Together We Can Prevent HPV-Related Cancers

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HPV YOU ARE THE KEY TO CANCER PREVENTION

NYC Health

The learner should be able to:

1. Discuss latest trends in HPV disease prevalence and prevention.

2. Employ evidence-based techniques for increasing HPV vaccination rates in your own practice.

3. Apply useful & compelling communication strategies and practical tips to inform parents about HPV.

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Every year in the United States over 30,000 people are diagnosed with a cancer caused by HPV.

That's 1 case every 20 minutes.

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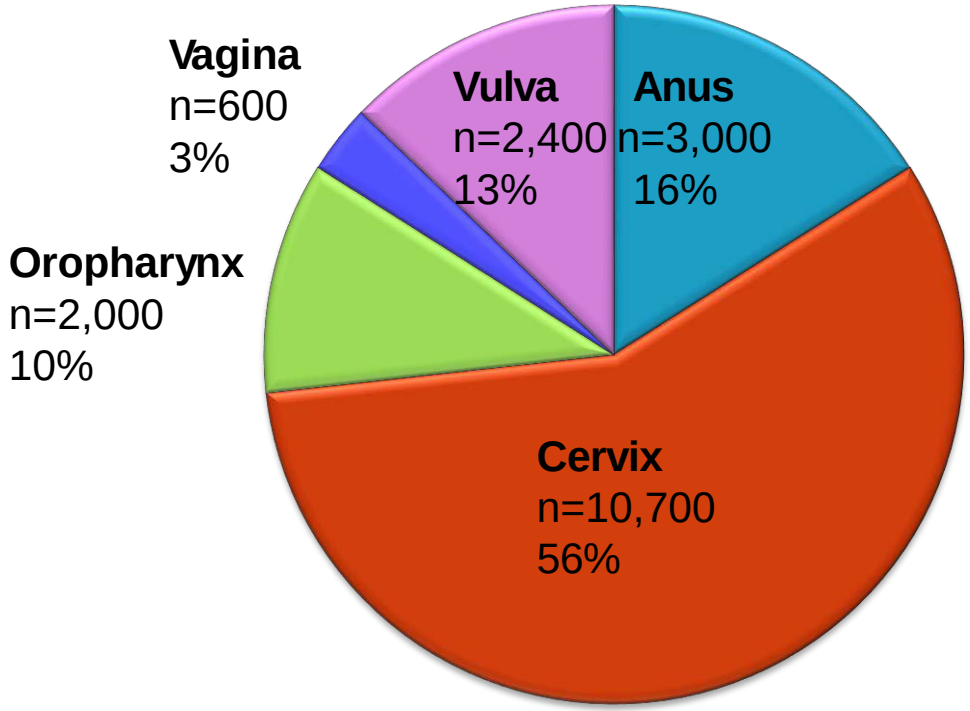
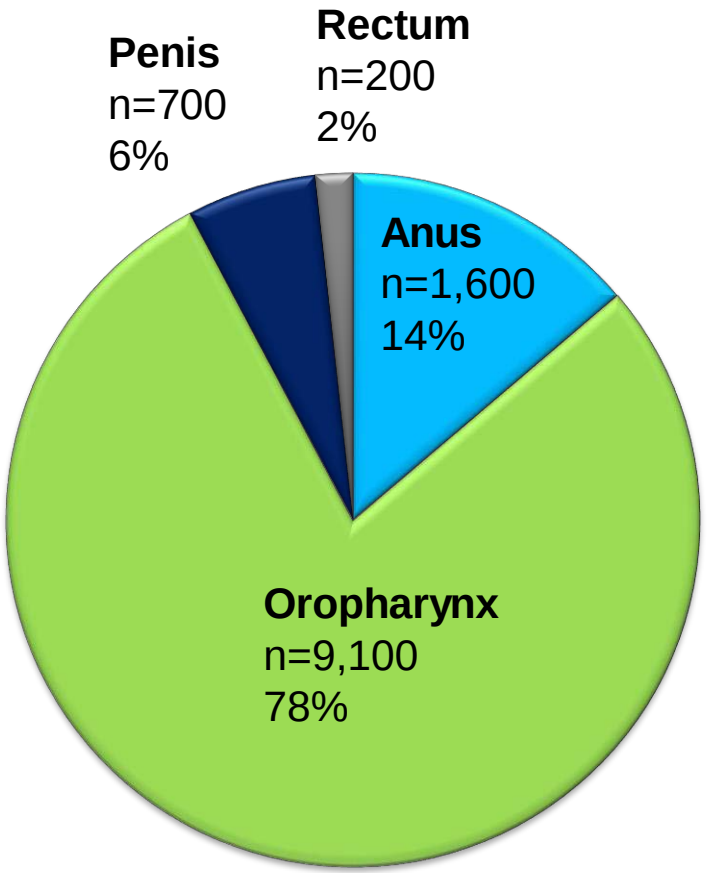
Average Number of New Cancers Probably Caused by HPV, by Sex, United States, 2008-2012



Women (n = 19,200)



Men (n = 11,600)

Data Source: MMWR 2016;65(26):661-666.

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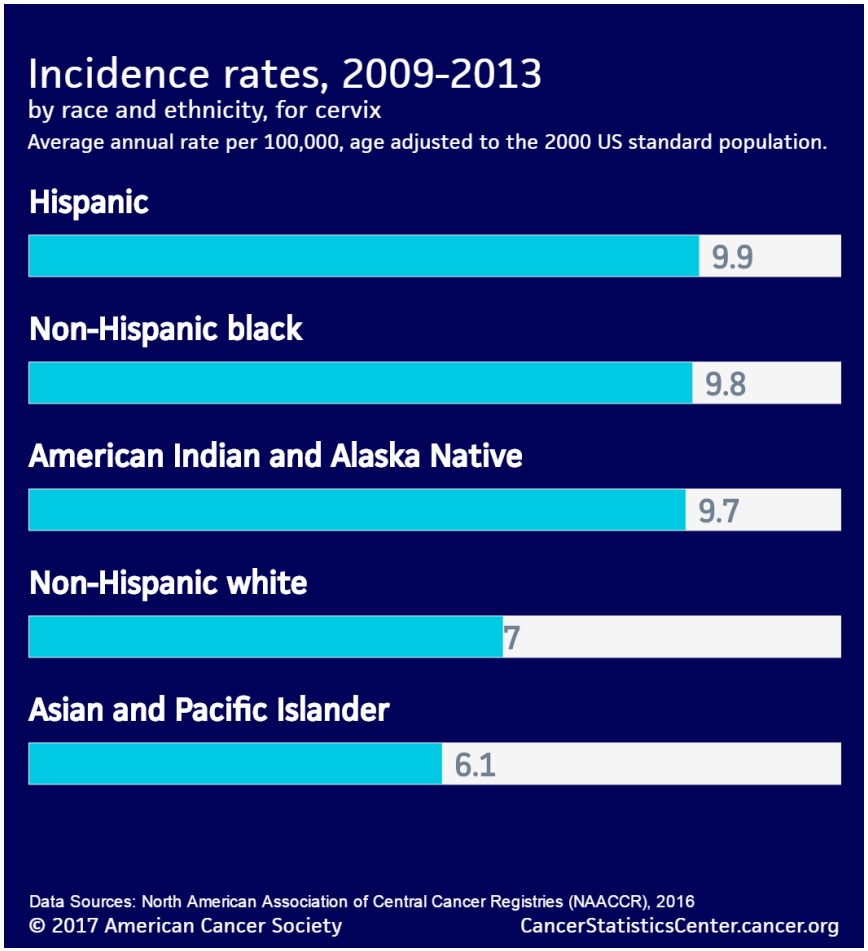
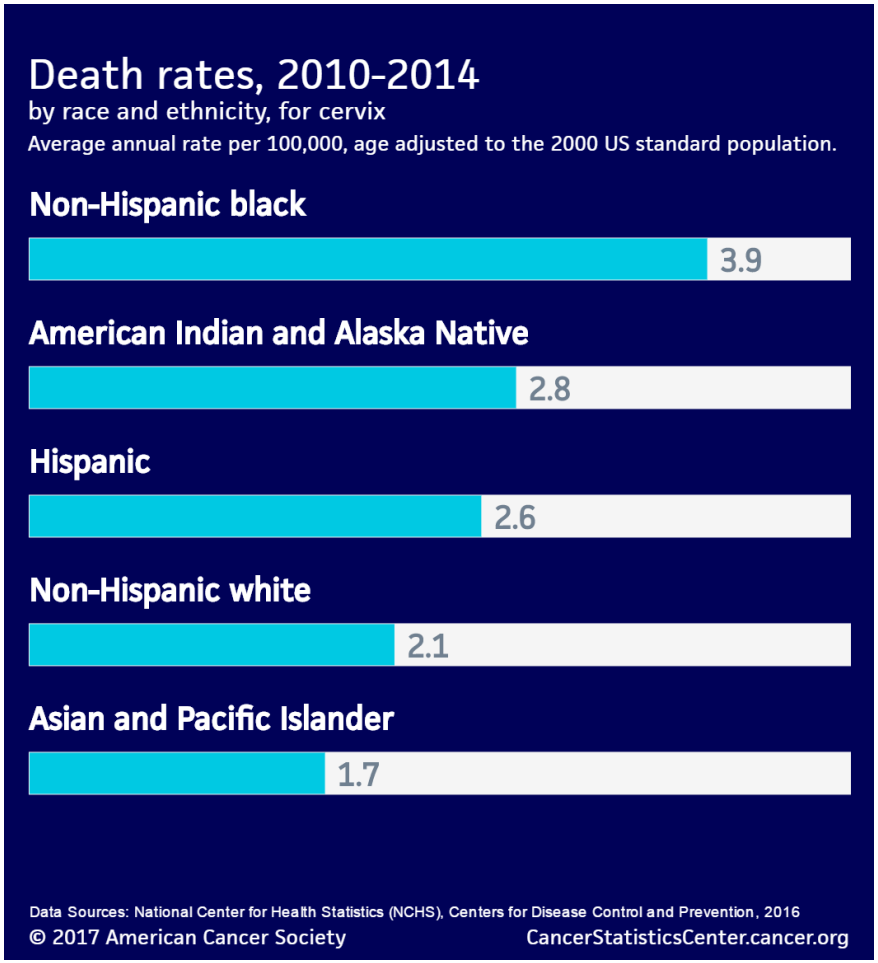
Disparities in Cervical Cancer Incidence and Death Rates





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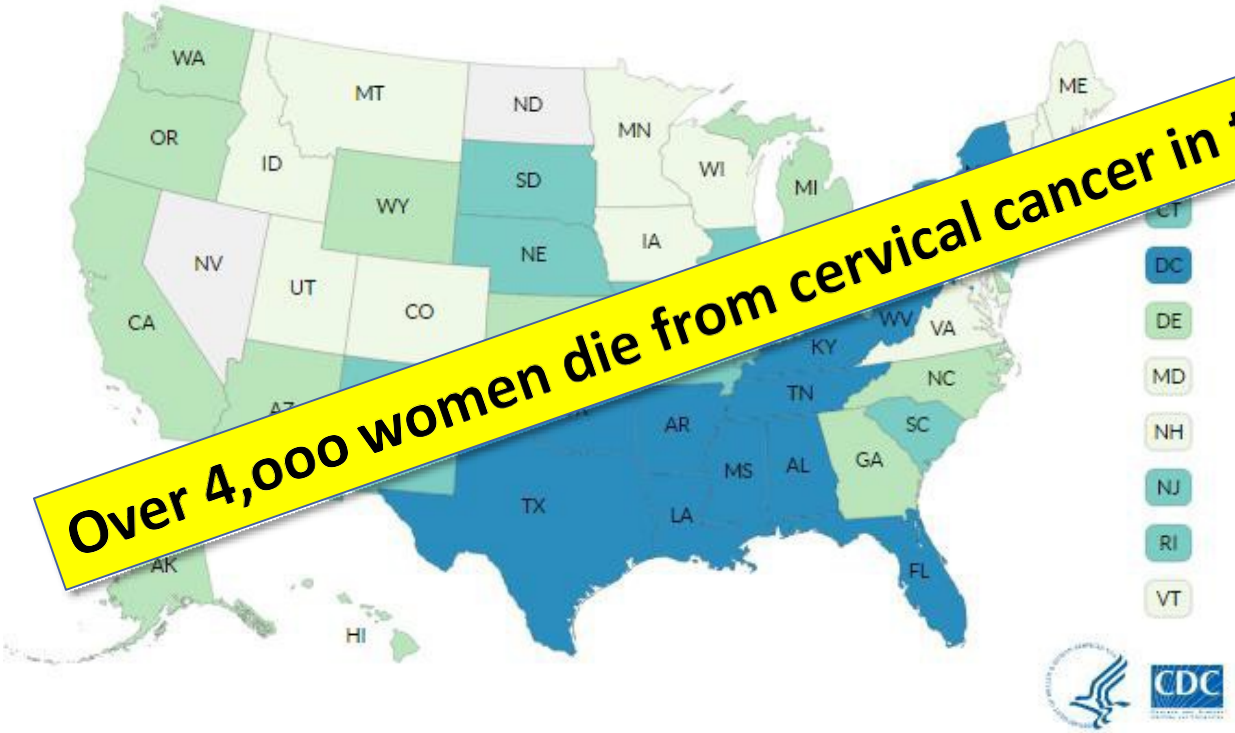
State Variation in Rates of Cervical Cancer

Cervical Cancer Incidence Rates by State, 2013



Over 4,ooo women die from cervical cancer in the US each year

Range

- Data not available‡
- 3.6 to 5.9
- 6.0 to 7.1
- 7.2 to 7.7
- 7.8 to 10.6

Data Source: www.cdc.gov/cancer/cervical/statistics/state.htm

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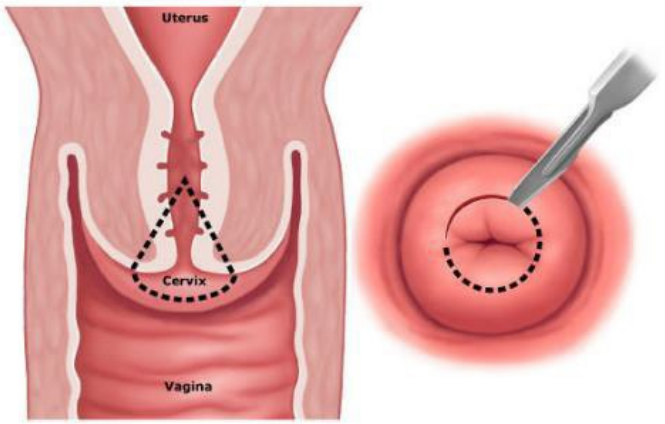
Implications of Pre-Cancerous Lesions

- Ongoing medical follow-up isrecommended
- Cervical conization and LEEP (loop electrosurgical excision procedure) are associated with adverse obstetric morbidity
- Subsequent pregnancies are at riskof:
  - Perinatalmortality
  - Pretermdelivery
  - Low birthweight
- Financial costs ofcare



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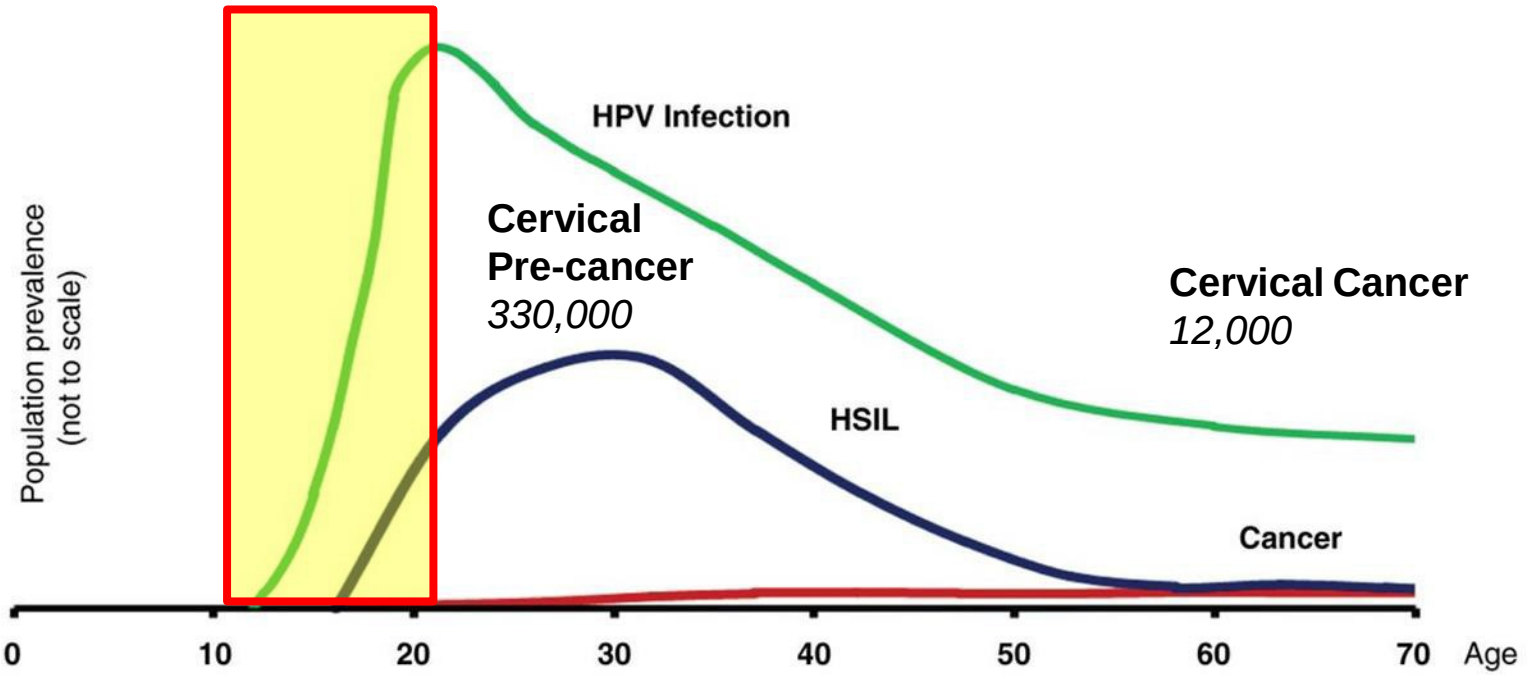
HPV Vaccination Eliminates HPV Infection and the Downstream Consequences



Data Source: Schiffman M et al., 2013

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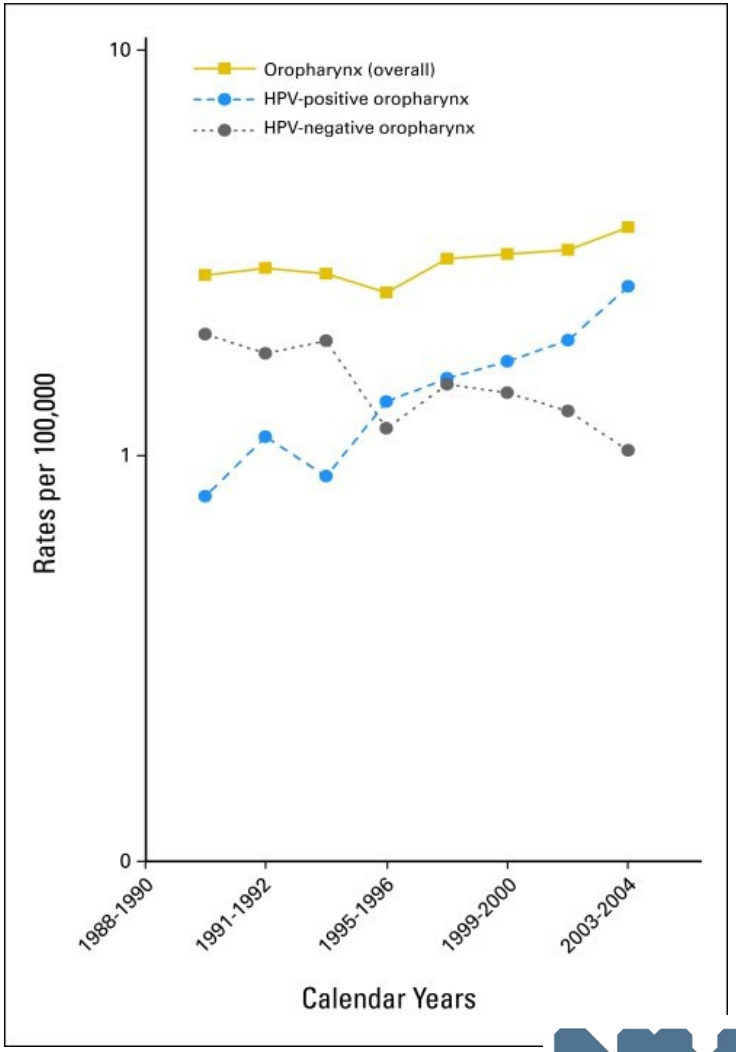
Oropharyngeal Cancers

- More new oropharyngeal cancers than cervical cancers

- HPV negative
  - Smoking and alcohol-related
  - Decreased50%

- HPV positive
  - Increased by225%



Data Source: M. Moore. Adopted from Chaturvedi A., 2010

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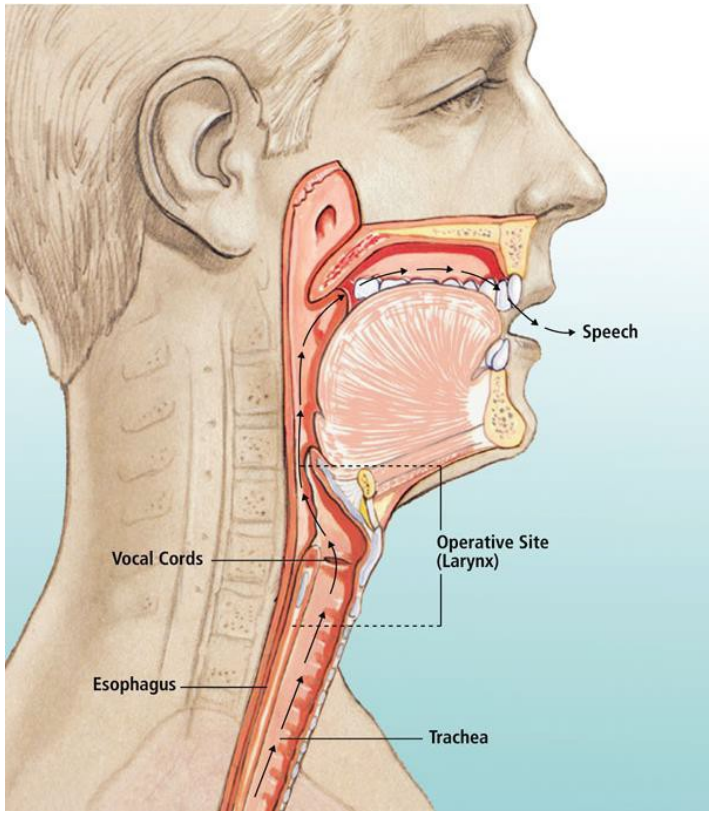
Anatomy of the Oropharynx



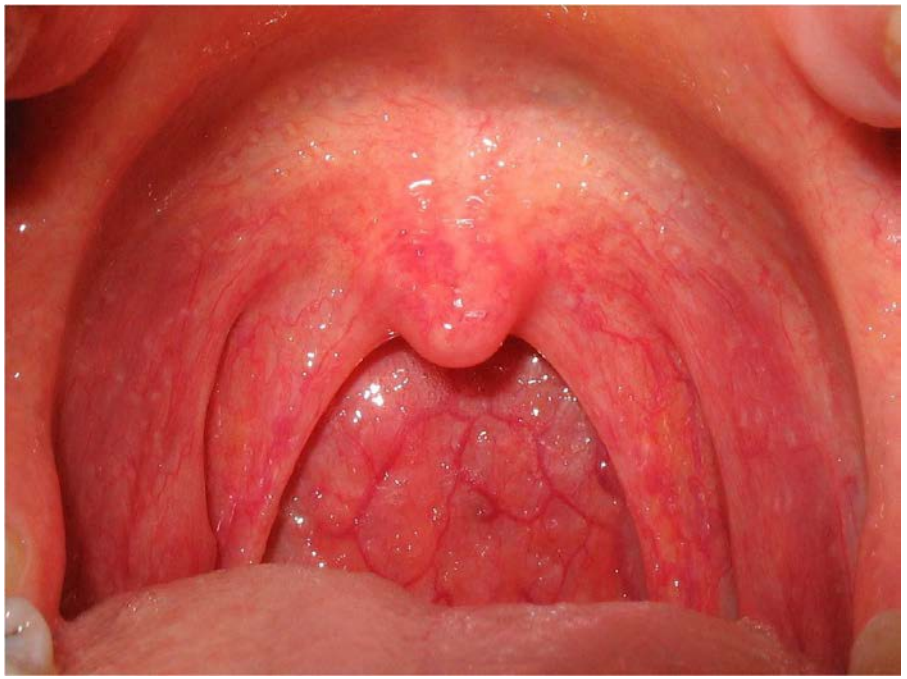


Photo Credit (left): www.inhealth.com/category_s/60.htm
Photo Credit (right): https://nn.wikipedia.org/wiki/S%C3%A5r_hals

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Oropharyngeal Cancers

Photo Credit: Dr. Michael Moore, UC Davis

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Side Effects of Non-surgical Therapy

Side Effect	Percent affected
Taste Disturbance	88%
Nausea/Vomiting	36%
Dry Mouth	29-38%
Esophageal Stricture	5%
Require G tube > 1 year	9%

Data Source: Irune, et al, 2014; Kocak-Uzel, et al, 2014; Nutting, et al, 2011; McBride, et al, 2014

Photo Credit: http://www.jpalliativecare.com/viewimage.asp?img=IndianJPalliatCare_2010_16_2_74_68408_f3.jpg

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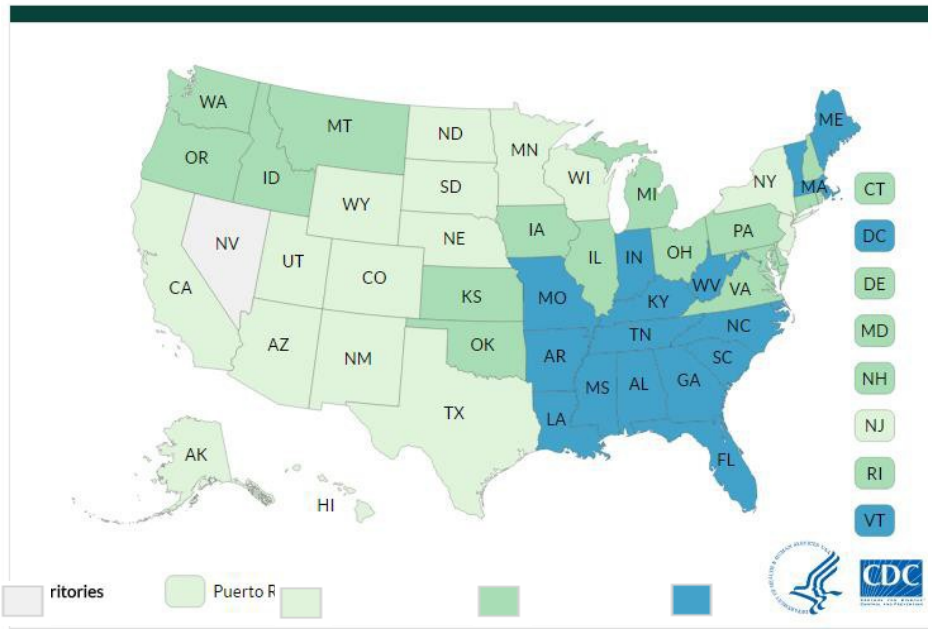
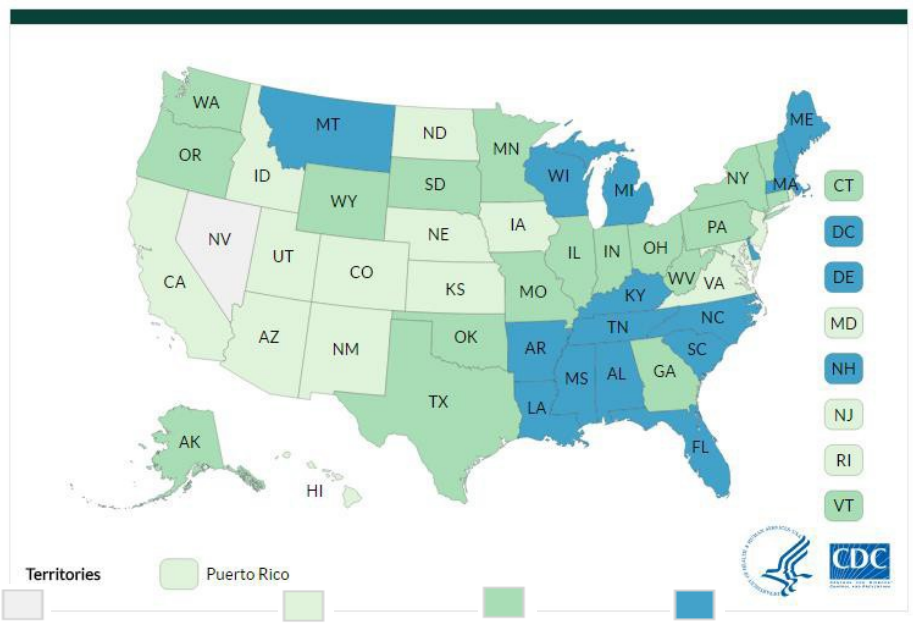
State-based Disparities in HPV-Associated Oropharyngeal Cancer

Men



Data Not Available | 4.53 to 7.02 | 7.03 to 8.19 | 8.20 to 9.73

Women



Data Not Available | .80 to 1.52 | 1.53 to 1.82 | 1.83 to 2.33

Data Source: Adapted from www.cdc.gov/cancer/hpv/statistics/state/oropharyngeal.htm

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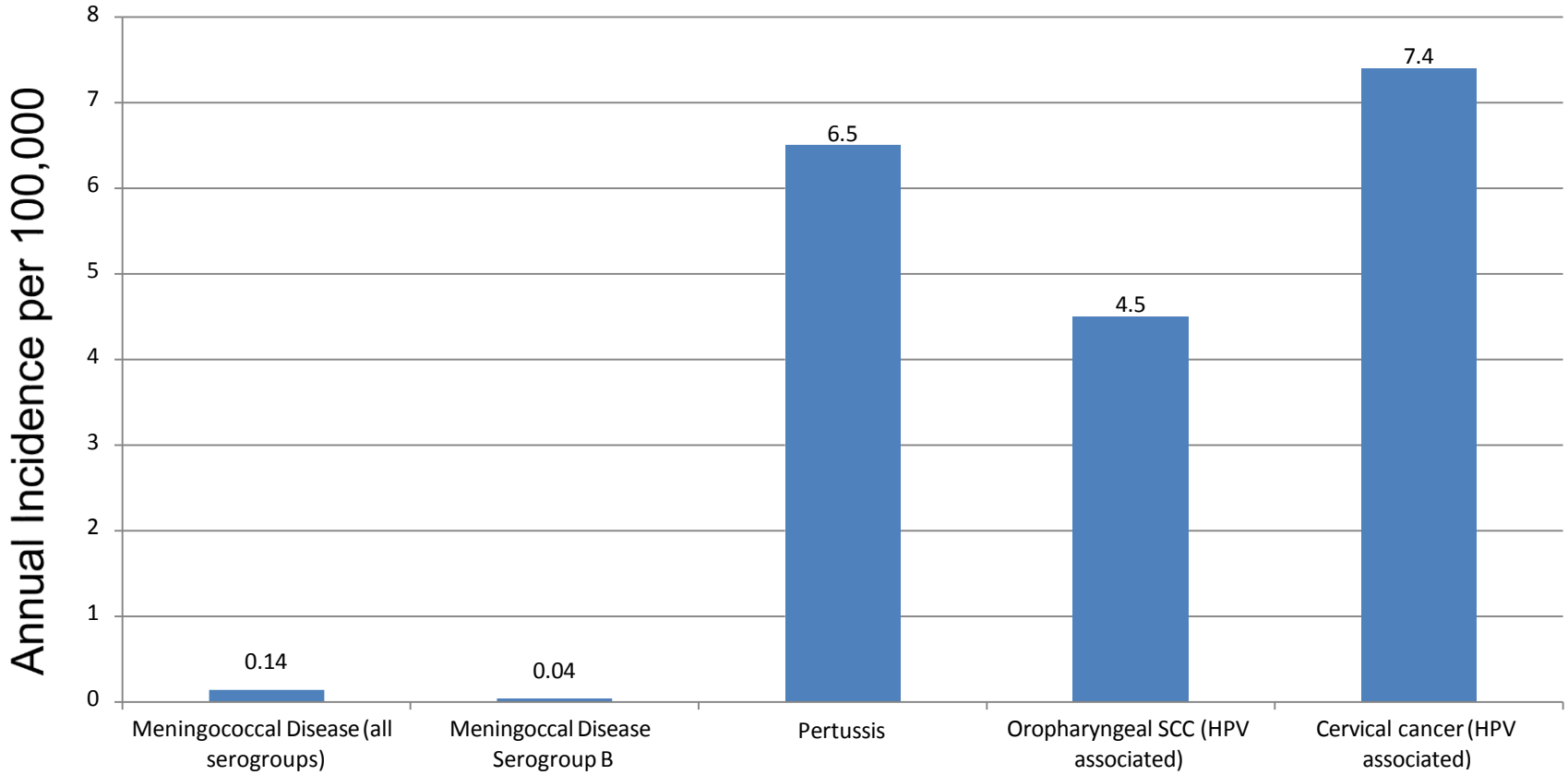
Incidence of Diseases Covered in Adolescent Vaccine Series



Meningococcal Data Source: 2014 CDC ABCs
Pertussis Data Source: 2015 CDC ABCs
Cervical & Oropharyngeal Data Source: 2008-2012 SEER

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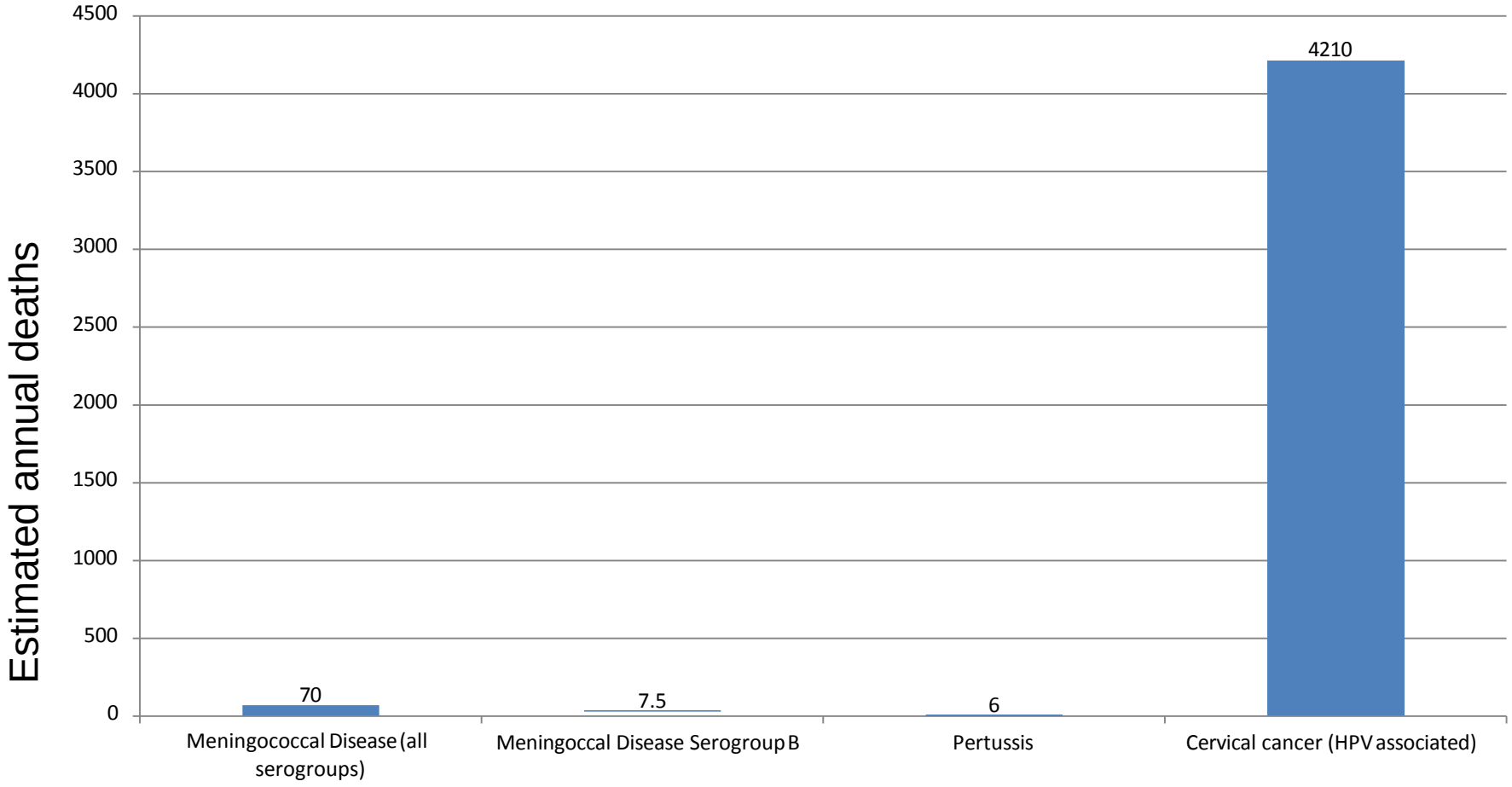
Deaths from Diseases Covered in Adolescent Vaccine Series



Meningococcal Data Source: 2014 CDC ABCs
Pertussis Data Source: 2015 CDC ABCs
Cervical Data Source: 2016 American Cancer Society

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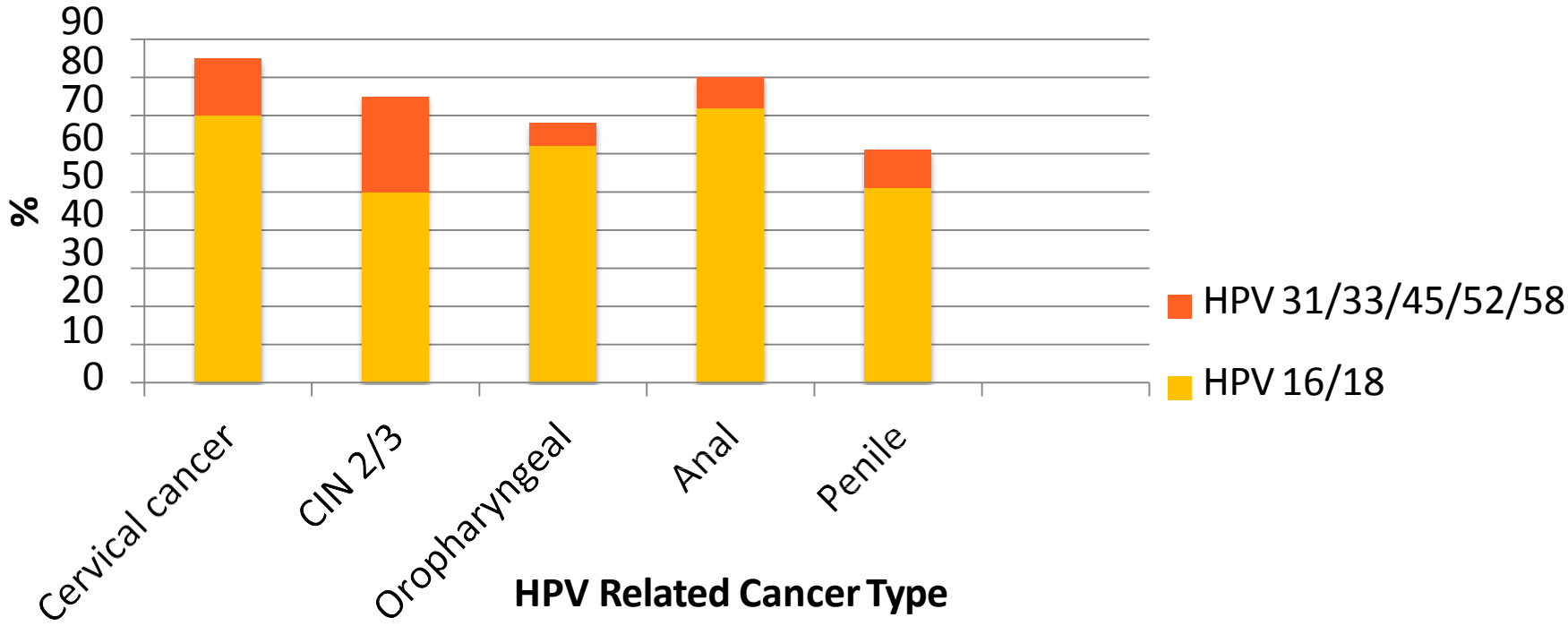
Percentage of HPV types found in common HPV related cancers, US Data



9-valent vaccine is estimated to prevent: 85% of cervical, 70% of oropharyngeal, 80% of anal, and 60% of penile cancers

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2017 Immunization Schedule

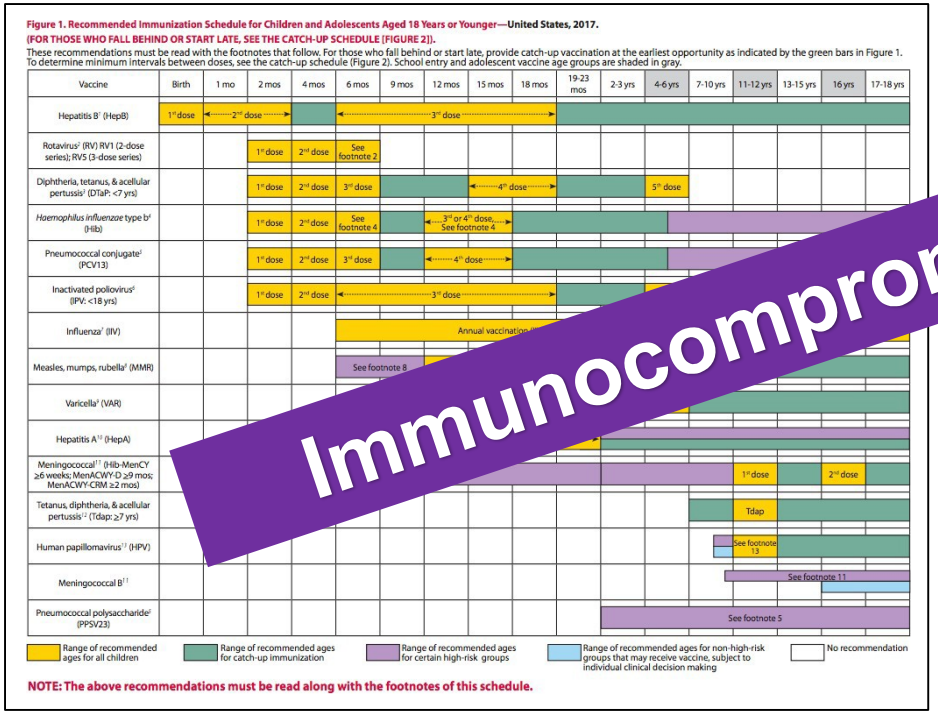

Figure 1. Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger—United States, 2017.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are shaded in gray.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Hepatitis B[1] (HepB)	1st dose	2nd dose			3rd dose												
Rotavirus[2] (RV) RV1 (2-dose series); RV5 (3-dose series)			1st dose	2nd dose	See footnote 2												
Diphtheria, tetanus, & acellular pertussis[3] (DTaP: <7 yrs)			1st dose	2nd dose	3rd dose			4th dose				5th dose					
Haemophilus influenzae type b[4] (Hib)			1st dose	2nd dose	See footnote 4		3rd or 4th dose, See footnote 4										
Pneumococcal conjugate[5] (PCV13)			1st dose	2nd dose	3rd dose		4th dose										
Inactivated poliovirus[6] (IPV: <18 yrs)			1st dose	2nd dose	3rd dose												
Influenza[7] (IIV)					Annual vaccination												
Measles, mumps, rubella[8] (MMR)					See footnote 8												
Varicella[9] (VAR)																	
Hepatitis A[10] (HepA)																	
Meningococcal[11] (Hib-MenCY ≥6 weeks; MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)														1st dose		2nd dose	
Tetanus, diphtheria, & acellular pertussis[12] (Tdap: ≥7 yrs)														Tdap			
Human papillomavirus[13] (HPV)														See footnote 13			
Meningococcal B[11]															See footnote 11		
Pneumococcal polysaccharide[5] (PPSV23)											See footnote 5						

Range of recommended ages for all children | Range of recommended ages for catch-up immunization | Range of recommended ages for certain high-risk groups | Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision making | No recommendation

NOTE: The above recommendations must be read along with the footnotes of this schedule.

Immunocompromised: 3 doses

Age at 1[illegible] vaccine

- **Before 15th Bday: 2 doses**
- **On or after 15th Bday: 3 doses**
- **Immunocompromised: 3 doses**

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What Forms of "Immunocompromise" Necessitate a 3-dose HPV Vaccine Series?

Needs 3 doses irrespective of age:

Primary or secondary conditions that might reduce cell-mediated or humoral immunity

Examples:

- B lymphocyte Ab deficiencies
- T lymphocyte complete or partial defects
- HIV infections
- Malignant neoplasm
- Transplantation
- Autoimmune disease
- Immunosuppressive therapy

Can use 2-dose series for those initiating before 15th birthday:

- Asthma
- Asplenia
- Diabetes mellitus
- Sickle cell disease
- Chronic granulomatous disease
- Chronic disease of liver, lung, kidneys
- Heart disease
- CNS barrier defects (eg, cochlear implant)
- Complement deficiency, persistent complement component deficiency

Slide courtesy of Dr. Sean O'Leary

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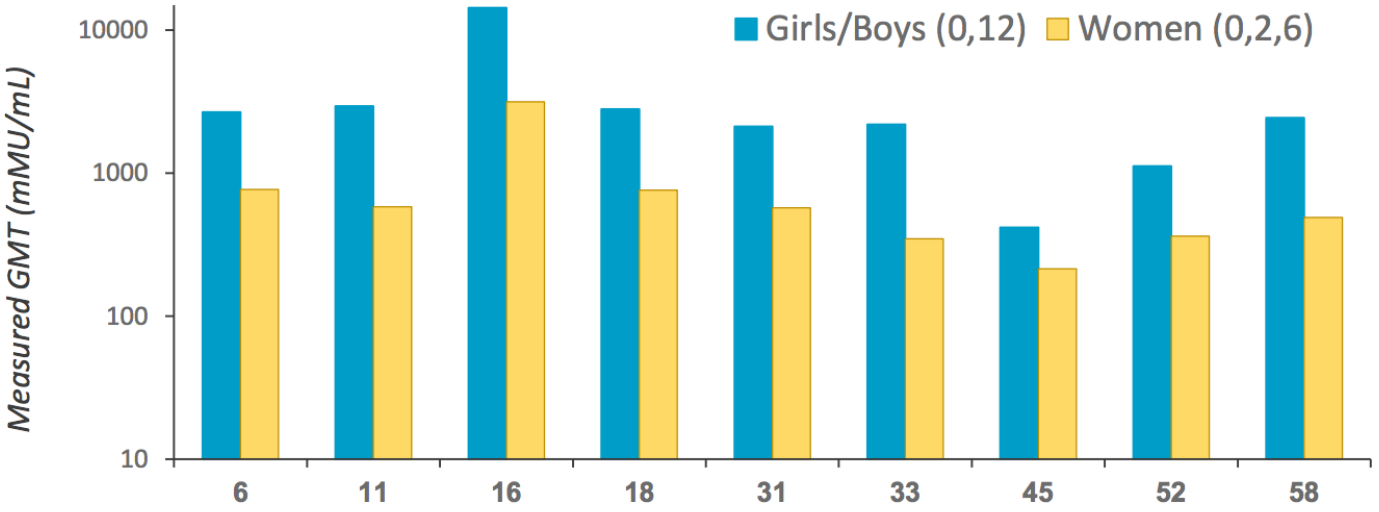
2 –Dose Immunogenicity Trial

9vHPV 2-Dose Immunogenicity Trial

Non-inferior GMT at 1 month post-last dose in 2-dose girls/boys vs. 3-dose women



Fold difference (girls & boys /women)	3.47	5.07	4.54	3.69	3.70	6.31	1.96	3.08	4.98
95% CI	*(2.93, 4.11)*	*(4.32, 5.94)*	*(3.84, 5.37)*	*(3.06, 4.45)*	*(3.08, 4.45)*	*(5.36, 7.43)*	*(1.61, 2.37)*	*(2.64, 3.61)*	*(4.23, 5.86)*

Data Source: Luxembourg presented at February 2016 ACIP

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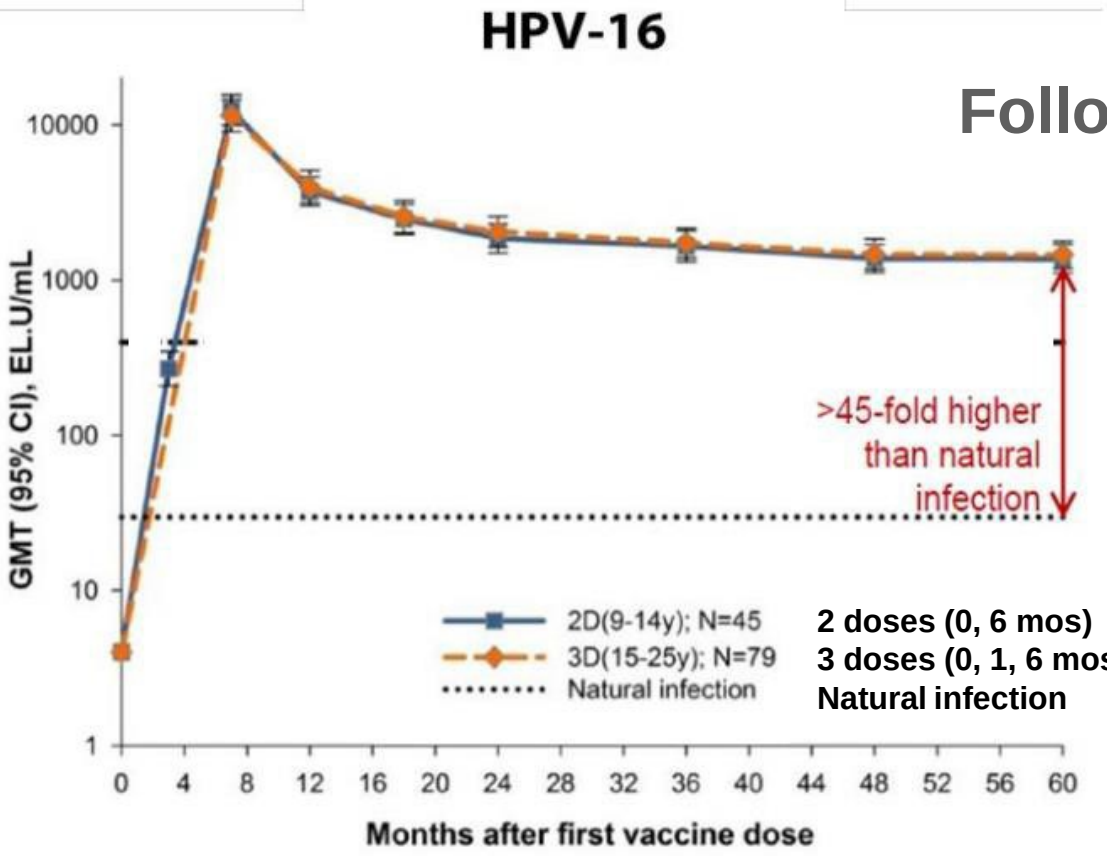
Does Immunity Last?



Follow-up through month 60

RESULTS: Antibody kinetics

- **Similar in 2 groups**
- **Steady**
- **> Natural infection**

2 doses (0, 6 mos) (ages 9-14 y)
3 doses (0, 1, 6 mos) (ages 15-25 y)
Natural infection

Data Source: Adopted from Romanowski, 2016

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Evidence of lasting immunity

- For 2-or 3-dose series?
  - No evidence of waning protection after a 3-dose series
  - So far, antibody persistence after a 2-dose series appears similar to 3-dose series
- How long?
  - Data available through ~10 years for 2vHPV and 4vHPV
  - Longer follow-up, through 14 years, ongoing in some studies

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9vHPV Vaccine Safety

- 7 pre-licensure studies including 15,000 males and females

- Generally well-tolerated
  - Adverse event profile similar to that of 4vHPV across age, gender, race, and ethnicity
  - More injection-site reactions expected amongthose who receive 9vHPV

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HPV Vaccine Long-Term Safety Data

No increased risk of:

- 2011- Allergic reactions, anaphylaxis, GBS, stroke, bloodclots, appendicitis, or seizures (than unvaccinated or who received other vaccines)
- 2013 –Blood clots or AEs related to the immune & CNS (almost 1 million girls)
- 2014 – Venous thromboembolism or blood clots (>1 million women)
- 2012 & 2014 – Autoimmune disorders (2 studies)
- 2015 – Multiple sclerosis or other demyelinating diseases
- 2016- Over 60 conditions
- 2012 - Vaccine may be associated with skin infections where the shot is given during the two weeks after vaccination and fainting on the day the shot is received

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Vaccine Efficacy from Clinical Trials

Vaccine	Disease	Efficacy, Females	Efficacy, Males
HPV4	High-grade abnormalities in cervix	100%	N/A
	High-grade abnormalities in vagina	100%	N/A
	High-grade abnormalities in vulva	100%	N/A
	High-grade abnormalities in anus	N/A	75%*
	Genital Warts	99%	89%
HPV2	High-grade abnormalities in cervix	93%	N/A

* Only among men-who-have-sex-with-men

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Efficacy vs Effectiveness

- Efficacy - reduction in disease under experimental conditions
  - Clinical trials

- Effectiveness – reduction in disease in "real world" setting
  - Observational/ecological studies
  - Linked studies

Source: ACS. Saslow 2016

HPV Vaccine Effectiveness from NHANES 2003-2014

Age Group	4v HPV Prevalence Prevaccine Era (2003-2006)	4v HPV Prevalence Vaccine Era (2011-2014)
14-19 y	11.5%	3.3%
20-24 y	18.5%	7.2%
25-29 y	11.8%	8.8%

Source: Oliver SE. J Infec Dis. 2017

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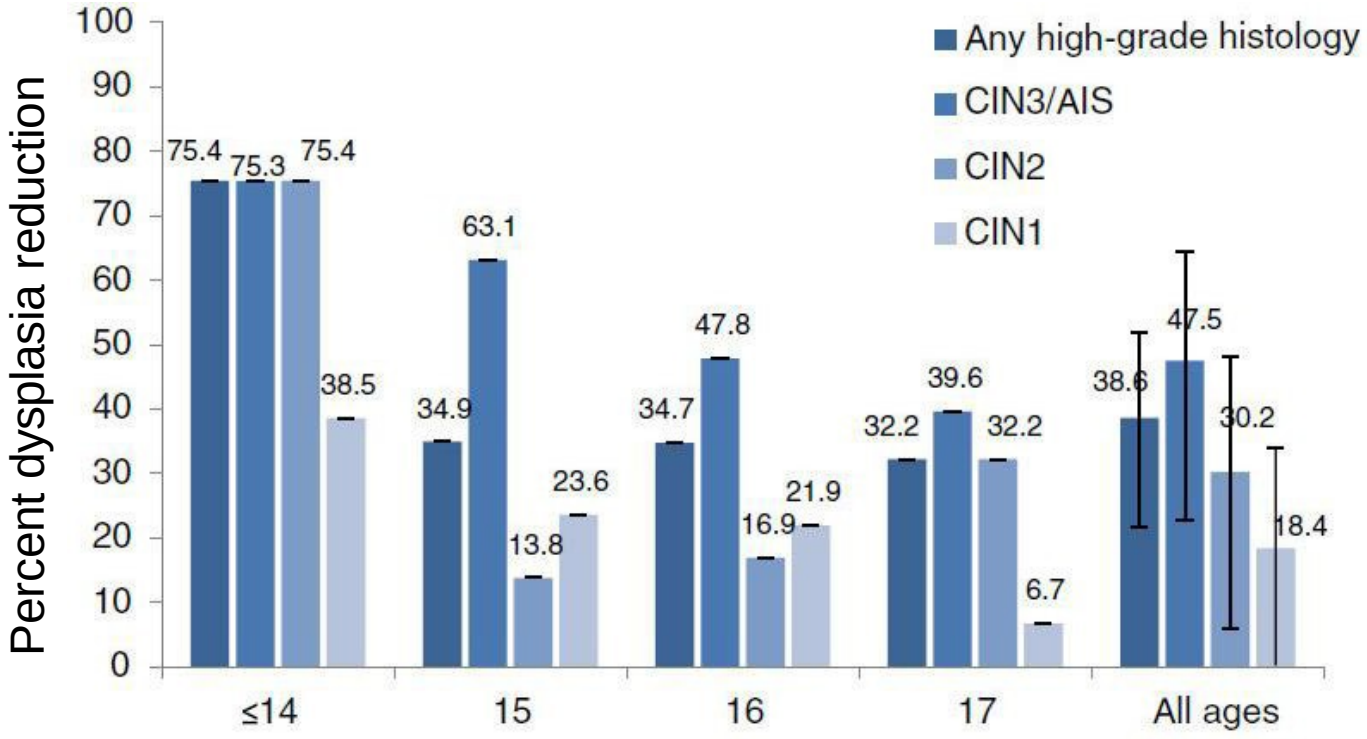
HPV Vaccine Effectiveness

Percent reduction in cervical dysplasia 5 years after vaccination, by age in 2007



Graph Source: Gertig DM, 2013

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HPV Vaccine Effectiveness from NHANES 2003-2014

	Unvaccinated (2011-2014)	Vaccinated (2011-2014)
4v HPV Prevalence	12.2%	2%

This corresponds to a vaccine effectiveness of 83%

Source: Oliver SE. J Infec Dis. 2017

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HPV Vaccine Effectiveness

Table 1. Vaccine Effectiveness Against Human Papillomavirus (HPV) 16/18-Related Cervical Intraepithelial Neoplasia 2 or Worse Among Women Receiving Quadrivalent HPV Vaccine at the Start of the Baseline Study: Per-Protocol Efficacy Population

Endpoint	n	Number of Cases	Person-Years at Risk	Incidence Rate per 100 Person-Years at Risk (95% Confidence Interval)	Vaccine Effectiveness[a] (%)
HPV16/18-related CIN2+	2084	0	13c794.9	0.0 (0.0-0.0)	100
By time since day 1 of base study					
4 years or less	1930	0	803.5	0.0 (0.0–0.5)	
>4 to 6 years	2083	0	4119.9	0.0 (0.0–0.1)	
>6 to 8 years	2037	0	3978.7	0.0 (0.0–0.1)	
>8 to 10 years	1914	0	3393.1	0.0 (0.0–0.1)	
>10 to 12 years	1333	0	1479.0	0.0 (0.0–0.2)	
>12 to 14 years	124		20.6	0.0(0.0–17.9)	
By HPV type					
HPV16-related CIN2+	1787	0	11 809.9	0.0 (0.0-0.0)	
HPV18-related CIN 2+	1981	0	13115.5	0.0 (0.0-0.0)	
By lesion type					
CIN 2	2084	0	13 794.9	0.0 (0.0-0.0)	
CIN 3	2084	0	13 794.9	0.0 (0.0-0.0)	
Adenocarcinoma in situ	2084	0	13 794.9	0.0 (0.0-0.0)	
Cervical cancer	2084	0	13 794.9	0.0 (0.0-0.0)	

Abbreviations: CIN, cervical intraepithelial neoplasia; HPV, human papillomavirus.

[a]Vaccine effectiveness measures the relative reduction of the disease incidence in vaccine recipients compared to the baseline incidence rate of 0.287 per 100 person-years established from the incidence rate in an unvaccinated cohort.

Source: Kjaer. CID2018

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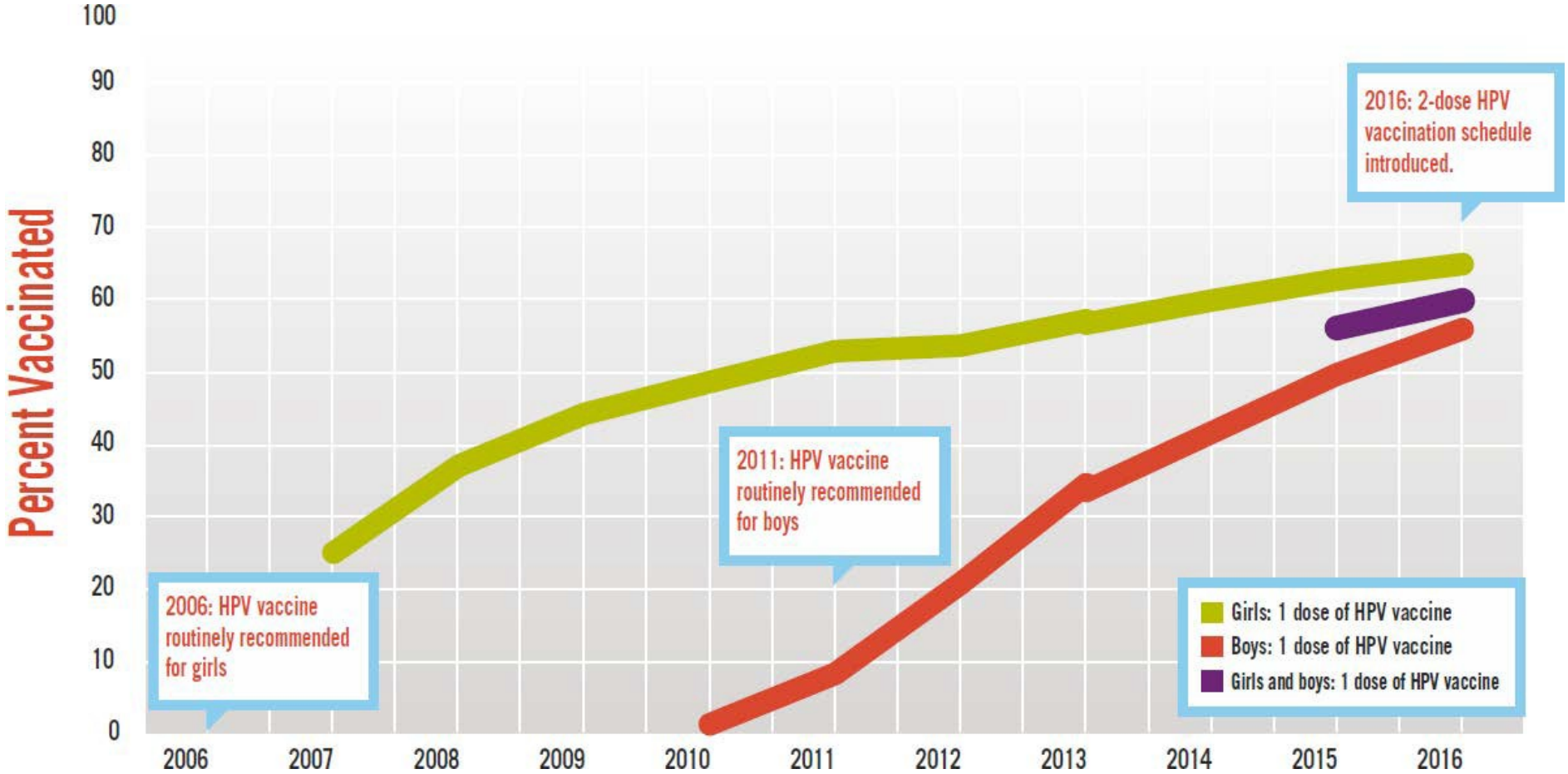
One or More Doses HPV Vaccine Among Females and Males 13-17 Years of Age, US



Source: CDC NIS Teen 2016. MMWR Aug 25, 2017

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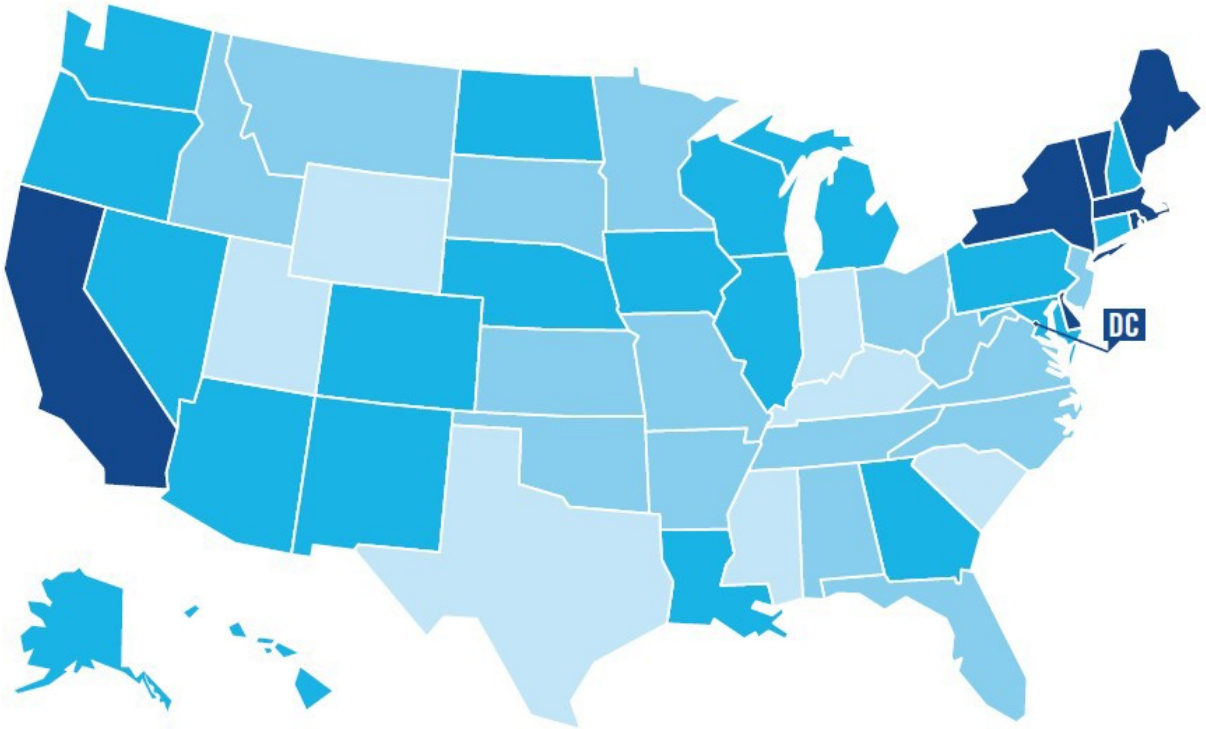
One or More Doses HPV Vaccine Among Females and Males 13-17 Years of Age, US

Percentage of adolescent boys and girls who have received one or more doses of HPV vaccine*



NATIONWIDE

6 OUT OF 10

parents are choosing to get the human papillomavirus vaccine for their children.

National coverage is 60%

Coverage by state:

- 49% or less
- 50-59%
- 60-69%
- 70% or greater

Source: CDC NIS Teen 2016. MMWR Aug 25, 2017

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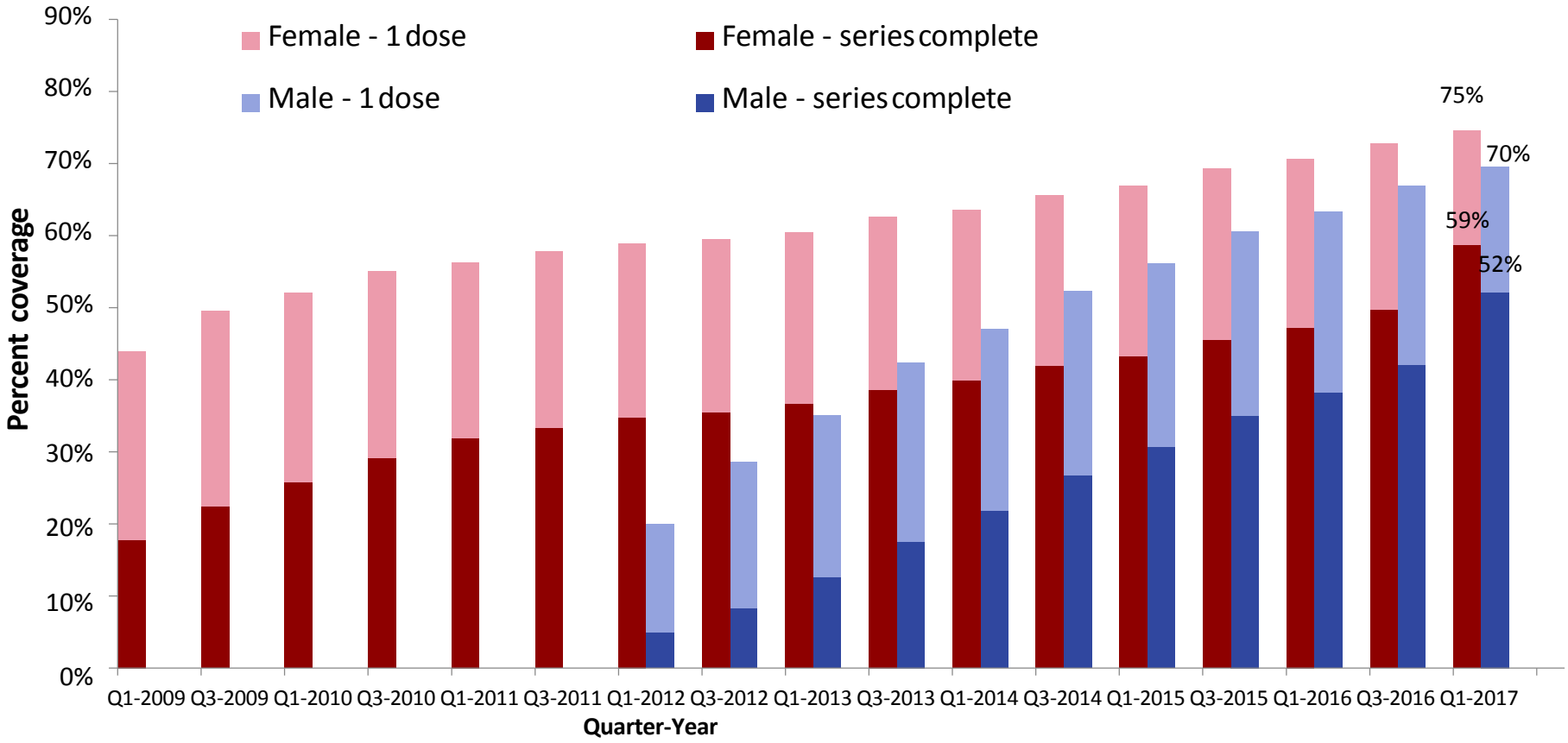
HPV Vaccine Coverage Among Females and Males 13-17 Years of Age, NYC



Data Source: NYC DOHMH Citywide Immunization Registry (numerators) and NYC DOHMH Epiquery and 2010 US Census (population estimates). [1] ACIP has recommended routine HPV vaccination for females ages 9-26 since 2006 and for males ages 11-21 since 2011.

[2] Series can be completed with 2 or 3 doses depending on series initiation at <15 years of age and interval between dose 1 and dose 2 is >5 months

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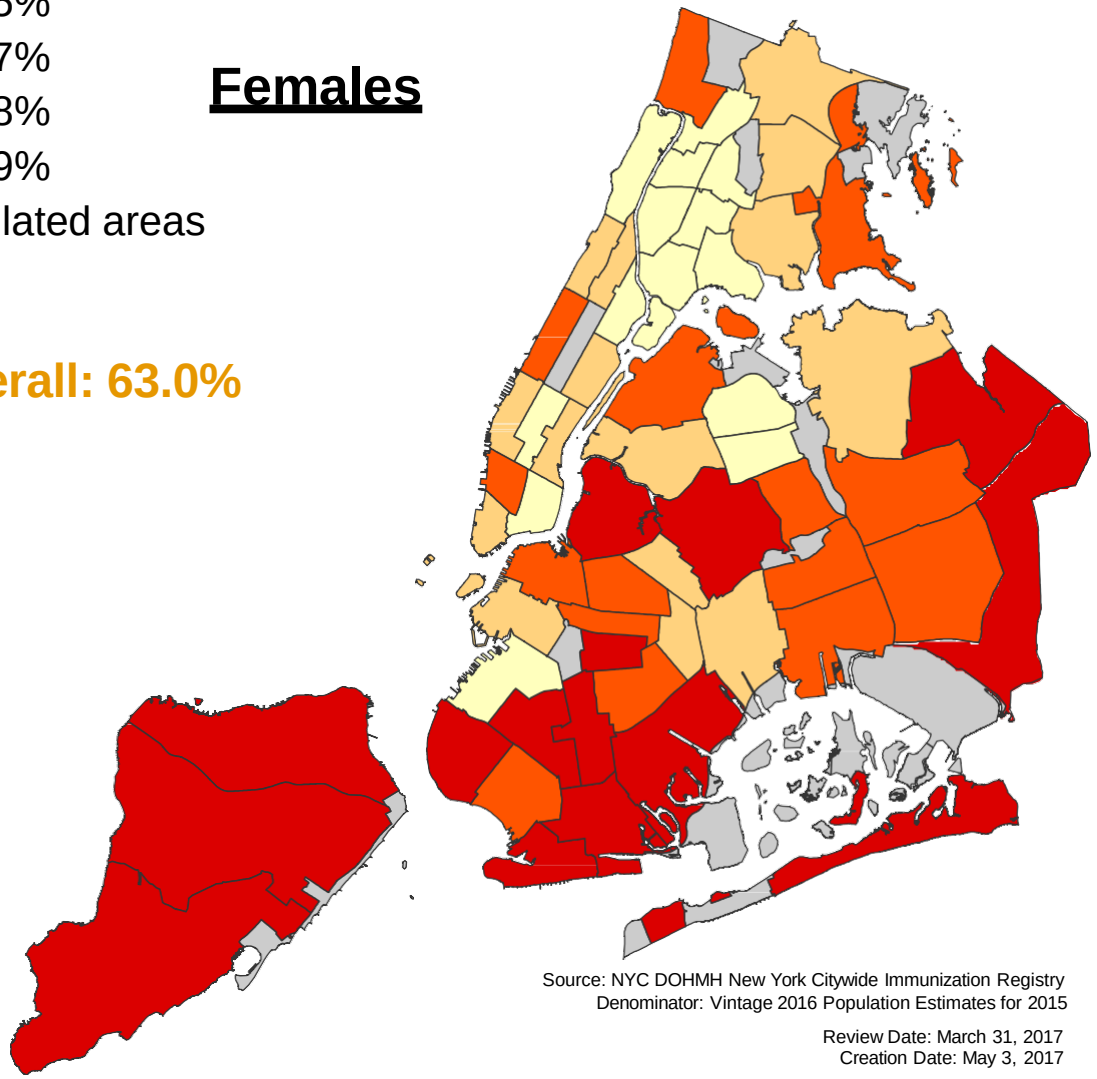
Disparities in HPV Vaccine Coverage, NYC, Series Complete

18% - 45%
46% - 57%
58% - 68%
69% - 89%
Unpopulated areas

Females

NYC Overall: 63.0%



Source: NYC DOHMH New York Citywide Immunization Registry
Denominator: Vintage 2016 Population Estimates for 2015

Review Date: March 31, 2017
Creation Date: May 3, 2017

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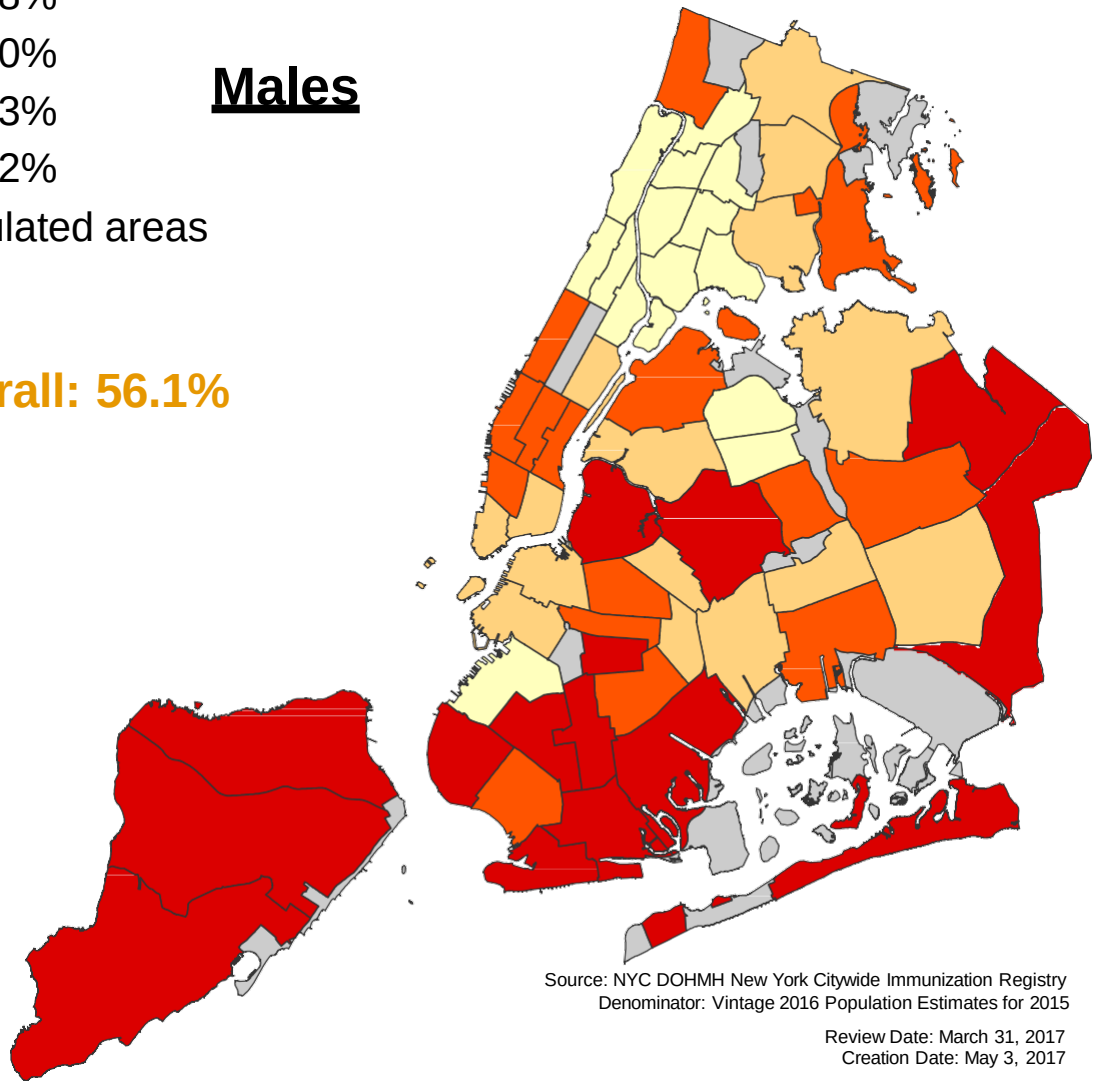
Disparities in HPV Vaccine Coverage, NYC, Series Complete

14% - 38%
39% - 50%
51% - 63%
64% - 82%
Unpopulated areas

Males

NYC Overall: 56.1%



Source: NYC DOHMH New York Citywide Immunization Registry
Denominator: Vintage 2016 Population Estimates for 2015

Review Date: March 31, 2017
Creation Date: May 3, 2017

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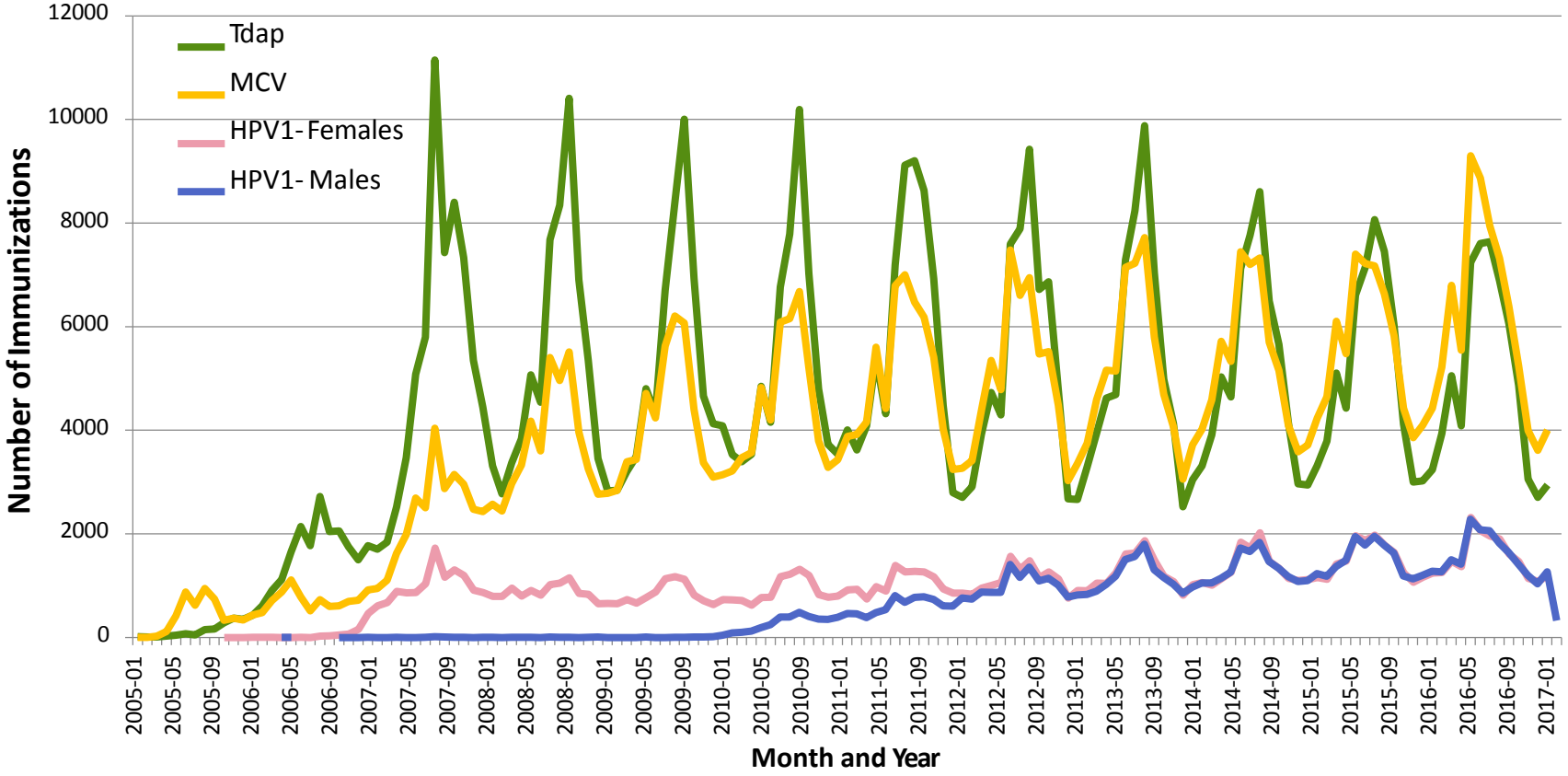
Missed Opportunities for HPV Vaccine Administration, NYC



Tdap, MCV4, and first HPV doses administered to 11 year-olds each month from January 2005 – April 2017. Overall Tdap and MCV4 dosesare shown. HPV vaccine doses are reported separatelyfor males and females.

Reference: Sull M, et al. Pediatrics,2014;134(6):e1576-1583

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How Should We Introduce the Vaccine?

The Architecture of Provider-Parent Vaccine Discussions at Health Supervision Visits

Douglas J. Opel, John Heritage, James A. Taylor, Rita Mangione-Smith, Halle Showalter Salas, Victoria DeVere, Chuan Zhou and Jeffrey D. Robinson

Pediatrics 2013;132;1037; originally published online November 4, 2013;

Announcements Versus Conversations to Improve HPV Vaccination Coverage: A Randomized Trial

Noel T. Brewer, PhD,[a,b] Megan E. Hall, MPH,[a] Teri L. Malo, PhD,[b] Melissa B. Gilkey, PhD,[c] Beth Quinn, BS,[d] Christine Lathren, MD[a]

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How Should We Introduce the Vaccine?

- Opel et al: 'Presumptive recommendation'
  - "We have some shots to do today"
  - Observational study
- Brewer et al: 'Announcements'
  - "Your child is due for 3 vaccines today…"
  - RCT

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Putting Presumptive into Practice: Same Day, Same Way

"Your child needs 3 vaccines today- Tdap, HPV and meningococcal"

"Today, your child should have 3 vaccines. They're designed to protect him from meningitis, cancers caused by HPV and tetanus, diphtheria, and pertussis."

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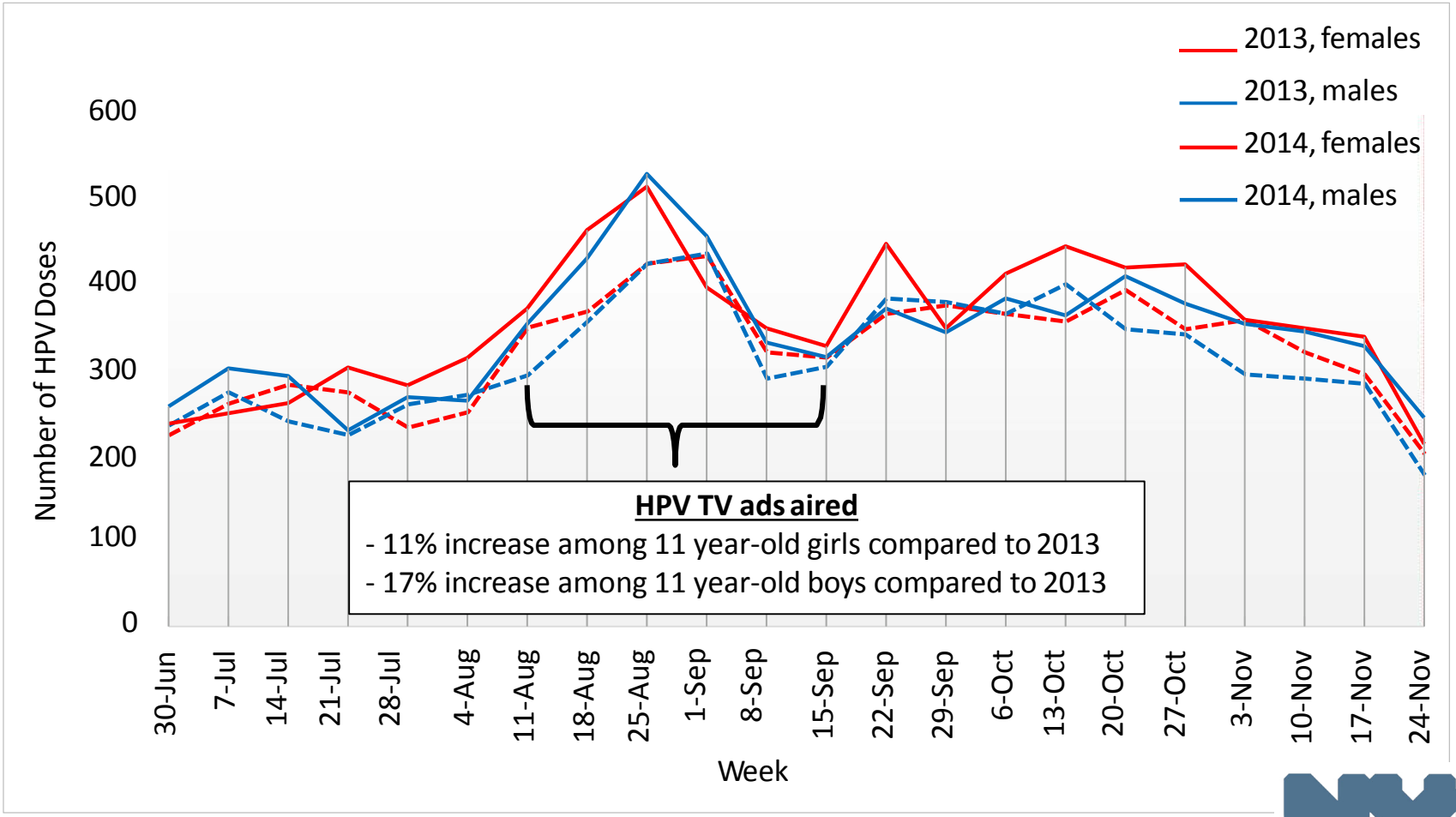
NYC Advertising Campaign

NYC Health

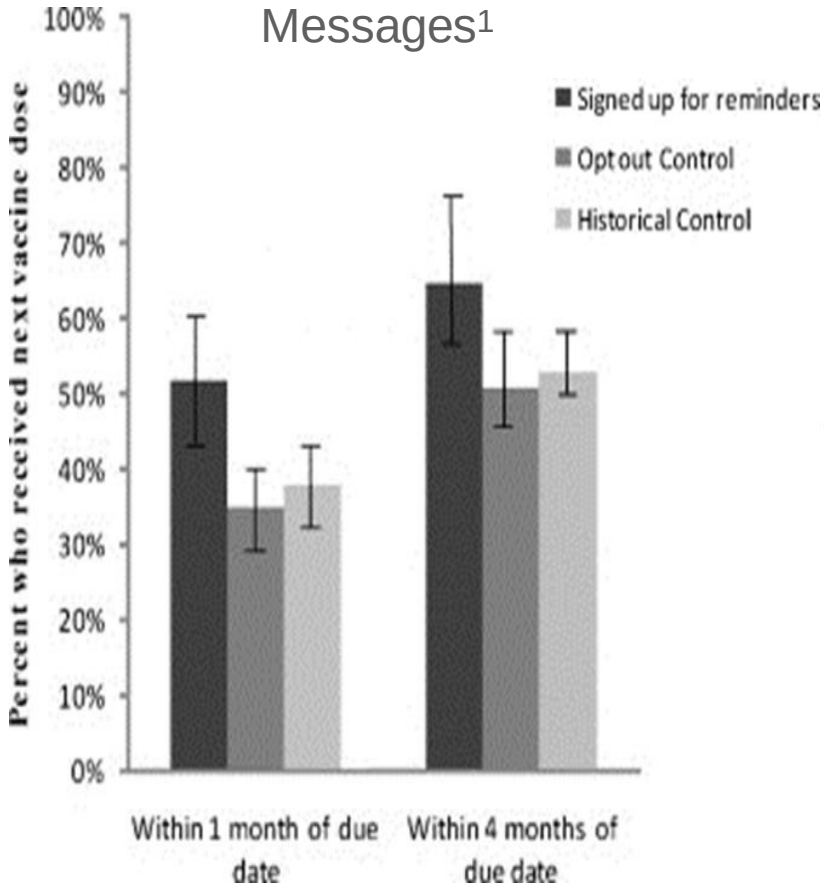
Effectiveness Evaluation of Citywide HPV Campaigns, 2014



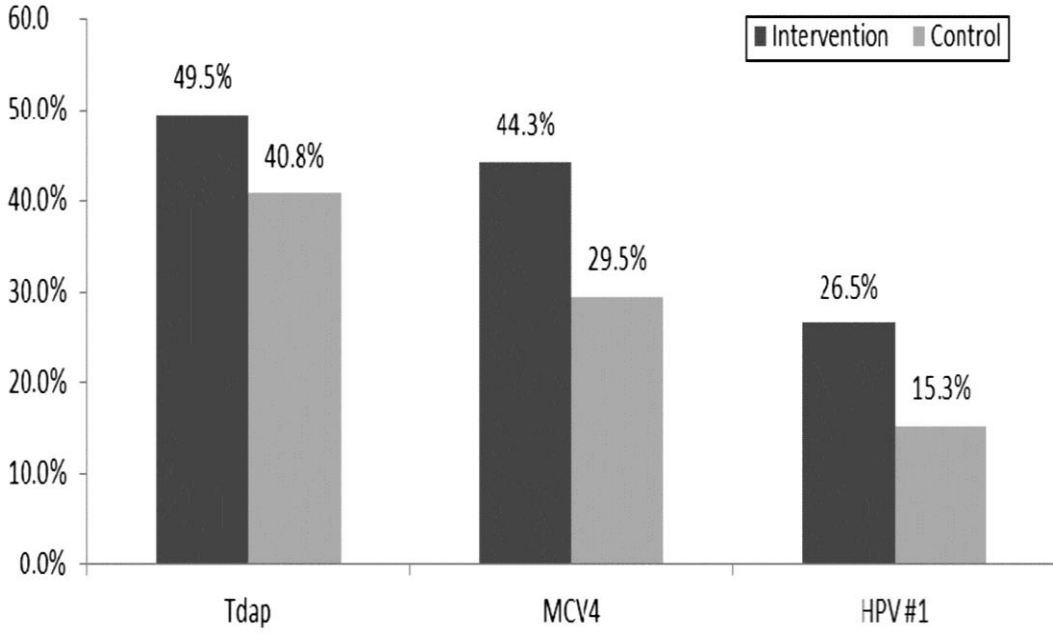
NYC Health

Reminder/Recall Strategies Can Increase HPV Vaccination Rates

Text Messages[1]

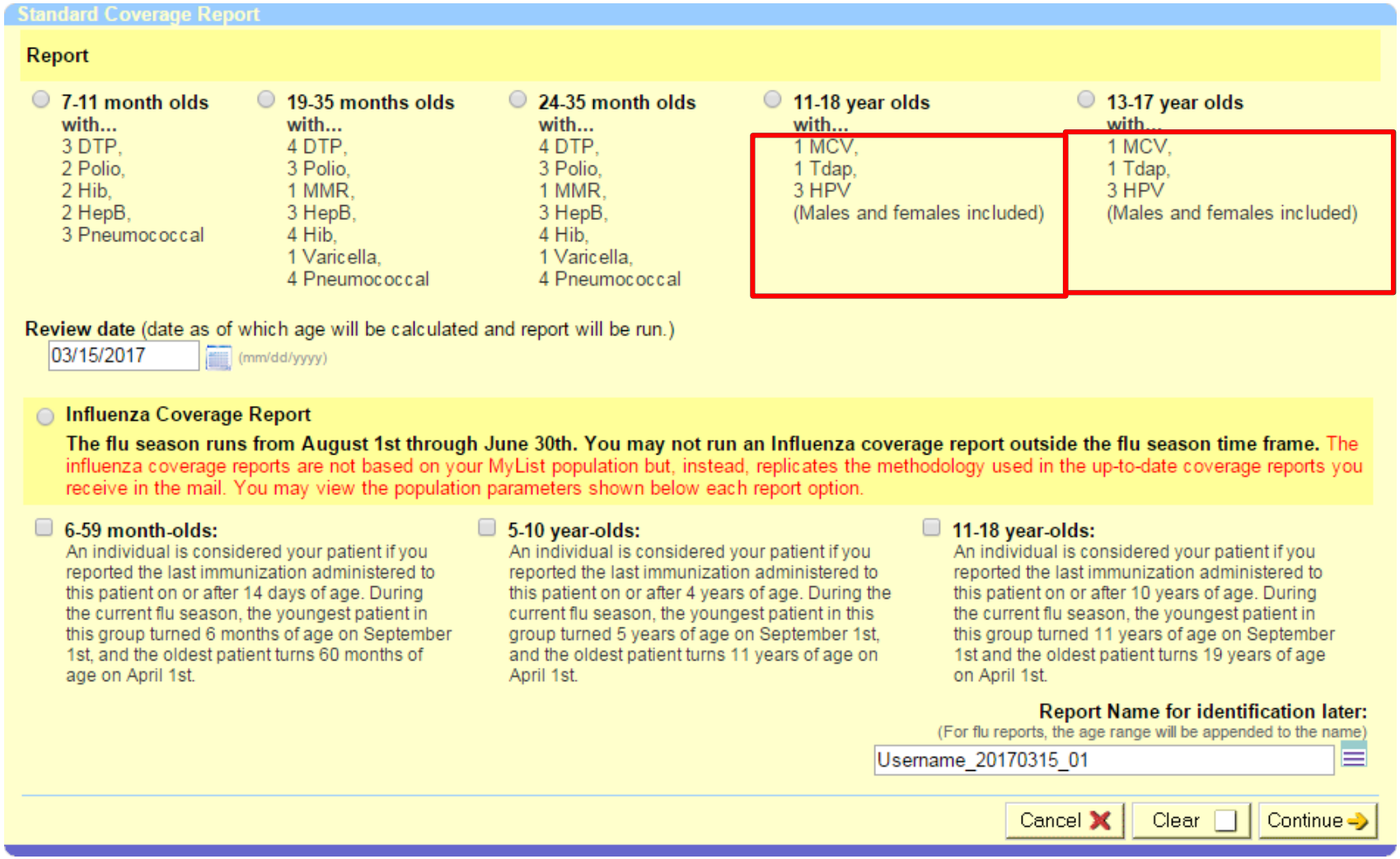


Letters & Telephone calls[2]



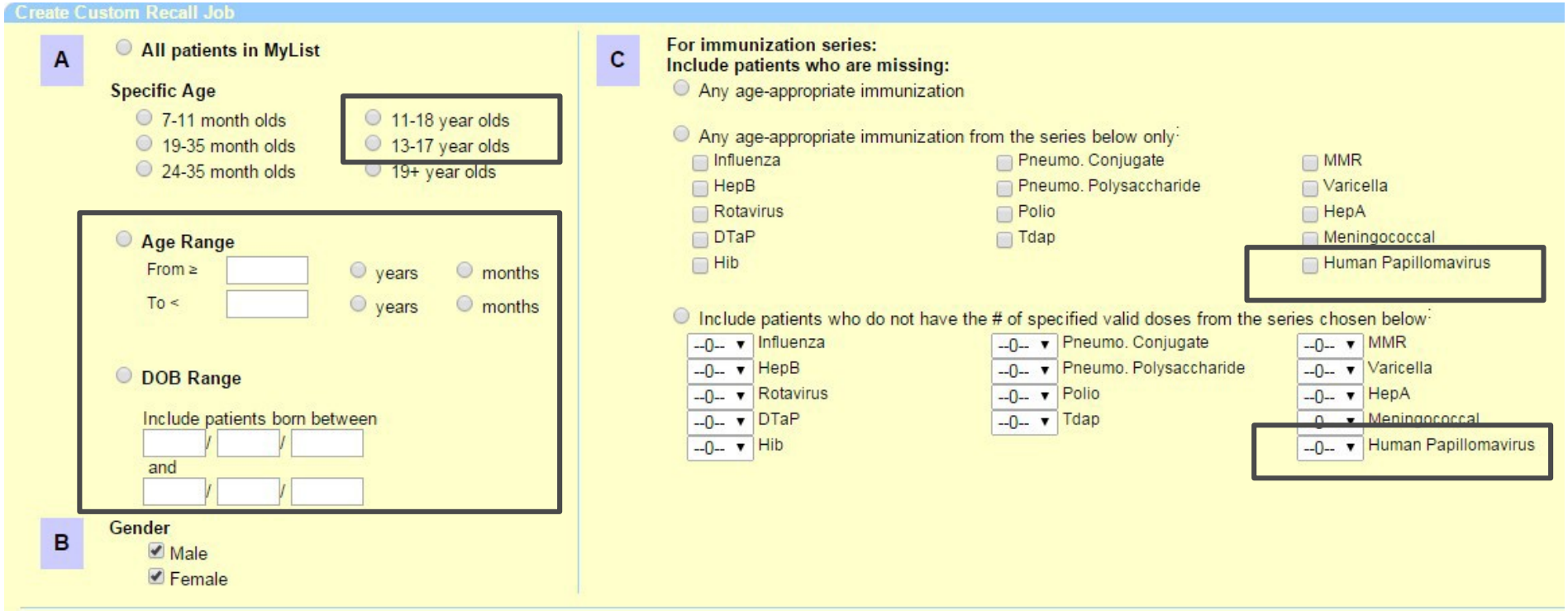
Graph Sources: Left) Kharbanda. E et al., 2011; Right) Suh CA et al., 2012

CIR for Coverage Reports



NYC Health

CIR for Recall: Customizable



Health

CIR for Recall: Lists Letters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Recall Name: Username_MyList_Due_Any_20170315													
2	Date Created: 3/15/2017 12:20:59 PM													
3	Created By: 22904													
4	Based On: Patients in 'My List'													
5	Custom Recall: All Ages, Gender: Males and Females													
6	Total Patients: 19, Patients not UTD: 19 (100%) Patients UTD: 0 (0%)													
7	Doses: Patients missing any age appropriate immunization													
8														
9	**Last Name**	**First Name**	**DOB**	**Gender**	**CIR Id**	**Medrec Num**	**Address**	**City**	**State**	**Zip**	**Home Phone**	**Cell Phone**	**Opted Out Text Msg**	**Due Now**
10	ALCOTT	LOUISA	02/01/2008	F	543222663		13 Downing Street, 1ST FLOOR	BROOKLYN	NY	11215	212-676-2312	917-319-0521	N	HPV-1
11	KATZ	FELIX	05/26/1950	M	601854063		195 Main Street, 3C	BROOKLYN	NY	11205	646-479-8426		N	Influenza-1
12	RODGERS	AARON	03/13/1980	M	908399945		4209 28th Street, 5	QUEENS	NY	11105	347-396-2544		N	DTP-1, MMR-1, Varicella-1
13	RUBBLE	BARNEY	04/05/2007	M	883622687		50 Gravel Pit Way	BEDROCK	NY	10101	718-666-6666	718-666-6666	N	Influenza-1, HepB-1, Polio-1, MMR-1, Varicella-1, I
14	TESTDISNEY	TESTBUGS	12/23/1980	M	908386384		4209 28th Street, 5	QUEENS	NY	11101	374-396-2544		N	DTP-1, MMR-1, Varicella-1

March 15, 2017

Dear Parent/Guardian:

Our records show that your child may need the following vaccines:

Patient Name: FELIX KATZ
Immunizations Due Now: Influenza-1

Please call our office at 347-396-2400 to schedule an appointment at your earliest convenience.

Thank you,

To the Parent/Guardian of:
LOUISA ALCOTT
13 Downing Street, 1ST FLOOR
Brooklyn, NY 11215

To the Parent/Guardian of:
FELIX KATZ
195 Main Street, 3C
Brooklyn, NY 11205

To the Parent/Guardian of:
AARON RODGERS
4209 28th Street, 5
Queens, NY 11105

To the Parent/Guardian of:
BARNEY RUBBLE
50 Gravel Pit Way
Bedrock, NY 10101

To the Parent/Guardian of:
TESTBUGS TESTDISNEY
4209 28th Street, 5
Queens, NY 11101

To the Parent/Guardian of:
TESTAARON TESTRODGERS
4209 28th Street, 5
Queens, NY 11105

NYC Health

CIR Text Message Recall

Select message (default recommended.) This message will be sent to each patient on your recall list.

- **Use default message**
- Fill in the fields for the sample message provided.

Your child born in
CIR will insert patient birth YEAR here
is overdue for immunization. Call

FACILITY NAME (up to 42 characters):

Characters remaining: 42

at CONTACT NUMBER:

to schedule.

NOTE: To allow patients to opt out of receiving text message reminders, the line "To stop reminders, text STOP" will be added to the end of your message.

Patients who text "STOP" will not receive any future text messages via the CIR.

- **Use custom message**
- Type in your custom message. Make sure to include your facility name.

  (Messages are limited to Latin alphabets.)

130 character limit

Characters remaining: 130

Please note that it is your responsibility to adhere to the laws, rules, and regulations that apply to the disclosure of confidential and sensitive information in the content of your custom text message.

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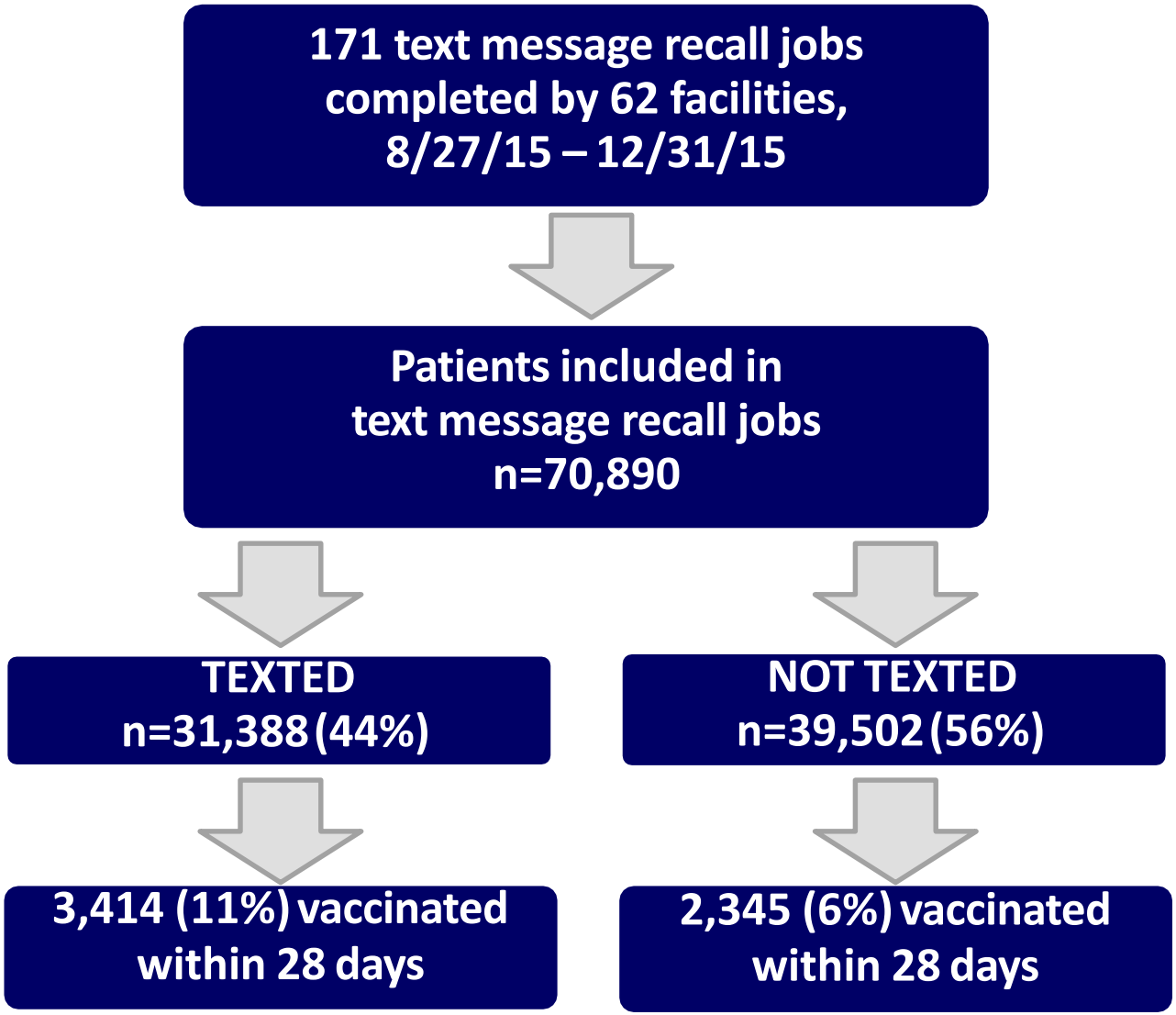
Impact of Text Message Recall



NYC Health

Standing Orders

- Single physician order for all patients for recommended vaccines
- Stipulate that all patients meeting certain criteria should be vaccinated – age, underlying medical condition
- Components
  1. Nurse/MA tracks immunization history
  2. Nurse/MA identifies eligible patients
  3. Nurse/MA educates patients –alert provider if patient still has questions or wants to talk with the provider
  4. Nurse administers vaccines

NYC Health

Benefits of Standing Orders

- Shown to be effective in both adults and children
  - For children, use of standing orders is associated witha median increase in vaccination coverage of 28%
  - Most effective evidence-basedmethod
- Overcome administrative barriers and save time
- 'Presumptive' recommendation in action

Source: www.thecommunityguide.org/vaccines/RRstandingorders.html

NYC Health

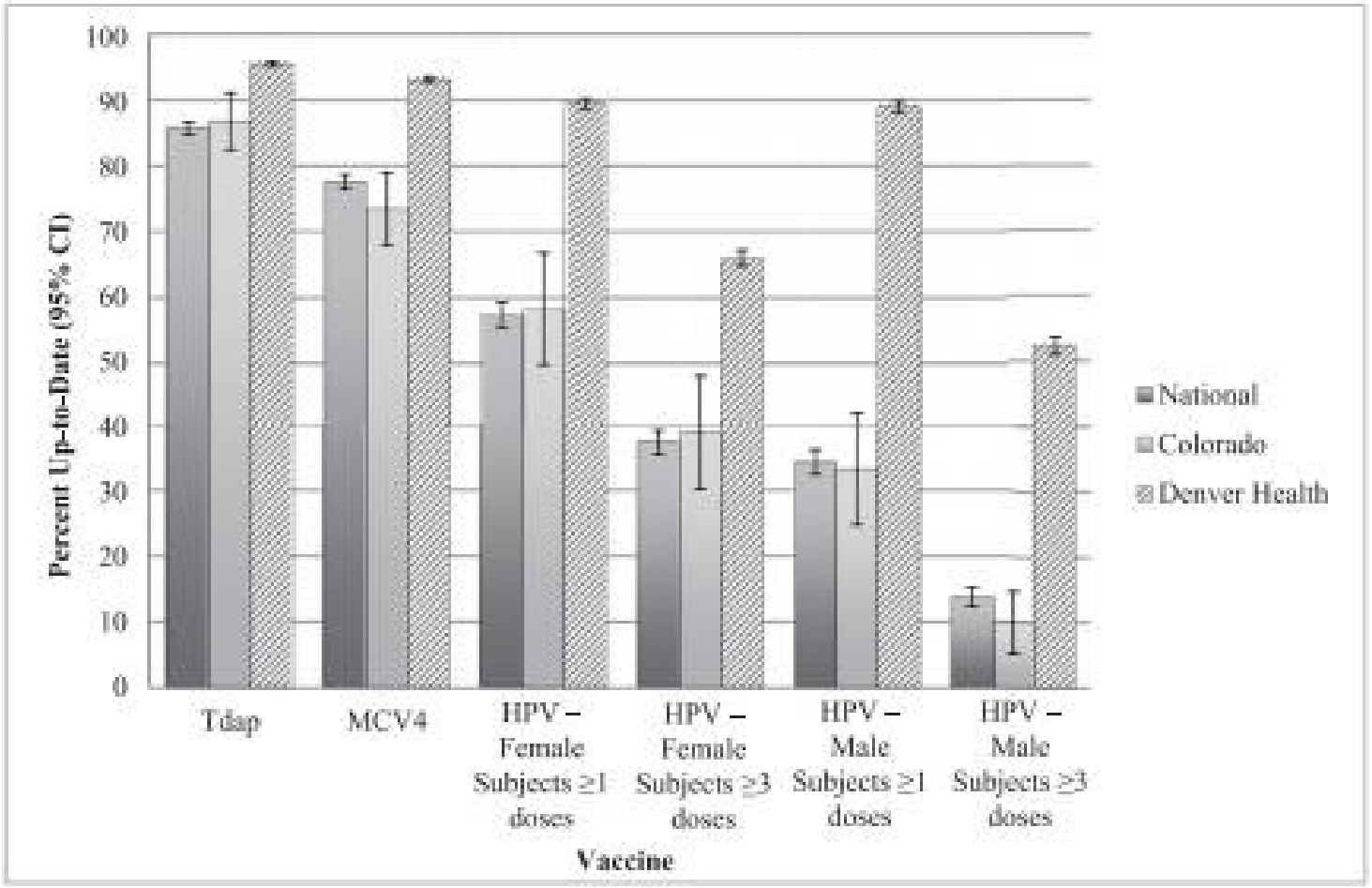
The Denver Health Story

- Large vertically integrated community health system
  - Cares for about 1/3 ofall children in Denver
  - 8 community healthcenters, 16 school-based health centers
- For many years, had ‘typical’ immunization process, with similar rates to national average

Photo Credit: https://commons.wikimedia.org/wiki/File:The_Childrens_Hospital_of_Denver_Front.JPG

NYC Health

Adolescent Vaccine Rates with Standing Orders

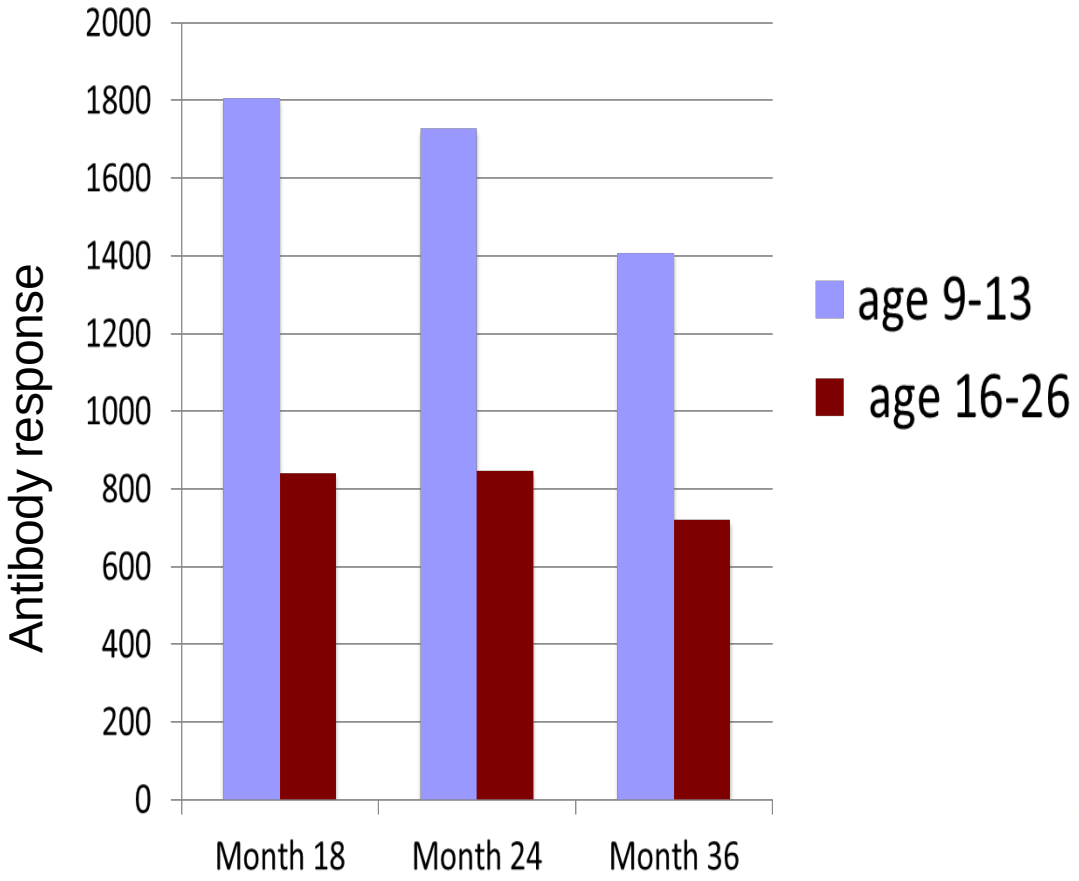


Graph Source: Farmar, Anna-Lisa M., et al., 2016

NYC Health

Why Vaccinate at Ages 11-12?

1) Better immune response



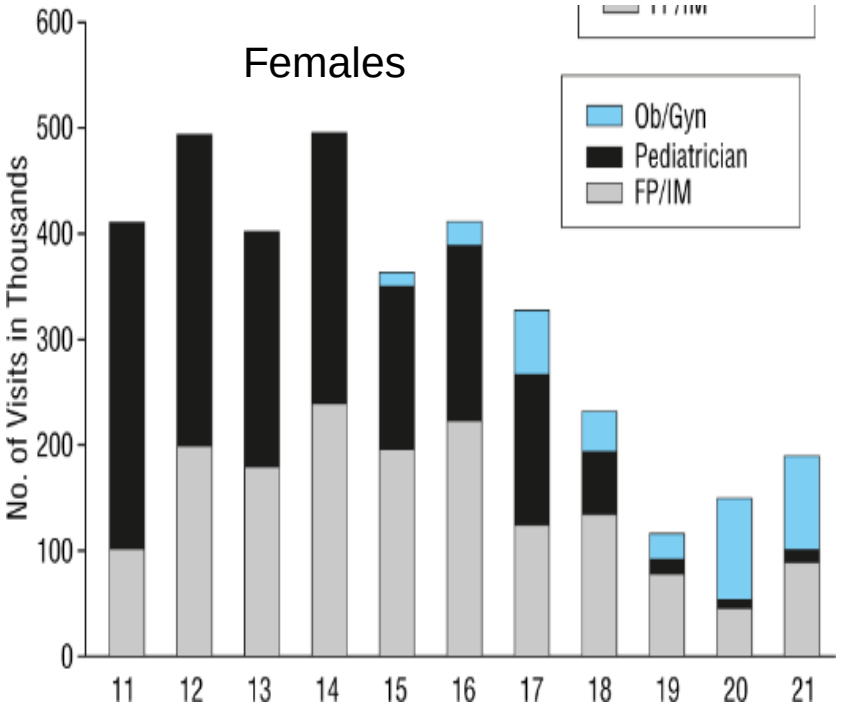
Data Source: Dobson, Simon RM, et al., 2013

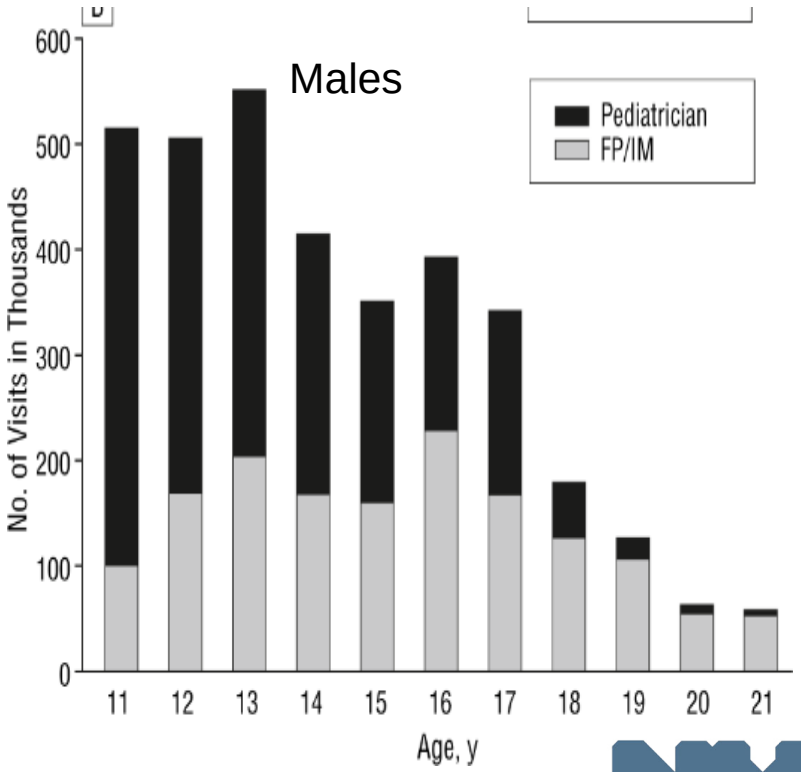
NYC Health

Why Vaccinate at Ages 11-12?

2) More chances to vaccinate

Early adolescents have 3 times more preventive care visits than late adolescents





Graph Source: Rand CM et al., 2007; reprinted with author's permission

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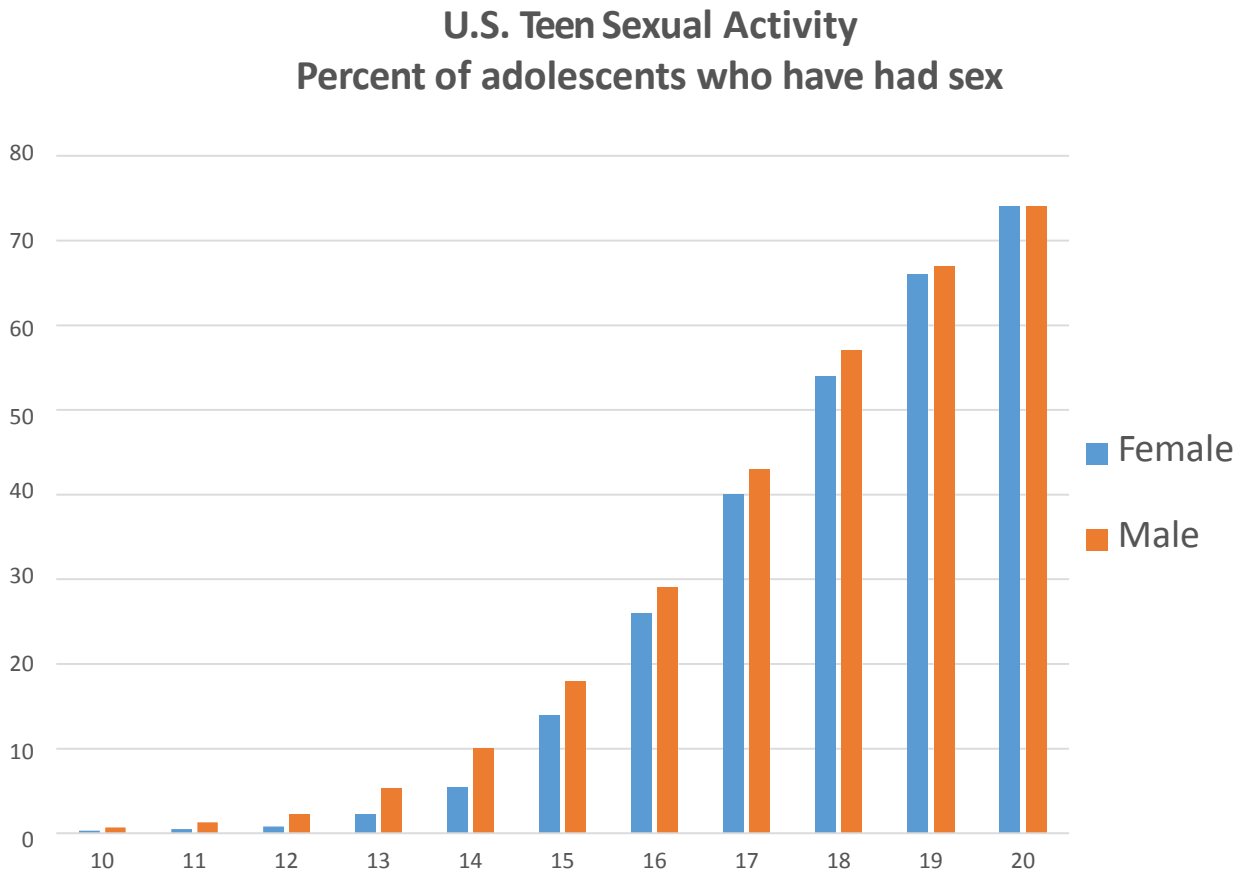
Why Vaccinate at Ages 11-12?

3) Lack of exposure



Data Source: Finer, Lawrence B., and Jesse M. Philbin, 2013

NYC Health

Why Vaccinate at Ages 11-12?

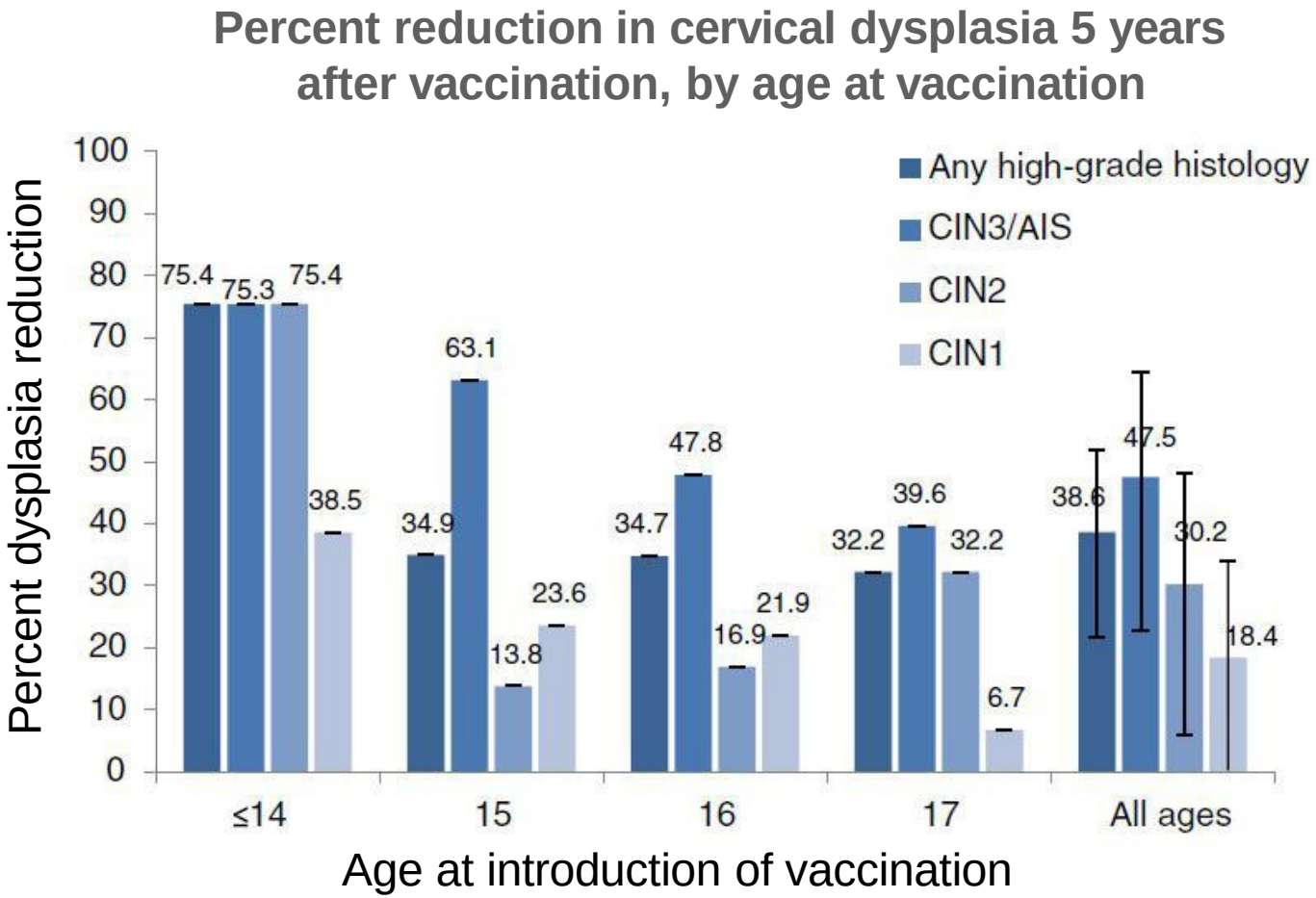
4) Long duration of immunity

- **No evidence of waning protection up to 10 years after 3-dose schedule**
- **Antibody kinetics with 2-dose schedules are similar, suggesting there will be similar protection**

NYC Health

Why Vaccinate at Ages 11-12?

5) Prevents twice as much pre-cancer



Graph Source: Gertig DM, 2013

NYC Health

Why Vaccinate at Ages 11-12?

What I say to patients:

"The HPV vaccine works better and prevents more cancers at younger ages.

If Ella gets the vaccine today she will only need 2 doses, but if we wait until she's older she may need 3 doses."

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Why Vaccinate at Ages 11-12?

NYC Health

Why NOT Vaccinate at Ages 9 - 10?

Health

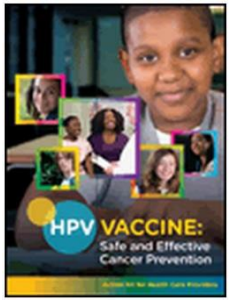
You can’t vaccinate too early…..
Only too late

Health

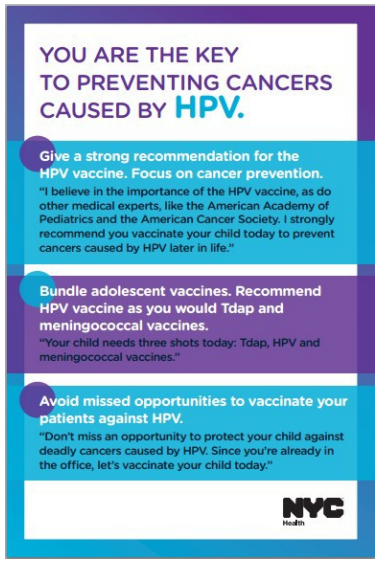
HPV VACCINATION RESOURCES

NYC Health

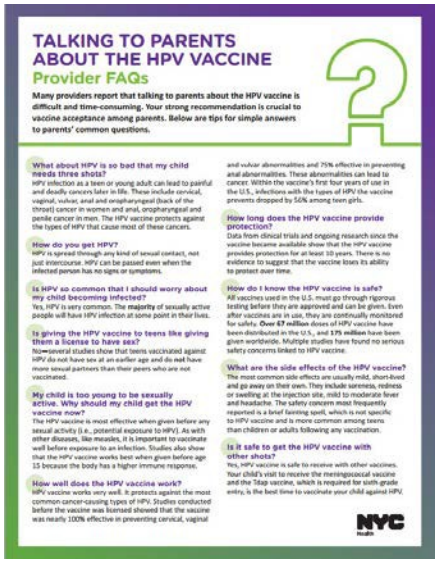
HPV Provider Toolkit



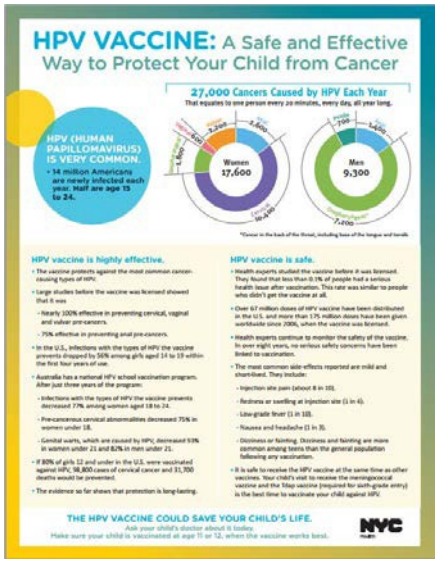
Key Strategies Card



Provider FAQs



Tear-off Pad* (for parents)



https://www1.nyc.gov/site/doh/providers/resources/public-health-action-kits-hpv.page

Double-sided English/Spanish. Also available in Chinese,Arabic, Bengali, Urdu, Haitian-Creole, Korean, French, Russian

NYC Health

For More Information

- NYC DOHMH
  - CIR
    - http://www1.nyc.gov/assets/doh/downloads/pdf/cir/cir-recall-guide.pdf
- CDC
  - https://www.cdc.gov/hpv/hcp/index.html
- AAP
  - Info for parents (www.healthychildren.org)
  - Info for clinicians (https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/HPV-Champion-Toolkit/Pages/HPV-Champion-Toolkit.aspx)
- CHOP Vaccine Education Center
  - http://www.chop.edu/centers-programs/vaccine-education-center

NYC Health

Contact info

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and Mental Hygiene
Bureau of Immunization
nycimmunize@health.nyc.gov
(347)396-2400

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