Fact Sheet: Cervical Cancer Screening

Cervical cancer by the numbers

- Cervical cancer is the fourth most common cancer and the fourth leading cause of cancer death in women.[1]
- In 2020, there were 604,000 new cases of cervical cancer globally and 342,000 women died as a result of the disease.[1]
- In Europe, there are around 58,169 new cervical cancer cases diagnosed annually,[2] and cervical cancer ranks* as the 9th most common cancer amongst women in Europe.[2]
    - Annual world-age standardised incidence rates range from 6.8 per 100,000 women in Western Europe to 16 per 100,000 women in Central and Eastern Europe.[3]
- In Europe, it has been found that women who receive regular screening can reduce their risk of dying from cervical cancer by up to 92% when compared to those who didn't attend screening.[4]
- More than 95% of cervical cancer cases are caused by the human papillomavirus (HPV).[5]

*Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st) excluding non-melanoma skin cancer. Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.[2]

Cervical cancer is mainly caused by HPV infection

Although there are more than 200 types of HPV, the majority of cervical cancers are caused by the 14 high-risk HPV strains.[6] HPV can also lead to other types of cancer, including: vaginal, vulval, penile, anal, and several oropharyngeal cancers.[7] It is commonly spread through skin-to-skin contact, and nearly all sexually active women and men will have an HPV infection at some point in their lives.[5] Most HPV infections do not cause any symptoms and resolve on their own within 1 to 2 years, particularly among younger adults.[5,6] However, in some individuals certain high-risk strains of HPV can remain active or persistent and lead to abnormal cervical cells (also known as pre-cancerous cells), which if left untreated, can lead to cervical cancer.[5] Cervical cancer is usually slow to develop, taking on average 15-20 years in healthy women, but 5-10 in those with weakened immune systems.[5]

Cervical cancer is considered a major health concern worldwide, with over half a million new cases and more than 200,000 deaths globally each year.[1,8,9]

The importance of national screening programmes for cervical cancer prevention

Cervical cancer is largely preventable and one of the easiest gynaecologic cancers to treat if detected early. Affecting the cervix – the lower, narrow end of the uterus – cervical cancer is preventable through vaccination and regular screening and is a highly curable type of cancer when diagnosed and treated early.[10] The Centers for Disease Control and Prevention (CDC) reports that as many as 93% of cervical cancers can be prevented by cervical cancer screening and HPV vaccination.[11]

Cervical cancer screening programmes have been in place across Europe, the UK, the US and other medium to high-income countries since the 1980s and have helped to reduce cervical cancer rates by up to 80%.[12] In Europe, research has shown that women who attend regular screening reduce their risk of dying from cervical cancer by up to 92%.[4]

Cervical cancer is preventable, yet women are still dying from it.

The WHO's global strategy for cervical cancer elimination calls for 70% of women worldwide to be screened at least twice in their lifetime with a high-performance test for cervical cancer and for 90% of those needing treatment to be given access to it.[13] Alongside the HPV vaccination of girls, implementing this global strategy could prevent more than 62 million deaths from cervical cancer in the next 100 years.[13]

The European Union, through the European Commission's Communication on Europe's Beating Cancer Plan, also recently set a target for 90% of eligible women to be offered screening by 2025.[14]

The challenges with cervical cancer screening programmes

Cervical cancer screening programmes are essential;
unfortunately, participation has been declining in some countries.

Despite the success of screening programmes globally, there are varying rates of uptake, with some middle and high-income countries seeing screening participation declining in recent years.[15,16] In many European countries, for example, participation rates vary between 80% in some and reach as low as 25% in other countries.[15,16] In the UK, screening rates have been falling continuously, with rates in London as low as 64.7%, and in the United States, only 73.5% of eligible women are up-to-date with cervical cancer screening.[17,18] The reasons for this decline are multifactorial and include inadequate access to screening services, lack of education, and language, cultural, and socioeconomic barriers.[17]

In low-income countries, the high cost of screening and treatment, coupled with a lack of infrastructure and trained healthcare professionals, often results in limited access to screening services.[19] Additionally, a decline in screening rates worldwide was witnessed during the COVID-19 pandemic.[19]

Because of these barriers, some women are consistently under-screened (sometimes called 'non-responders') and are at risk of avoidable disease and death, highlighting a critical need for new strategies to reduce barriers to cervical cancer screening conducted by a healthcare professional.[8,14] In addition, the costs of treating advanced cervical cancer are high, putting a strain on healthcare systems and society as a whole.

The types of cervical cancer screening

Routine screening conducted by a healthcare professional (using an HPV test either alone or in combination with a Pap test) is the most proven and reliable way to detect cervical cancer in women.[20,21] The HPV vaccine does not protect against all cancer-causing HPV types. Therefore, all women, including those who are vaccinated, are advised to receive regular screening.[22]

Cytology

Cytology tests (also known as Pap testing in some countries) involve a healthcare professional taking cells from the cervix and where normal and abnormal cells can be seen at the microscopic level and classified accordingly.[19] Since the introduction of cytology testing, cervical cancer incidence and mortality have declined by >70% in developed nations.[19]

HPV Testing

An HPV test involves a healthcare professional taking cells from the cervix and sending them to be tested for the presence of high-risk types of HPV. HPV tests target mRNA or DNA, and if detected, further testing (usually cytology testing) will be done to determine whether there are any abnormal cells present in the sample. In some countries, an HPV test in combination with a cytology test (also

known as co-testing) is conducted; it involves one sample from the patient with two tests conducted in parallel by the laboratory.[19]

HPV self-sampling tests are being considered as a potential option to help increase screening participation rates, especially in low-resource settings and among women who are considered under-screened.[19] However, HPV self-sampling tests collect a different type of sample to that collected by a healthcare professional (also known as a clinician). Women collect their own sample from their vagina for an HPV at-home self-sampling test. As part of a clinic appointment, a healthcare professional collects a sample from a woman's cervix where cells can become infected with HPV and certain strains can potentially lead to cancer. While some research studies show self-sampling having a similar sensitivity to clinician-collected samples, other real-world studies have shown that vaginal samples collected through self-sampling are less sensitive and present a higher risk of missing disease; with one in four women potentially at risk of having cervical lesions undetected by a self-sample.[23,24,25] Therefore, sampling by a healthcare professional should remain the preferred option for the majority of women, especially those who regularly attend clinician screening. Self-sampling should be reserved as an option for under-screened women who are habitual non-attenders whilst further research is carried out and implementation challenges are addressed.

Visual inspection with acetic acid (VIA)

In lower resource settings with limited screening access, a visual inspection of the cervix may be carried out to identify lesions that might require further identification or treatment.[19] This method is not appropriate for menopausal women and has limitations, such as subjectivity and wide variation in accuracy, and is considered the least effective screening tool.[19,26] The WHO has mentioned that this method is not preferred.[7]

As one of the most preventable types of cancer, women can be protected from cervical cancer and its risk to their life with access to regular screening. Presently, despite the availability of effective tests and screening programmes, too many women remain under-screened. The current global incidence and mortality rates of cervical cancer highlight the urgent need for increased education, prevention, and treatment efforts to reduce the impact of this disease on women and their health.

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References

[1] Sung H, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021;71(3):209-249.

[2] Human Papillomavirus and Related Diseases Report, Europe. Available at: https://hpvcentre.net/statistics/reports/XEX.pdf. Accessed: June 2023.

[3] Ritchie D, et al. Europe's path to eliminating cervical cancer as a public health problem. The Lancet Regional Health - Europe. 2022;12:100276.

[4] Jansen EEL, et al. IMCM; EU-TOPIA consortium. Effect of organised cervical cancer screening on cervical cancer mortality in Europe: a systematic review. Eur J Cancer. 2020; 127: 207-223.

[5] World Health Organization. Cervical Cancer. February 2022. Available at: https://www.who.int/news-room/fact-sheets/detail/cervical-cancer. Accessed: May 2023.

[6] National Cancer Institute. HPV and cancer. Available at: HPV and Cancer - NCI. Accessed: May 2023.

[7] Centers for Disease Control and Prevention. Cancers caused by HPV. Available at: https://www.cdc.gov/hpv/parents/cancer.html. Accessed: June 2023.

[8] Shrestha AD, et al. Cervical Cancer Prevalence, Incidence and Mortality in Low and Middle Income Countries: A Systematic Review. Asian Pac J Cancer Prev, 19 (2), 319-324.

[9] Ardekani A, et al. Human Papillomavirus Infection during Pregnancy and Childhood: A Comprehensive Review. Microorganisms. 2022; 10(10):1932.

[10] World Health Organisation. WHO recommendations on self-care interventions. Available at: https://www.who.int/publications/i/item/WHO-SRH-23.1. Accessed: June 2023.
[11] Centers for Disease Control and Prevention. Cervical Cancer is Preventable. Available at: https://www.cdc.gov/vitalsigns/cervical-cancer/index.html. Accessed: June 2023.
[12] Koliopoulos G, et al. Cytology versus HPV testing for cervical cancer screening in the general population. Cochrane Database Syst Rev. 2017 Aug 10;8(8):CD008587.
[13] World Health Organisation. Global strategy to accelerate the elimination of cervical cancer as a public health problem. Available at: https://www.who.int/publications/i/item/9789240014107 Accessed: April 2023.
[14] European Commission_Europe's Beating Cancer Plan. Available at: https://health.ec.europa.eu/system/files/2022-02/eu_cancer-plan_en_0.pdf Accessed: April 2023.
[15]NHS Digital. Cervical Screening Programme, England - 2020-21. Official statistics, national statistics. https://digital.nhs.uk/data-and-information/publications/statistical/cervical-screening-annual/england--2020-2021. Accessed May 2023.
[16] OECD (2018), "Screening, survival and mortality for cervical cancer", in Health at a Glance: Europe 2018: State of Health in the EU Cycle, OECD Publishing, Paris. Available at: https://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-europe-2018/screening-survival-and-mortality-for-cervical-cancer_health_glance_eur-2018-41-en Accessed: May 2023.
[17] Judah G, et al. A population survey on beliefs around cervical cancer screening: determining the barriers and facilitators associated with attendance. BMC Cancer. 2022 May 9;22(1):522.
[18] Cancer Research UK. New insights on self-sampling for cervical cancer screening. April 2022. Available at: https://news.cancerresearchuk.org/2022/04/27/the-latest-on-self-sampling-for-cervical-cancer-screening/ . Accessed: April 2023.
[19] Elizabeth Gourd. COVID-19 pandemic causes cervical cancer screening crisis. The Lancet. Available at: https://www.thelancet.com/action/showPdf?pii=S1470-2045%2821%2900382-X Accessed: May 2023.
[20] US Preventive Services Task Force. Screening for Cervical Cancer: US Preventive Services Task Force Recommendation Statement. JAMA. 2018;320(7):674–686.
[21] Rizzo EA and Feldman. Update on primary HPV screening for cervical cancer prevention. Current Problems in Cancer. 2018; 42(5):507-520.
[22] Bedell SL, et al. Cervical Cancer Screening: Past, Present, and Future. Sexual Health Reviews. 2020;8:28e37.
[23] Arbyn M, et al. HPV testing of self-samples: Influence of collection and sample handling procedures on clinical accuracy to detect cervical precancer. The Lancet Regional Health – Europe. 2022;14.100332.
[24] Inturrisi F, et al. Clinical performance of high-risk HPV testing on self-samples versus clinician samples in routine primary HPV screening in the Netherlands: An observational study. Lancet Reg Health Eur. 2021;11:100235.
[25] Rebolj M, et al. Widening the offer of human papillomavirus self-sampling to all women eligible for cervical screening: Make haste slowly. International Journal of Cancer Int. J. Cancer. 2022;1–12.
[26] Cremer M, et al. Adequacy of visual inspection with acetic acid in women of advancing age. Int J Gynaecol Obstet. 2011 Apr;113(1):68-71.