

## **Human Papilloma Virus: The Basics**

**Satellite Conference and Live Webcast  
Wednesday, January 20, 2010  
2:00 - 3:00 p.m. Central Time**

Produced by the Alabama Department of Public Health  
Video Communications and Distance Learning Division

## **Faculty**

**Grace H.A. Thomas, FACOG  
Medical Director  
Women's Health  
Alabama Department of Public Health**

## **Worldwide...**

- Cervical cancer is the second most common malignancy in women
- > 200,000 women die yearly

## **In the U.S....**

- 11,000 new cases of invasive cervical cancer are estimated for 2009 & 4,000 deaths in 2009

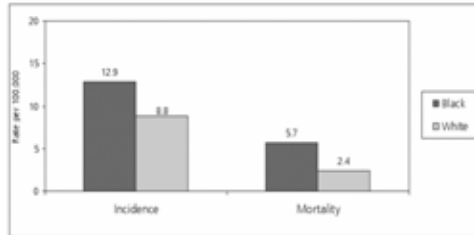
## **ASCR**

- Estimates in 2008 – 170 new cases of cervical cancer will occur in Alabama

## **Cervical Cancer**

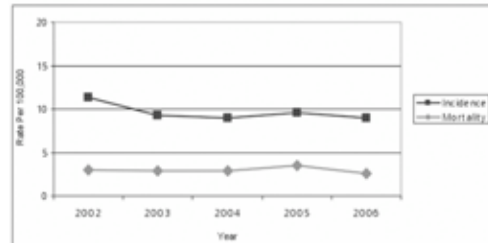
- Incidence rate in AL is 9.8
  - Higher than U.S. of 8.5
- Mortality rate in AL 3.1
  - Slightly higher than national rate of 2.4

### Cervical Cancer Incidence and Mortality Rates\*, by Race, Alabama



\*Per 100,000, age-adjusted to the 2000 U.S. standard population. Source: Alabama Statewide Cancer Registry (ASCR), 2006. Cancer Incidence (1997-2004), Cancer Mortality (1999-2004).

### Trends in Cervical Cancer Incidence and Mortality Rates\*, Alabama, 2002-2006



\*Per 100,000, age-adjusted to the 2000 U.S. standard population. Source: Alabama Statewide Cancer Registry (ASCR), 2006.

### Cervical Cancer

- Cervical cancer incidence has declined by 1/3 in the U.S. within the last 20 years
- The elderly, the economically disadvantaged, and those who are not regularly screened are disproportionately represented among women who develop and die from this disease

### ACS Estimates

- Between 60% and 80% of American women with newly diagnosed invasive cervical cancer have not had a Pap Smear in the past 5 years

### Risk Factors for Cervical Cancer

- Young age at first coitus
- Multiple sex partners
- High parity
- Smoking
- Immunosuppression
  - HIV

### Risk Factors for Cervical Cancer

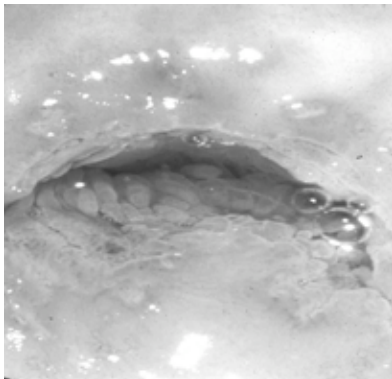
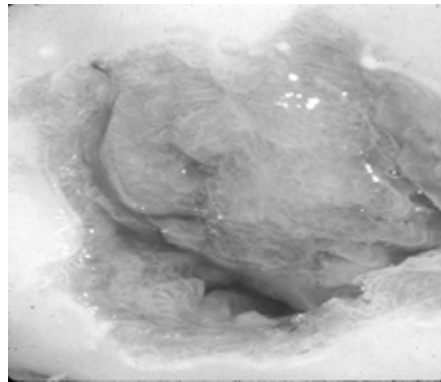
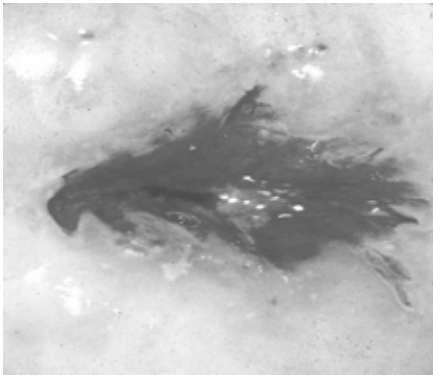
- Long term use of oral contraceptives
- H/O sexually transmitted diseases
- HPV infection

## Epidemiologic Studies

- HPV infection to be the most important risk factor for the development of pre-cancerous lesions (LGSIL, etc.) and invasive squamous carcinomas
- Prevalence of HPV DNA in more than 90% of pre-invasive & invasive lesions

## HPV

- > 100 HPV types identified
- > 40 types infect the genital tract
- Genital HPV primarily targets squamous epithelium and cells within the squamocolumnar junction
- Majority of cervical cancer is squamous cell

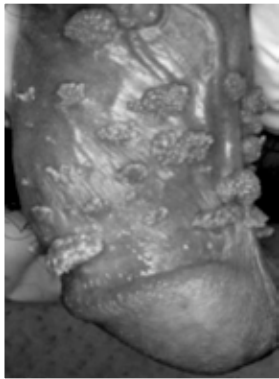


## Low Risk HPV Types

- Caused by HPV types 6 & 11
- Cause genital warts
  - Condyloma acuminata
- Rarely develop into cancer
- Cause low grade changes in the cells of the cervix
  - Most resolve spontaneously

### **Low Risk HPV Types**

- Warts may appear weeks to months after sexual contact, or may never appear



### **High Risk HPV Types**

- Linked to anogenital cancer in men and women
- Common high risk types include
  - 16, 18, 31, 35, 39, 45, 51, 52, 58
- ~ 70% of cervical cancers in U.S. caused by types 16 or 18

### **High Risk HPV Types**

- Can cause low grade/high grade changes
  - Precancerous and cancerous changes in the cells of the cervix

### **Precancerous Cervical Conditions**

- Detected when a Pap Smear is done
- Bethesda System used to report Pap Smear results
  - 3 main categories
    - Negative for intraepithelial lesion or malignancy

### **Precancerous Cervical Conditions**

- Epithelial cell abnormalities
  - ASCUS, LGSIL, ASC-H, HGSIL
- Cancer

### **HPV DNA Test**

- Tests specifically for high risk HPV types 16 & 18
- Used in women with ASCUS pap result
- Used with Pap Smear for screening in women 30 and older
- Almost always positive with LGSIL & HGSIL

### **Genital HPV Infection/Transmission**

- Most common STI in the U.S.
- 6.2 million Americans infected each year
- > 50% of all sexually active men & women become infected at some time in their lives

### **Genital HPV Infection/Transmission**

- 500,000 precancerous cell changes of the cervix, vagina, and vulva are diagnosed yearly in the U.S.

### **Transmission**

- Direct genital contact during vaginal, oral, or anal sex
- From Mother to newborn rare
  - Respiratory papillomatosis
- Genital contact in women who have never had sexual intercourse has been reported

### HPV Infection

- Prevalence is highest among sexually active women in their 20's
- Stabilizes after age 45
- May not always cause warts
- May have HPV for years without symptoms
- Most genital infections do not cause cervical cancer

### HPV Infection

- Most who test HPV+, test negative within 6-12 months
- Often leads to cytologic abnormalities (LGSIL, ASCUS) while actively shedding DNA
- Majority clear spontaneously in 1 to 2 years

### HPV Infection

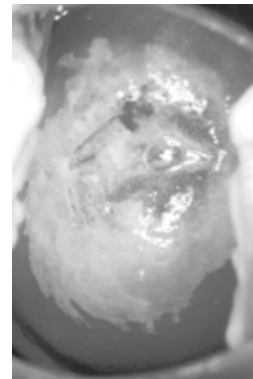
- Unclear how many HPV infected women who later become HPV negative have cleared the virus
- Latent infection
  - Harbor virus at low levels, undetectable by standard testing
- Reactivation of latent virus

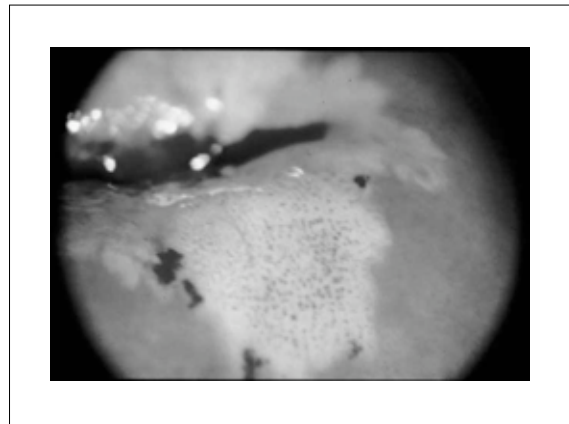
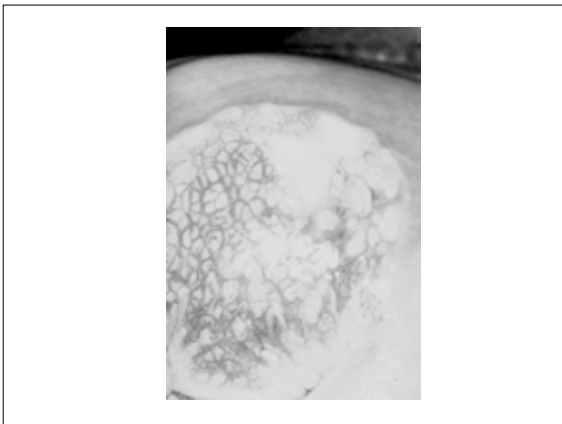
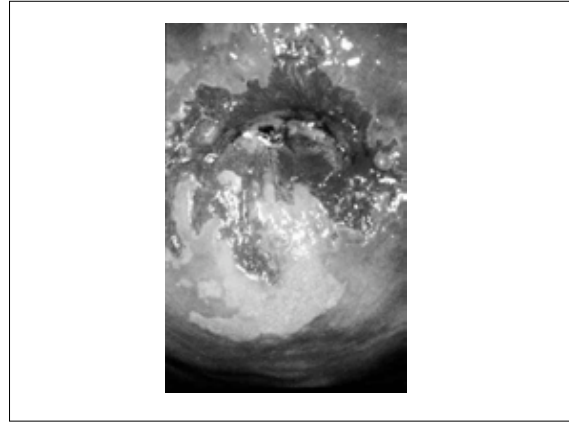
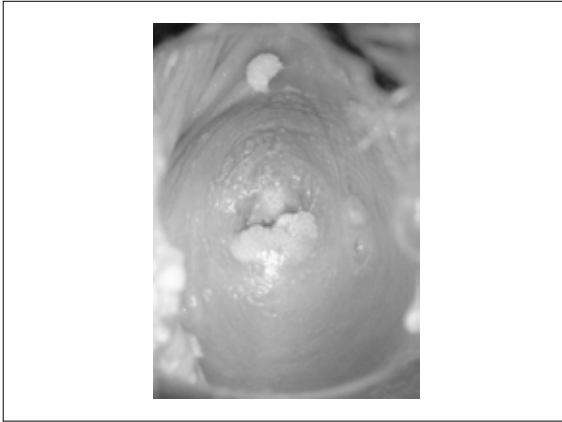
### HPV Infection

- Cannot distinguish between reactivation and newly acquired infection

### Treatment of HPV Infection

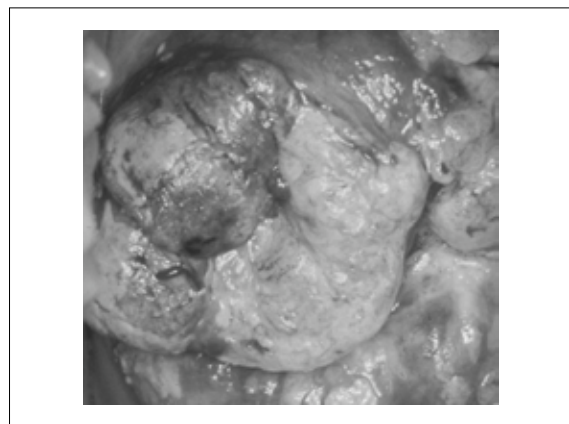
- No cure to eliminate HPV, treat epithelial cell abnormalities
- Colposcopy & biopsies
- Biopsy results are reported as CIN instead of SIL
- Cryosurgery, LEEP, cone biopsy
- Topical treatments for external genital warts

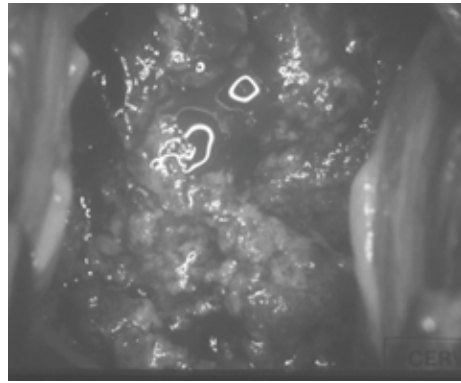
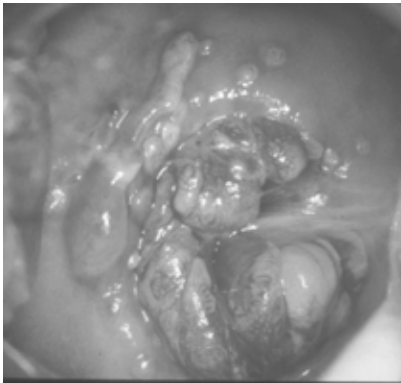




**Treatment of HPV Infection**

- Invasive cervical cancer may be detected when performing colposcopy
- Referral to Gyn oncologist for staging, treatment & follow-up





### **Prevention of HPV Infection**

- **Avoid being exposed to HPV**
  - Avoid risky behavior
  - Multiple partners
  - Delay sexual debut
- **Use condoms**
  - Provide some protection
- **Don't smoke**

### **Prevention of HPV Infection**

- **Get vaccinated**
- **Get screened**
  - Treat precancerous conditions

### **Vaccines**

- **Cervarix & Gardasil**
  - Highly effective
- **Will prevent certain types of HPV infections & the cancers linked to those types**
  - Will not treat an infection that is already there

### **Vaccines**

- **Both prevent types 16 & 18**
- **Gardasil also protects against types 6 & 11 that cause 90% of all genital warts**



### **To Be Most Effective**

- Should be given before sexual contact with another person
- Gardasil effective for females aged 9 to 26 years
- Cervarix effective for females aged 10 to 25 years
- Gardasil recently approved for boys between ages 9 to 26

### **To Be Most Effective**

- ACIP recommends routine immunizations of girls ages 11 & 12

### **Vaccines**

- Both given in 3 doses over 6 month period
- Studies now being conducted in women 26 and older
- Impact of vaccine will not be known for years
- Both vaccines are included in the federal VFC program

### **Vaccines**

- Vaccines will prevent the 2 types of HPV that cause most cervical cancer
- Prevent vulvar & vaginal cancers related to types 16 & 18
- Vaccines do not replace the need for pelvic exams & Pap Smears
- Duration of protection not known and if booster needed

### **Cervical Cancer Screening**

- Should begin at age 21
- Cervical cytology screening every 2 years for women between the ages of 21 & 29
- Women aged 30 and older who have had 3 consecutive negative cervical cytology smears, may be screened every 3 years

### **Women Who Are**

- Infected with HIV
- Immunosuppressed
- Were exposed to DES in utero
- Women previously treated for CIN2, CIN3, or cancer

### **Screening**

- Women aged 65 years & older represent 14.3% of U.S. population but have 19.5% of new cases of cervical cancer
- The rate of new onset cervical cancer peaks in the mid 50s & then decreases for white women in the U.S.

### **Screening**

- Hispanics in the early 70s
- Asian or Pacific Islanders peak incidence in the late 70s
- The incidence of cervical cancer continues to increase throughout life in African-American women in the U.S.

### **Screening**

- A woman's past screening history must be taken into consideration before an upper age limit is recommended for discontinuation of screening
- ACS recommends age 70
- USPSTF recommends age 65 as the upper limit of screening

### **Screening**

- Women who have had total hysterectomy for benign indications and no prior h/o CIN, should discontinue routine cytology testing
  - Ref: ACOG Practice Bulletin #109, 12/09

### **American College of OB/GYN**

- Reasonable to discontinue screening at 65 or 70 years of age in women who have 3 or more negative cytology results in a row & no abnormal test results in the past 10 years
  - Ref: ACOG Practice Bulletin #109, 12/09

### **Take Home Points**

- HPV infections are commonly acquired by young women shortly after the initiation of vaginal intercourse
  - In most cases, they are cleared by the immune system within 1-2 years without producing pre-cancerous or cancerous changes

### **Take Home Points**

- **Risk of neoplastic transformation increases in those women with persistent infections**
- **Get screened!**
  - **Screening offers the best chance for early detection of cervical cancer & successful treatment**

### **Take Home Points**

- **Getting one of the HPV vaccines before being exposed to HPV will prevent some HPV**
- **Modify behavior**
  - **Consistent use of condoms reduces, but does not prevent transmission**