Meeting the Challenge of the Recommended Adolescent Immunization Platform

Improved Immunization Delivery in the School-Based Health Centers

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Disclosures

The authors have no relevant financial relationships with any commercial interests to disclose

No reference will be made to the use of medications in manners not licensed by the Food and Drug Administration

Objectives

- To understand current adolescent vaccine delivery at a national level
- To identify vaccine delivery challenges experienced by SBHCs
- To develop solutions to vaccine delivery challenges

Background

- Adolescents are a targeted age group for many newer (Tdap, MCV4, HPV) and long-standing (influenza, varicella) vaccines
- Many barriers to vaccination for adolescents
- Strategies to strengthen adolescent immunization delivery system
  - Reduce barriers in traditional medical home
  - Explore immunization outside of traditional settings

Ref: NVAC, *Am J Prev Med*, 2008

ACIP Recommendations

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FIGURE 2. Recommended immunization schedule for persons aged 7–18 years — United States, 2008
(for those who fall behind or start late, see the schedule below and the catch-up schedule [Table])

Vaccine ▼ Age ▶	7–10 years	11–12 years	13–18 years
Diphtheria, Tetanus, Pertussis[1]	See footnote 1	Tdap	Tdap
Human Papillomavirus[2]	See footnote 2	HPV (3 doses)	HPV Series
Meningococcal[3]	MCV4	MCV4	MCV4
Pneumococcal[4]	PPV		
Influenza[5]	Influenza (Yearly)		
Hepatitis A[6]	HepA Series		
Hepatitis B[7]	HepB Series		
Inactivated Poliovirus[8]	IPV Series		
Measles, Mumps, Rubella[9]	MMR Series		
Varicella[10]	Varicella Series		

Range of recommended ages

Catch-up immunization

Certain high-risk groups

Assets of SBHCs in Adolescent Immunization Delivery

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- The majority of SBHCs are in high schools and middle schools serving adolescents
- "Captive audience"--SBHCs have enormous capacity to ensure delivery of care
- SBHCs may be the only source of care for some students/patients

Immunization Delivery in Denver SBHCs

- Students using Denver's SBHCs more likely than those using Community Health Center only to:
  - receive an influenza vaccine, a tetanus booster and a hepatitis B vaccine
- Immunization cost per dose at SBHCs shown to be significantly less than an HMO-based program
  - Government-purchased vaccine available at lower cost
  - Parents did not incur work-loss costs

Allison, MA et al. *Pediatrics.* 2007; 120;e886-e894
Deuson, RR et al. *Am J Public Health.* 1999; 89; 1722-27

A Retrospective Analysis of Immunization Delivery in the DSBHCs

- Objectives
  - To evaluate the completion rate of immunization (IZ) series within a single urban SBHC setting
  - To compare series completion rates between SBHCs and Community Health Centers (CHCs) located within the same vertically integrated urban delivery system

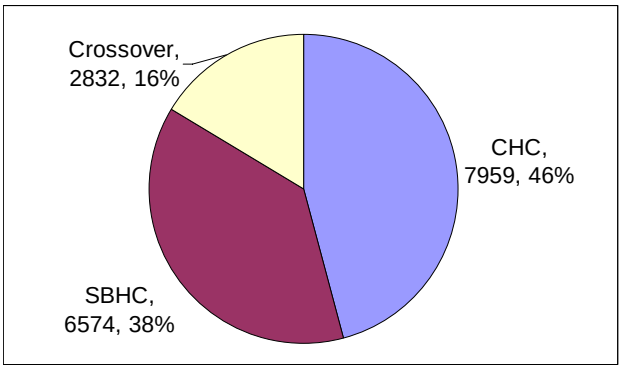
Design

- Design: Retrospective Cohort Study
- Data Sources: Denver Health database
  - Immunization Registry
    - Up to date by each vaccine
    - Combined HPV:MCV:Tdap (3:1:1)
  - Billing database
    - Age, Gender, Visits (site/number)
    - Race/Ethnicity, Language, Insurance Status
- Population: Adolescents ages 12 to 18 years old
  - Any visit between 8/01/06 & 7/31/08

Setting

- Denver Health
  - Comprehensive, vertically-integrated safety-net
  - >30% of Denver's pediatric population including indigent and uninsured
- Community Health Centers
  - Pediatric (3) and Family Practice (5)
  - >100,000 total pediatric patient visits per year
- 12 SBHCs
  - 6 high schools, 6 middle schools, +feeder elementary
  - 60-90% of students = free and reduced lunch
  - 60-70% of enrolled students participate in SBHCs
  - 2007-2008: 7400 patients/29,000 visits

Site of Care



Results

	SBHC	CHS	AOR	95% CI
Hep A	54.33%	50.36%	1.06	0.99-1.14
Hep B	92.76%	84.08%	2.47	**2.18-2.80**
Td	48.84%	53.65%	0.82	0.76-088
Tdap	71.45%	61.47%	1.42	**1.31-1.54**
MCV4	64.52%	60.76%	1.05	0.97-1.13
IPV	94.76%	85.12%	2.90	**2.53-3.33**
Varicella	19.78%	12.98%	1.68	**1.52-1.85**
MMR	89.09%	83.05%	1.59	**1.43-1.76**
HPV	18.27%	14.53%	1.51	**1.33-1.72**

Results: Sub-analyses

HPV

Age	SBHC	CHS	AOR	95% CI
12-15	17.60%	17.66%	0.87	0.73-1.04
16-18	**19.36%**	**11.66%**	**2.21**	**1.80-2.71**

Combo 3-1-1*

Age	SBHC	CHS	AOR	95% CI
12-15	17.06%	17.22%	0.86	0.72-1.03
16-18	**18.55%**	**11.01%**	**2.23**	**1.81-2.75**

Conclusions

- SBHC IZ series completion rates exceeded CHC IZ rates within the same system
  - Both settings serve an important role in adolescent immunization delivery
  - Particular benefit to SBHC setting for older teens completing the 3-1-1 series

Limitations

- Snapshot in time
  - No intention to treat analysis
- Generalizable?
  - Not all SBHC are vertically integrated
  - Not all SBHC are linked to CHC or are a Federally Qualified Health Center (FQHC)

Policy Implications

Advantages

- Captive audience
- Access for hard to reach populations

Needs

- Increased sustainable funding
- Advocates for expansion of the model

Adolescent Immunization Delivery in School-Based Health Centers

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Study Objectives

Primary: to determine current immunization practices of SBHCs nationally:

- Vaccines offered
- Methods for improving immunization rates
- Mechanisms for vaccine financing
- Perceived barriers to adolescent vaccination

Methods

- Survey period: November 2007-March 2008
- 1000 SBHCs randomly sampled from National Assembly on School-Based Health Care listing
- Exclusion criteria:
  - Only provided dental or mental health services
  - Did not see any patients 11-18 years old
- Surveyed by internet and standard mail, with multiple mailings per subject

Design: National Survey

- Among eligible SBHCs, 64% response rate
- Survey response rates higher from Northeast (71%) and West (70%) than South (62%) and Midwest (49%)
- Response rates also higher from rural (71%) and urban non-inner-city (68%) than urban inner-city (59%)

Administering Vaccines to Adolescents

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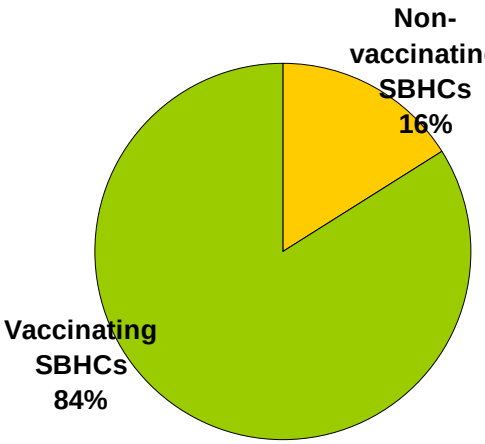

Vaccines Offered at SBHCs

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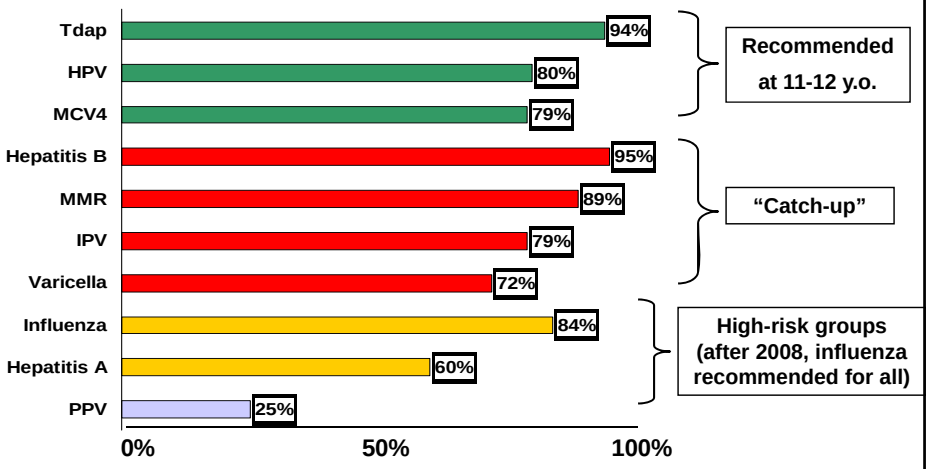


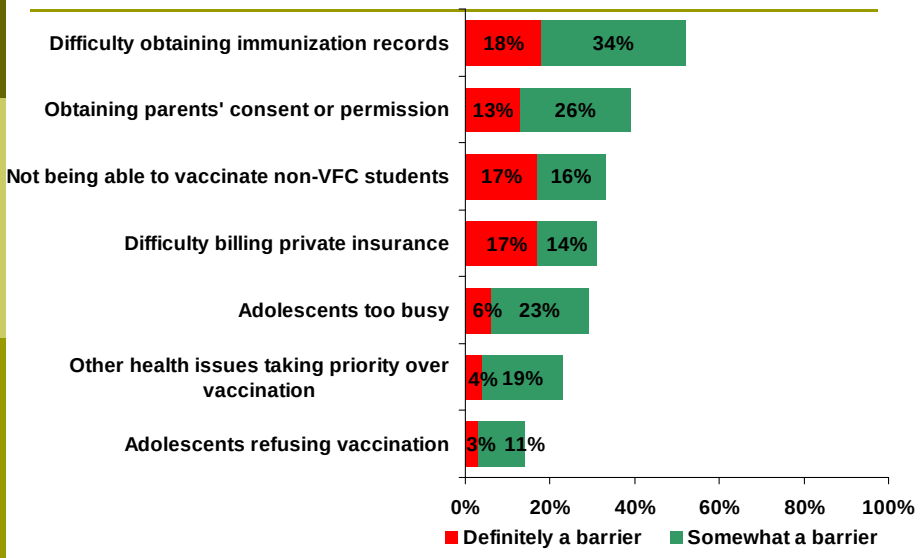
Reported Methods Used to Improve Immunization Rates

Method	%
Use immunization information system (registry)	69
Registry accessible by PCPs in community	59
Notify PCPs of vaccines given (letter, fax)	50
Assessed UTD rates in preceding 2 years	61

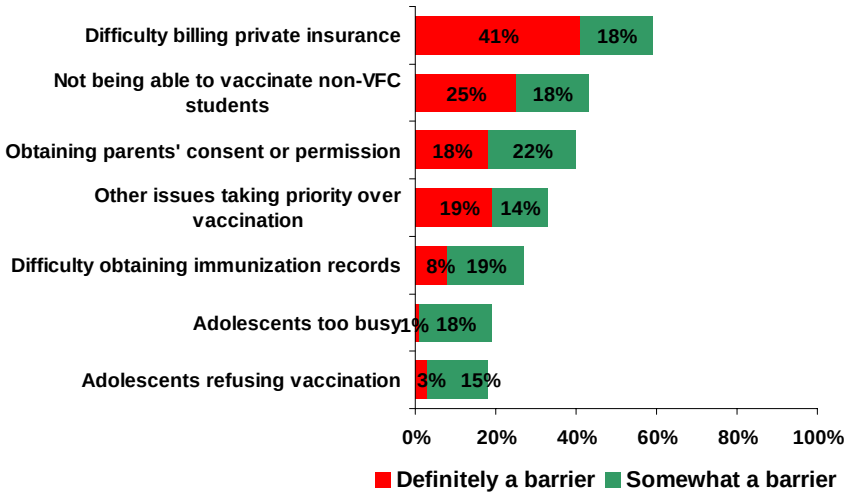
Vaccine Financing Among Vaccinating SBHCs

- 93% participated in VFC program
- Vaccination practices by insurance:
  - Reported vaccinating patients with Medicaid: 96%
  - SCHIP: 91%
  - Uninsured: 98%
  - Private health insurance: 83%
- Only 39% reported billing private health insurance for vaccines given

SBHCs That Currently Vaccinate: Perceived Barriers to Vaccination



Non-Vaccinating SBHCs: Perceived Barriers to Vaccination



Summary of Findings

- Vaccination practices
  - 84% of SBHCs reporting vaccinating adolescents
  - Most offered Tdap, MCV4, HPV vaccines
- Methods to improve immunization delivery
  - Many used immunization information system
  - Most conducted some form of reminder/recall
  - Most also assessed UTD rates

Implications

- SBHCs appear to be fully engaged in vaccine delivery to adolescents
  - Early adoption of new vaccine recommendations
  - More likely to use reminder/recall than private practices
- SBHCs concentrated in “pockets of need”
  - Students less likely to have PCP elsewhere
  - Higher risk for missing needed immunizations

Limitations

- Not all SBHCs in the nation may be listed in NASBHC master listing
- While survey response rate comparable to other national surveys, response rates varied by region and urban/rural location
- Survey results represent reported practice; actual practice not observed

Questions?

Activity

- Exercise 1
- Group break-out
- Identify challenges
- Report out on challenges
- Challenge slides
- Examples

Vaccine Delivery: Challenges

- Obtaining parental consent
- Obtaining immunization records
  - Computer access to multiple registries
  - Ability to integrate immunization tracking with school
- Billing: VFC vs non-VFC for reimbursement; commercial insurance

DSBHC Challenges

- Right Person-Right Job
- Lists, lists and more lists: registry required
- Reminder/recall process

- Challenges that continue to be improved
  - Vaccine storage compliance (temp logs, etc)
  - Inventory control

Questions?

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Activity

- Exercise 2
- Gap analysis (box worksheet)
- Report out

Wrap-up

- DSBHC handout
- A3

Activity: Improve your immunization delivery system

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- Determine your current state
- Determine your desired state
- Determine the gaps between where you are and where you would like to be
- Determine solutions to address the gaps
  - Rapid improvement cycles
- Track improvement and share with team
- Plan for the future