8.5%)

Median: -40.0%
IQR: -47.5%, 17.6%

Favors Intervention

Relative Percent Change or Difference

§All data points collapsed to calculate one effect estimate
†Weighted for number of female students in school
Appendix Figure 15.

Effect Modification (Secondary Research Question): Impact of Hours of Availability on Hospitalization and Emergency Department (ED) Use

Author Year (Metric, BL)

- Guo 05$ (avg # ED visit, NR)
- Guo 03$ (Hospitalization, NR)
- Kirby 91$-Dallas (avg # ED visit, 0.66)
- Kirby 91$-Gary (avg # ED visit, 0.44)
- Kirby 91$-Jackson (avg # ED visit, 0.38)
- Kirby 91$-Muskegon (avg # ED visit, 0.7)
- Kirby 91$-Quincy (avg # ED visit, 0.57)
- Kirby 91$-San Fran (avg # ED visit, 0.35)
- Kisker 96 (avg # ED visit, 0.49)
- Webber 03$ (with ED visit, 44.4)
- Webber 03$ (Hospitalization)
- Allison 07 (with ED visit, 33.8)
- Juszczak 03 (% with ED visit, NR)
- Kaplan 98 (% with ED visit, 55.5)
- Santelli 96$ (% with visit for asthma, 39)
- Santelli 96$ (Hospitalization, NR)

8 studies

Regular School Hours

Hospitalization
Emergency Department

Extended Hours

Favors intervention

Relative Percent Change or Difference

Median: $-5.2\%$

Median: $-37.0\%$

$^5$All data points collapsed to calculate one effect estimate
avg, average; BL, baseline; NR, not reported

American Journal of Preventive Medicine
Appendix Figure 16.

Effects Modification (Secondary Research Question):
Contraception Use Stratified by On-site vs. Off-site Access to Contraception

Author Year (outcome) (BL)  
Ethier11†  (7.1%)  
Kirby91§†  
Dallas (32.0%)  
Quincy, FL (29.0%)  
Jackson, MS (30.0%)  
Kirby91§†  
Gary, IN (23.0%)  
Muskegon, MI (27.0%)  
San Francisco (18.0%)  
Ethier11† (71.1%)  
Kirby91§†  
Dallas (33.0%)  
Jackson, MS (39.0%)  
Quincy, FL (57.0%)  
Kirby91§†  
Gary, IN (52.0%)  
Muskegon, MI (41.0%)  
San Francisco (29.0%)  
Zimmer-Gembeck01 (38.0%)  

Female  
On-site, female: 32.6%  
Off-site, female: 22.2%  

Male  
On-site, male: 5.4%  
Off-site, male: 32.8%  

SBHC before vs after  
Favors Intervention  
On-site distribution  

Relative Percent Change or Difference  

All data points collapsed to calculate one effect estimate for that study  
†Weighted for number of female students in school
Appendix Figure 17.

Effects Modification (Secondary Research Question):
Pregnancy Outcomes Stratified by On-site vs. Off-site Access to Contraception

<table>
<thead>
<tr>
<th>Author</th>
<th>Year (outcome) (BL)</th>
<th>% Pregnant, past yr</th>
<th>Location</th>
<th>Before-after w/ Comparison</th>
<th>Before-after</th>
<th>Cross-sectional</th>
<th>S Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirby91</td>
<td></td>
<td>(pregnancy among those no prior pregnancy) (31.6%)</td>
<td>Dallas (7.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Quincy, FL (7.0%)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Muskegon, MI (8.0%)</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>San Francisco (10.0%)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ricketts 06</td>
<td>(birthrate/1000 students) (160/1000)</td>
<td>(fertility rate per 1000 female students) (80/1000)</td>
<td></td>
<td>On-site distribution</td>
<td></td>
<td>Off-site distribution</td>
<td></td>
</tr>
<tr>
<td>Kirby93</td>
<td></td>
<td>(pregnancy among those no prior pregnancy) (31.6%)</td>
<td></td>
<td>On-site distribution</td>
<td></td>
<td>Off-site distribution</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>On-site distribution</td>
<td></td>
<td>Off-site distribution</td>
<td></td>
</tr>
<tr>
<td>Smith 11</td>
<td>(pregnancy rate among total sample) (20.0%)</td>
<td></td>
<td></td>
<td>SBHC w/onsite distribution vs SBHC w/offsite distribution</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All data points collapsed to calculate one effect estimate
†Weighted for number of female students in school

Relative Percent Change or Difference

-100 -80 -60 -40 -20 0 20 40 60 80 100 120 140