

**Introducing  
9-Valent  
Human Papilloma Virus  
Vaccine**

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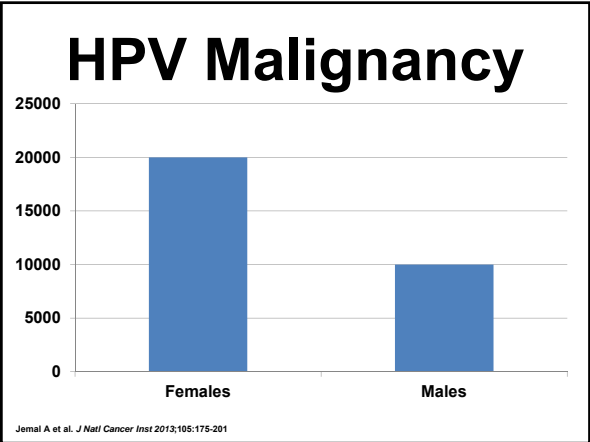
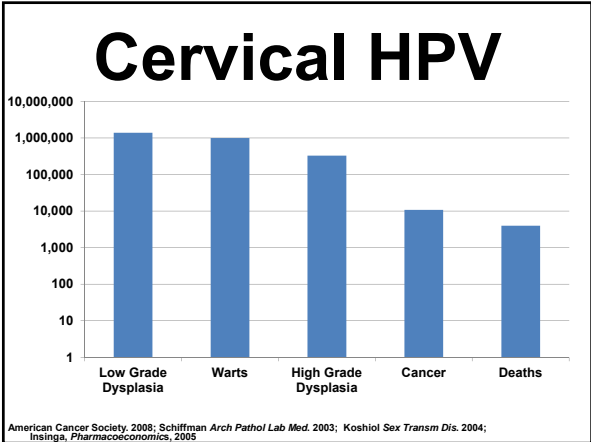
**Conflicts of Interest**

**None**



**HPV's Significance**

**US Population:  
320 Million  
HPV Infected:  
80 Million**



**Total Burden**  
**3 million cases**  
**costing**  
**\$7 billion**

**HPV Vaccine Coverage**

65-70% cervical cancers are secondary to HPV 16 and 18 infection

An additional 15-20% are secondary to HPV 31, 33, 45, 52, and 58

**Familiar HPV Vaccines**

**2 valent HPV Vaccine**  
**Cervarix**  
 Glaxo Smith Klein  
 (2vHPV)

**4 valent HPV Vaccine**  
**Gardasil**  
 Merck  
 (4vHPV)

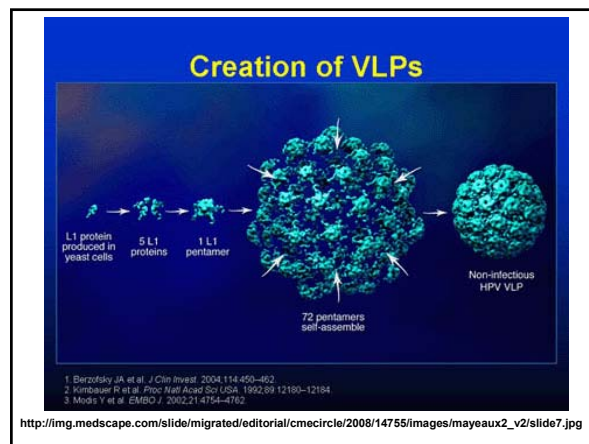
**Unfamiliar HPV Vaccine**

**9 valent HPV Vaccine**  
**Gardasil 9**  
 Merck  
 (9vHPV)

FDA Approved December 2014.  
 ACIP Recommended February 2015.  
 MMWR publication March 2015.

**2vHPV vs 4vHPV vs 9vHPV**

Vaccine	Strains Covered
2vHPV	16, 18
4vHPV	6, 11, 16, 18
9vHPV	6, 11, 16, 18, 31, 33, 45, 52, 58



## Routine Indications

Vaccine	Females	Males
2vHPV	11-26 yo	N/A
4vHPV	11-26 yo	11-21 yo
9vHPV	11-26 yo	11-21 yo

## Schedules

Vaccine	Schedule
2vHPV	0, 1, 6 months
4vHPV	0, 2, 6 months
9vHPV	0, 2, 6 months

## So Which Do We Use?

2vHPV  
or  
4vHPV while its available  
or  
9vHPV

*MMWR.* 2015; 64; 300-304.

## Vaccine Efficacy



# FUTURE

# 98%

vaccine efficacy in prevention of HPV  
16/18 High-Grade Cervical Lesions

*NEJM* 2007; 356:1915-1927

# FUTURE

# 100%

vaccine efficacy in prevention of cervical  
intraepithelial neoplasia, adenocarcinoma in  
situ, or cancer associated with HPV type 6,  
11, 16, or 18

*NEJM* 2007; 356:1928-1943

### Broad Spectrum HPV Vaccine Study

14,215 women randomized to 9v- or 4v-HPV

Rate of high grade HPV disease secondary to HPV 31,33,45,52,58

4vHPV = 1.6/1000 person years

9vHPV = 0.1/1000 person years

96.7% efficacy (80.9-99.8)

9vHPV was non-inferior to 4vHPV in prevention of HPV 6,11,16,18 disease

NEJM. 2015: 372; 711-723

## Safety

Adverse events related to injection site:

9v: 90.7% and 4v: 84.9%

Systemic adverse events:

9v: 55.8% and 4v: 54.9%

### Is Sanford Ready for 9vHPV?

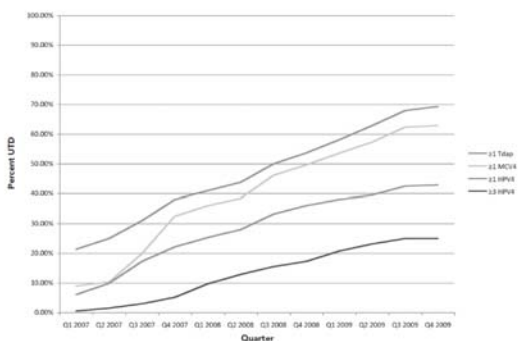
The Enterprise Immunization Committee has made a formal recommendation to the Enterprise Formulary Committee and the Enterprise Clinical Practice Committee to adopt 9vHPV.

9vHPV is now added to formulary.

### How is ND Doing?

LoMurray and Sander. Using the North Dakota Immunization Information System to determine adolescent vaccination rates and uptake. *Public Health Reports*. 2011 (126): Supplement 2.

Figure. Percentage of adolescents 13-17 years of age up-to-date for Tdap, MCV4, and HPV4 vaccines in North Dakota through Quarter 4 2009

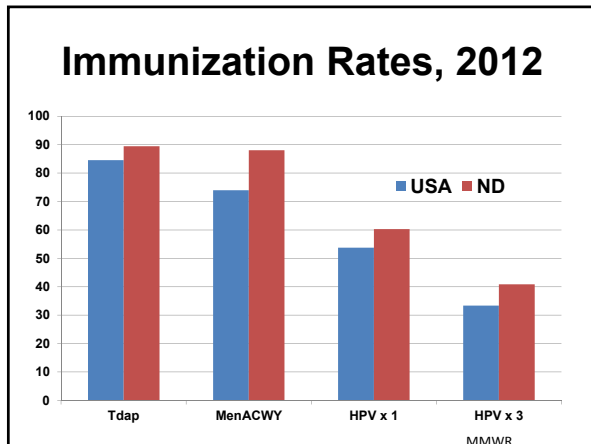


Tdap = tetanus-diphtheria-acellular pertussis  
 MCV4 = meningococcal conjugate  
 HPV4 = quadrivalent human papillomavirus  
 UTD = up-to-date

North Dakota Immunization Information System Data

### ND Rates 2009

Vaccine	Doses	Coverage
Tdap	≥1	69.2%
MCV4	≥1	62.8%
HPV4	≥1	42.8%
HPV4	3	24.9%



**Conclusion 1**

**Selling HPV vaccination must be hard.**

**Conclusion 2**

**This is not just a North Dakota problem.**

**Conclusion 3**

**Starting is a lot easier than finishing.**

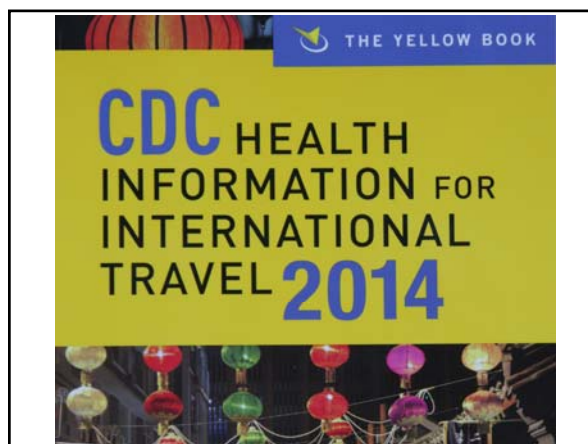
**Missed Opportunities 2009**

**Only 11.5% of FEMALES received MCV4, Tdap, and HPV4 at the first visit.**

**Missed Opportunities 2009**

**Only 48.9% of MALES received MCV4 and Tdap at the first visit.**

**Unfamiliar  
vaccines can  
be a very  
hard sell.**



**Familiar  
vaccines can  
be a hard sell  
too.**



## **A Question**

**What do you tell people  
who believe vaccination  
is unnecessary?**

## **The Answer**

**You don't know  
what you are  
talking about.**

## **Statement**

**My child is NOT  
having sex.**

## **Reply 1**

**Your child might  
be having sex.**

## **Reply 2**

**Your child will  
have sex  
someday.**

## **Simple Math**

79 million with HPV  $\approx$  80 million  
319 million total  $\approx$  320 million  
 $80 \text{ million} / 320 \text{ million} = \frac{1}{4}$   
Your child has a  $\frac{1}{4}$  chance of  
marrying someone with HPV.

## **Statement**

**If I vaccinate my  
children they will  
have sex.**

## **Reply**

**They will have sex,  
but not because you  
vaccinated them.**

### **Risk Perception Following Vaccination**

Mayhew et al. *Pediatrics* 2014;133:404–411

**Risk perceptions for both sexually  
experienced and inexperienced  
adolescents were unchanged when  
measured before and 6 months after  
HPV vaccination.**

### **Barriers to Vaccination**

**Providers in general are  
not comfortable talking  
to adolescents about  
sexual health.**

## **Question**

**They still don't want  
to be vaccinated, so  
now what do I do?**

## **Answer**

**Leave them with the  
thought that the patient  
is at risk for death and  
disability.**