
Altering Cervical Cancer's Trajectory

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Objectives and Agenda

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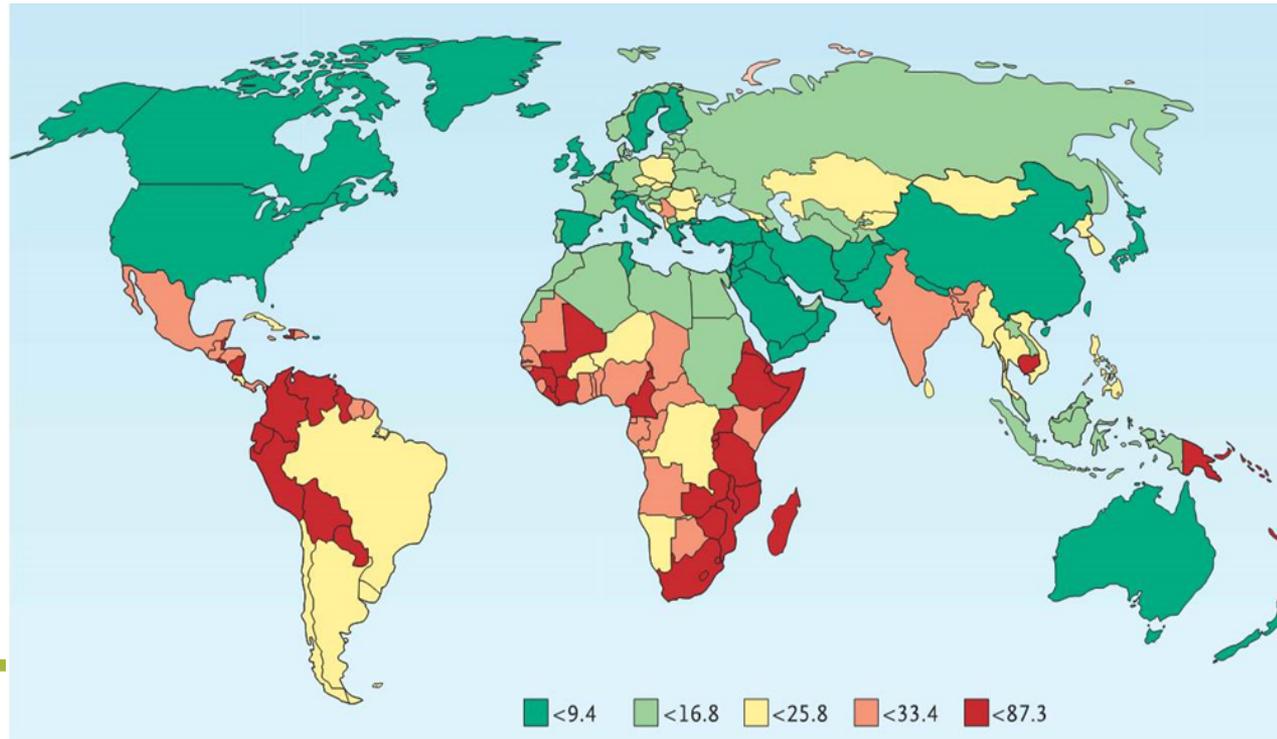
- Appreciate cervical cancer (CC) burden
- Understand why cervical cancer is a model disease for screening
- Emphasize importance of cervical cancer screening, including potential missed opportunities and barriers

Agenda

- Cervical cancer background and epidemiology
- HPV, CC natural history, prevention, and screening

Cervical cancer is the third most common cancer in women worldwide^{1,2}

In 2008, 530,000 new cases occurred globally, resulting in 275,000 deaths



* Numbers indicate cases per 100,000 population

1. GLOBOCAN 2008. International Agency for Research on Cancer website. <http://globocan.iarc.fr/> as of 5/13
2. Schiffman M, Castle PE. N Engl J Med 2005; 353:2101-2104

Cervical cancer epidemiology: US

Increased Pap test usage has contributed to a 70% decrease in cervical cancer incidence since the 1950s

Relatively rare in US
21st most common cancer

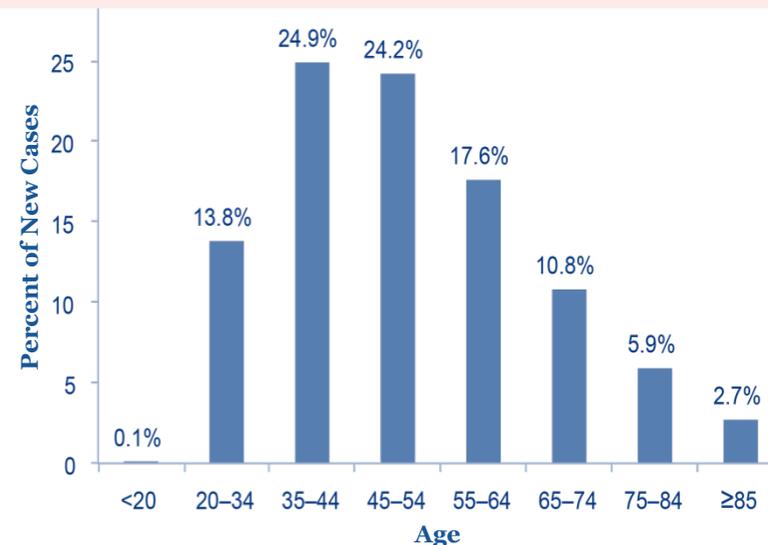
- 12,360 new cases in 2014
(1.5% of all new diagnoses in women)
- 4020 deaths in 2014
(1.5% of all cancer deaths in women)

Minority women have highest incidence and mortality rates

- Hispanic/Latino
- African-American
- American Indian/Alaska Native

Tends to develop in younger women

- Two-thirds of cases occur in women ≤ 54 years
- Median age at diagnosis: 49 years

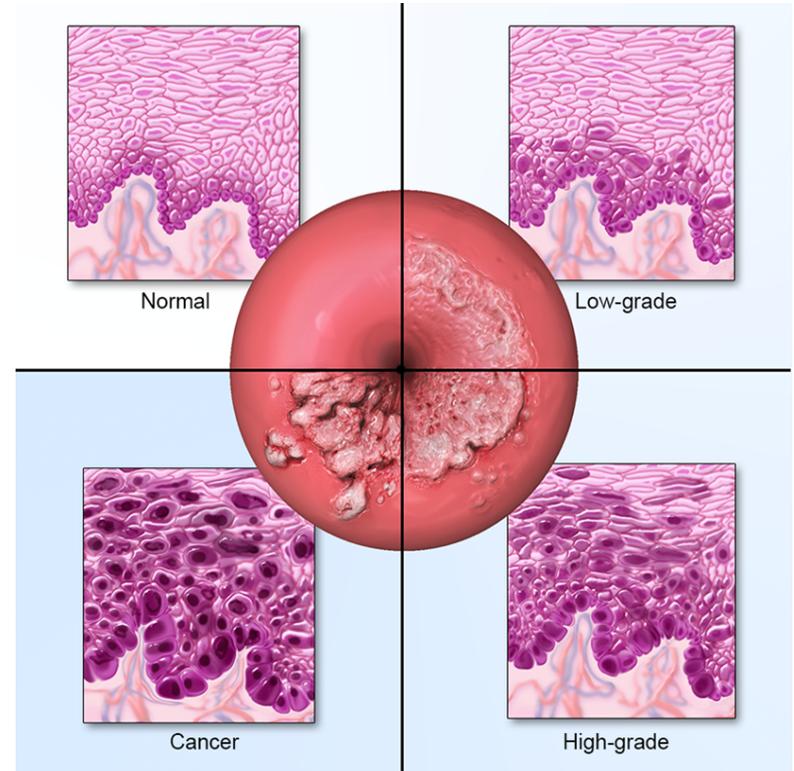


HPV, necessary but not sufficient

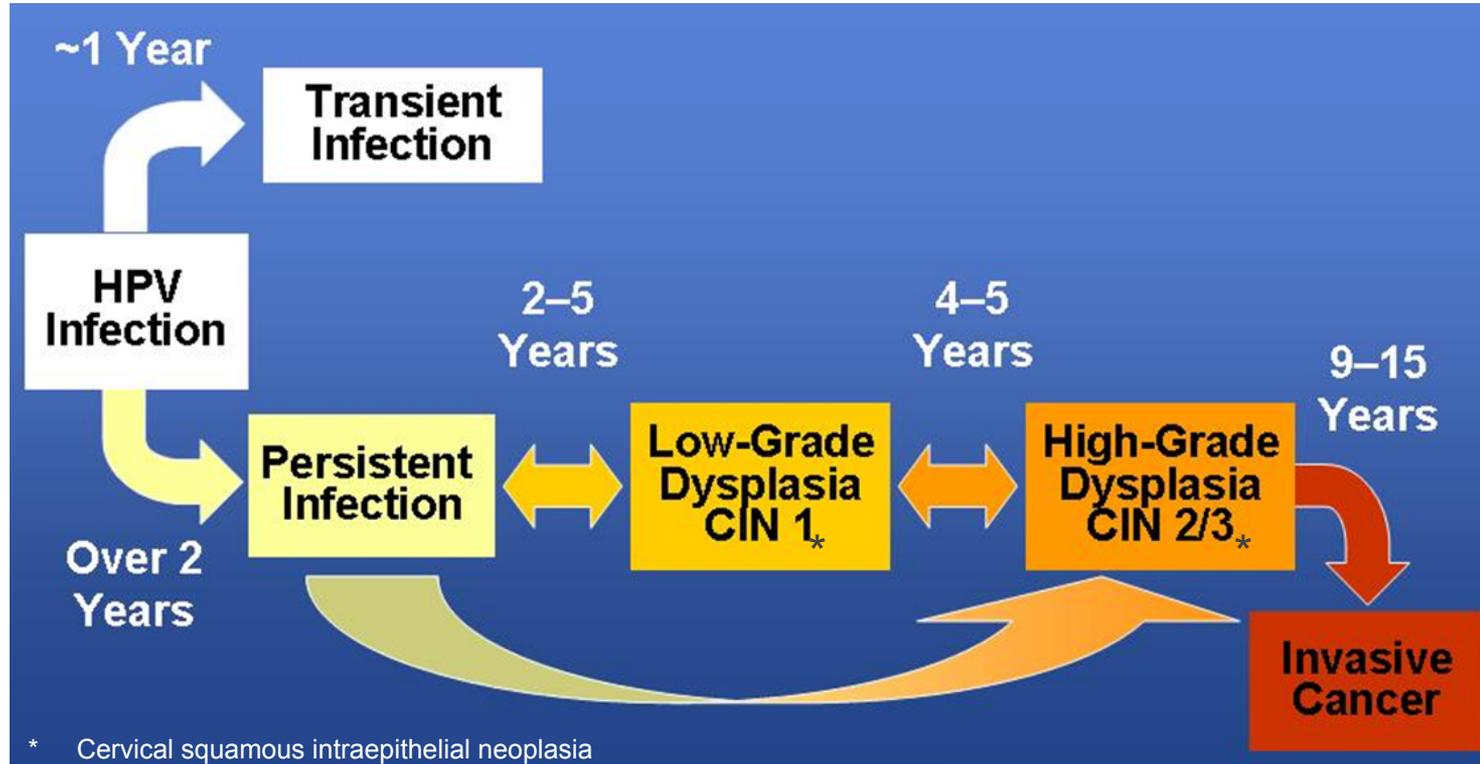
- **Human Papilloma Virus infection is common**
 - Over 75% of sexually active adults (by 50 y/o) have been exposed to HPV¹
- Other potentially important predictors for cervical cancer are smoking and immunosuppression
- Cervical cancer - model disease for which prevention and screening can have significant impact
 - Cervical cancer characteristics
 - Generally slow growth and progression
 - Opportunities for intervention in pre-cancer
 - Prevention – HPV vaccine
 - Screening – Pap smears

Progression to cervical cancer

- Normal cells of the cervix gradually develop precancerous changes that can eventually evolve into cancer
- Precancerous changes can be detected with the Pap test
- Treating dysplasia can prevent most cervical cancers



Natural history of high-risk HPV infection and potential progression to cervical cancer¹



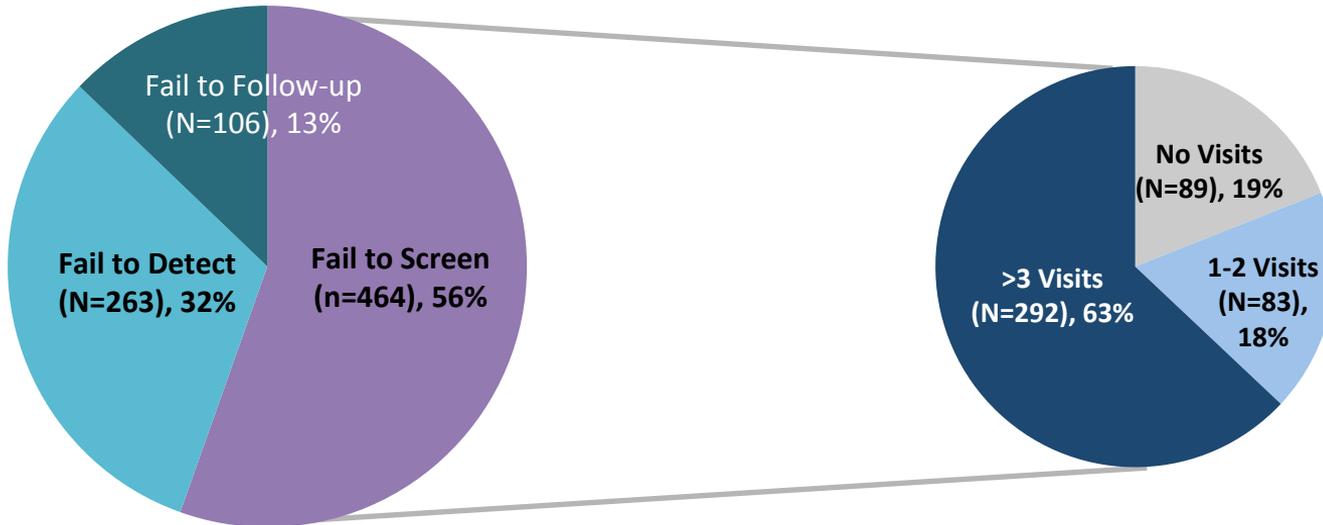
1. Reprinted from Pagliusi SR, Aguado Mt. *Vaccine*, 2004;23:569-578. Copyright©2004, with permission from Elsevier

Screening guidelines – generally agreed points

- Pap screening should generally be started at 21 years old and performed every 3 years until age of 65
- HPV co-testing, when used, should begin at 30 years old and should be performed every 5 years until age 65
- All screening can be stopped in women after the age of 65, provided they have an adequate screening history
- Women who have had a hysterectomy with removal of cervix do not need to have cervical screening, unless the hysterectomy was done to treat a precancerous cervical lesion or cervical cancer

System failures are associated with Cervical Cancer in the US

- Most CC cases are in women who didn't get screening in the prior 3 years
- Most of these “fail to screen” had more than 3 visits to health care providers in the prior 3 years



However, cervical screening may not detect all abnormalities

- Because screening may not detect all abnormalities, it does not always ensure early intervention^{1,2}
 - False-negative caused by sampling and detection errors¹
 - Adenocarcinoma difficult to detect by Pap smear²
- Some women with cervical cancer have had a recent normal Pap smear prior to diagnosis³
- Some women are nonadherent to cervical cancer screening³

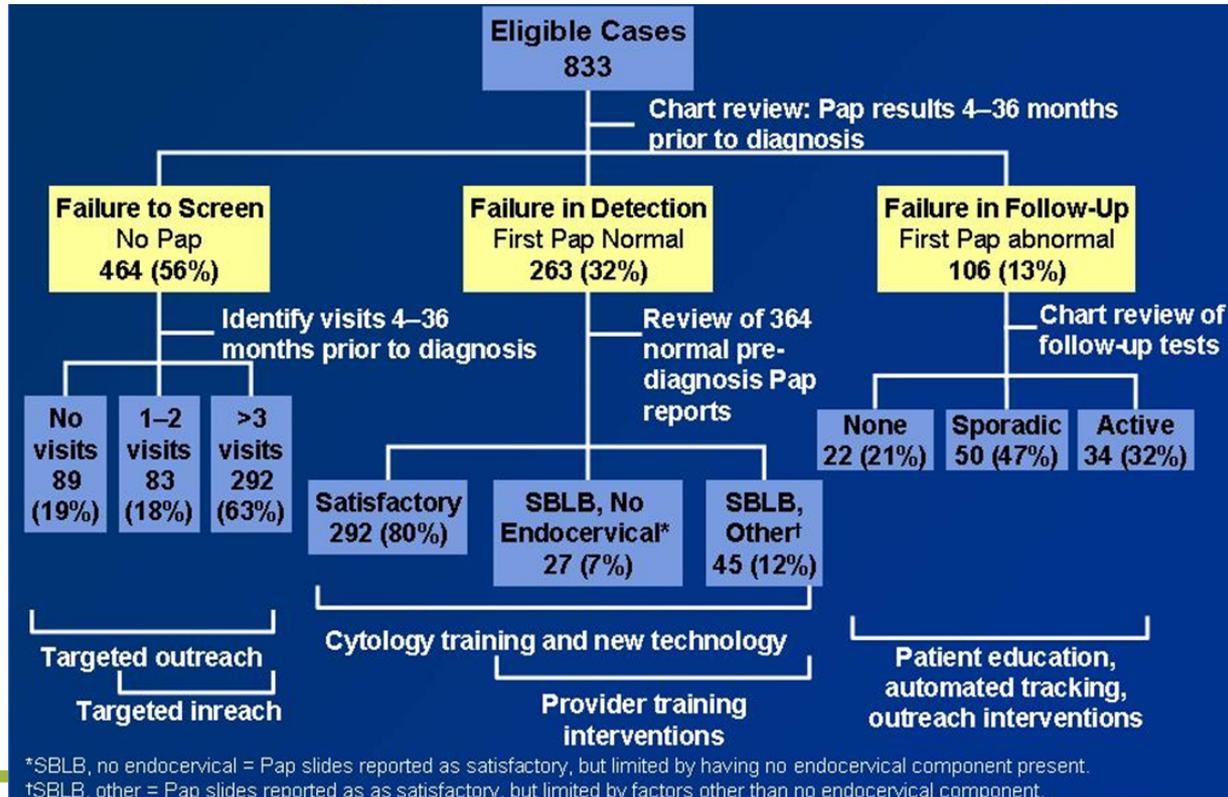
1. Nanda K, McCrory DC, Myers ER, et al. Ann Intern Med. 2000;132:810-819.
2. Johnston G, MacIsaac M, Rankin E. Available at: http://cancercare.ns.ca/media/documents/surveillance_info_system.pdf. Accessed February 4, 2005
3. Sung HY, Kearney KA, Miller M, Kinney W, Sawaya GF, Hiatt RA. Cancer. 2000;88:2283-2289

Summary

- Cervical cancer is largely preventable
- Screening barriers and missed opportunities deserve further study
- Eventually, research in this field could potentially lead to impactful interventions
- “It takes a village”

Appendix

Classification of cervical cancer by failures in screening, detection and follow-up¹



1. Leyden WA, Manos M, Geiger AM, et al. *J Natl Cancer Inst.* 2005;97:675-683. Reprinted with permission from Oxford Journals, Oxford University Press