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SPECIAL ARTICLE

Cervical Cancer Screening Guidelines: An updated review

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ABSTRACT

Screening is one of the strategies for cervical cancer elimination. Since the beginning of cytology to the modern era of primary HPV screening, there were various different clinical guidelines. All of the guidelines aim to detect preinvasive lesion that leads to cervical cancer; however, each guideline has dissimilar recommendation with explicable reason lying underneath. To be able to choose the suitable method of screening for individual patient would be advantage in both oncologic outcome and cost-effectiveness. This review was written to summarize the detail of changes and differences through clinician's point of view.

Keywords: cervical cancer screening, clinical practice guidelines, disease eradication, human papillomavirus DNA tests, mass screening, papanicolaou test.

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Introduction

Cervical cancer is the fourth most common cancer in women worldwide. It is also the most common cancer and cause of death from genital organ cancer in Thai women[1]. The cause of cervical cancer is persistent high-risk human papillomavirus (HPV) infection via sexual intercourse[2]. Most HPV infections resolve within 2 years and some women with infections progress to precancerous or invasive lesions[3, 4].

The cervical cancer incidence and mortality in the United States has declined significantly since the 1950s. This decline is mainly attributed to the introduction of the Papanicolaou test in the 1940s[5]. Cervical cancer is avertible because of improvements in screening programs, HPV vaccination, and effective treatment of precancerous lesions[6, 7]. In Thailand, the Royal Thai College of Obstetricians and Gynaecologists (RTCOG) and Ministry of public health has agreed to collaborate the strategy to eradicate cervical cancer since 2017.

The goal of cervical cancer screening is to detect precursor abnormalities that lead to invasive cervical cancer or to detect the early stage of cervical cancer.

Many guidelines have been proposed to prevent the disease and avoid over-screening that might lead to overtreatment. This is a review article of the present guidelines for cervical cancer screening.

Time to initiate cervical cancer screening

Earlier guidelines, such as the American College of Obstetricians and Gynecologists (ACOG), American Cancer Society (ACS), the American Society for Colposcopy and Cervical Pathology (ASCCP), and the US Preventive Services Task Force (USPSTF) suggested cervical cancer screening should be initiated at the age of 21 years, regardless of the age of her first sexual intercourse[8-10]. Nowadays, the ASC 2020 recommends screening should begin at the age of 25 years because the incidence of cervical cancer in women in the 20- to 24-year-old age group is 0.8%. Also, young women have a high incidence of HPV infection, low rate of persistence and progression, and a high rate of regression of abnormalities[11]. Cervical cancer is the second most common cause of Thai female cancer, second only to breast cancer. However, the RTCOG 2021 suggests that screening should begin at the age of 25 years with a history of sexual intercourse or at the age of 30 years in those women who never had sexual intercourse due to the low incidence of cervical cancer in younger Thai women[12]. Table 1. compares the recommendations of the various screening guidelines.

Table 1. Comparison of cervical cancer screening guidelines.

	ACOG 2016	USPSTF 2018	ACS 2012	ACS 2020	RTCOG 2021
Start	21 y	21 y	21 y	25 y	25 y with SI 30 y without SI
Intervals	21-29 y • every 3 y with cytology 30-65 y • every 3 y with cytology or • every 5 y with co-testing		21-29 y • every 3 y with cytology 30-65 y • every 3 y with cytology or • Co-testing	• every 3 y with cytology or • every 5 y with primary HPV testing or co-testing	• every 2 y with cytology or • every 5 y with co-testing
Discontinue	65 y with adequate negative prior screening in past 10 y				
Post-hysterectomy	Omit screening if hysterectomy was done for benign condition				

ACOG: American College of Obstetricians and Gynecologists, ACS: American Cancer Society, RTCOG: Royal Thai College of Obstetricians and Gynaecologists, SI: sexual intercourse, USPSTF: United States Preventive Services Task Force

Frequency of cervical screening

Women in the age range of 21 to 29 years should be screened with cytology alone (liquid-based or conventional) every 3 years[9, 10, 13]. Co-testing (HPV testing and cytology) is not recommended for this group due to the high prevalence of temporary HPV infection[10]. Women 30 to 65 years of age should be screened with co-testing every 5 years or every 3 years with cytology alone[9, 10]. The ACS 2020 advises the preference to screen women age 25 to 65 years with primary HPV testing every 5 years, or co-testing is acceptable every 5 years, or cytology alone every 3 years[11]. Many studies report that HPV-based cervical cancer screening has greater sensitivity and negative predictive values compared with cytology-based screening, and improves detection of adenocarcinoma in situ and adenocarcinoma[14-17]. Compare with co-testing, primary HPV testing has similar sensitivity to detect cervical

intraepithelial neoplasia (CIN)2+, cumulative risk of CIN2+, and cervical cancer. Additionally, it is less expensive and less complexity of management[18-20]. The Cobas® HPV Test and the BD OnclarityTM HPV Assay have been approved by the FDA for primary HPV screening[21]. The RTCOG 2021 proposes to screen women between 25 and 65 years with cytology every 2 years or co-testing every 5 years[12]. Women who have received the HPV vaccination should be managed in the same manner as women in the general population.

When to discontinue cervical cancer screening

Women older than 65 years should discontinue cervical cancer screening if there is no history of CIN 2+ in the previous 20 years with adequate screening, which is defined as three negative cytology results or two negative co-testing results or two negative HPV test results in the previous 10 years[9, 10, 12]. Women of any age who have a total hysterectomy done for a benign condition are not indicated for screening[9-12]. The ACS 2020 recommendations resemble the previous guideline for women who should not be screened; however, the period of time for women who have no cervix and no history of CIN2+ was extended from 20 to 25 years[11]. Women older than 65 years, who have had adequate screening, have a low prevalence of CIN2+, rarely develop cervical cancer, and are unlikely to be newly diagnosed as CIN3 that would develop to an invasive cancer[10]. The benefits of continued screening in women older than 65 years is low. Furthermore, the examination may cause pain and it may be difficult to collect an adequate sample because of a small transformation zone[22]. Also, elderly women have high rates of overdiagnosis and overtreatment[23].

Frequency of cervical screening in immunocompromised women

Women with HIV infection

Women younger than 21 years old and sexually active should be screened within 1 year of onset of sexual activity. Women aged 21-29 years should have cytology sampling every 1 year. If the results are normal in 3 consecutive years, cytology sampling can be performed every 3 years. Co-testing is not recommended in women with HIV infection under 30 years old. Women aged ≥ 30 years should have cytology sampling every 1 year. If the results are normal in 3 consecutive years, cytology sampling can be performed every 3 years or co-testing every 3 years[24].

Women with solid organ transplant, allogenic hematopoietic stem cell transplant, systemic lupus erythematosus, rheumatoid arthritis, or inflammatory bowel disease on immunosuppressive drugs

Women aged < 30 years in this group should have cytology screening regardless of vaginal intercourse experience. It is preferred those women aged ≥ 30 years should have screening with co-testing every 3 years. Cytology screening is acceptable every 1 year and if the results are normal in 3 consecutive years, the cytology screening can be performed every 3 years. If a patient receives a transplant or use immunosuppressive drugs before the age of 21 years, screening should begin within 1 year after sexual debut. Women in these groups should continue screening throughout their lifetime. Patients who have systemic lupus erythematosus, rheumatoid arthritis, or inflammatory bowel disease, and do not use immunosuppressant therapy or have type 1 diabetes mellitus should be screened the same as in the general population[25].

Conclusion

Choosing the right method and suitable interval of cervical cancer screening prevents the emerging of disease and lessen the chance of overtreatment. Clinicians should be delicate in patients' details such as age, interval and result of last screening, methods of screening, and whether the patients are immunocompromised or not. Cost effectiveness of each method should also be discussed.

Potential conflicts of interest

The authors declare no conflict of interest.

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