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Wydział Lekarski
Collegium Medicum w Bydgoszczy

CANCER PREVENTION IN GENERAL PRACTICE

Cancer is the nation's second leading cause of death, but more than half of cancer deaths could be prevented through healthy choices, screening, and vaccinations.

Primary prevention, prevention of disease occurrence - is defined as interventions that reduce the risk of disease in otherwise healthy individuals. E.g. - to avoid smoking and stop drinking too much alcohol, vaccination against HPV virus, prevention sun radiation.

Secondary prevention, controlling disease in early form - screening to identify risk factors for disease or the early detection of a disease among asymptomatic and at risk individuals. E.g. - screening for colon cancer using colonoscopy to detect precancerous polyps and then removing the polyps, carcinoma in situ.

Tertiary prevention, prevention of complications once the disease is present - individuals who clearly have a disease, and the goal is to prevent them from developing further complications. E.g. - within diabetes - retinal examination, psychotherapy for patients after chemo-therapy (anti-suicide prevention)

World Health Organization Criteria for a Screening Test (The Wilson-Jungner criteria):

1. The condition being screened for should be an important health problem
2. The natural history of the condition should be well understood
3. There should be a detectable early stage
4. Treatment at an early stage should be of more benefit than at later stage
5. A suitable test should be devised for the early stage
6. The test should be acceptable
7. Intervals for repeating the test should be determined
8. Adequate health service provision should be made for the extra clinical workload resulting from screening
9. The physical and psychological risk should be less than the benefits
10. The costs should be balanced against the benefits

Prevalence - is the proportion of a defined group of people who have a condition or disease at a given point in time. Prevalence can be expressed in cases per 1000, 10,000 or 100,000 people or as a percentage.

Incidence - is the proportion of an initially disease-free group of people who develop the disease over a given period.

Prevalence and incidence may describe the frequency and burden of disease in a population; however, incidence specifically communicates new cases of the disease over a specific period (e.g., new cases in a given year).

Morbidity - is the impact of the disease on health and functioning and mortality is the degree to which the condition results in death. Some diseases may have high prevalence but cause low morbidity, and other diseases may be rare but life-threatening conditions.

Screening Test Accuracy:

- the accuracy of test is its ability to measure the actual value of the quantity being measured (using sensitivity and specificity)
- sensitivity is defined as the proportion of people with the target disorder who have a positive test result
- specificity is the proportion of people without the target disorder who have a negative test result
- the positive predictive value is the proportion of people with a positive test result who have the target disorder
- the negative predictive values is the proportion of people with a negative test result who are free of the target disorder

Number needed to screen - is a concept used to express the number of individuals who would need to be screened for a disease to prevent a single complication (morbidity or mortality) of that disease.

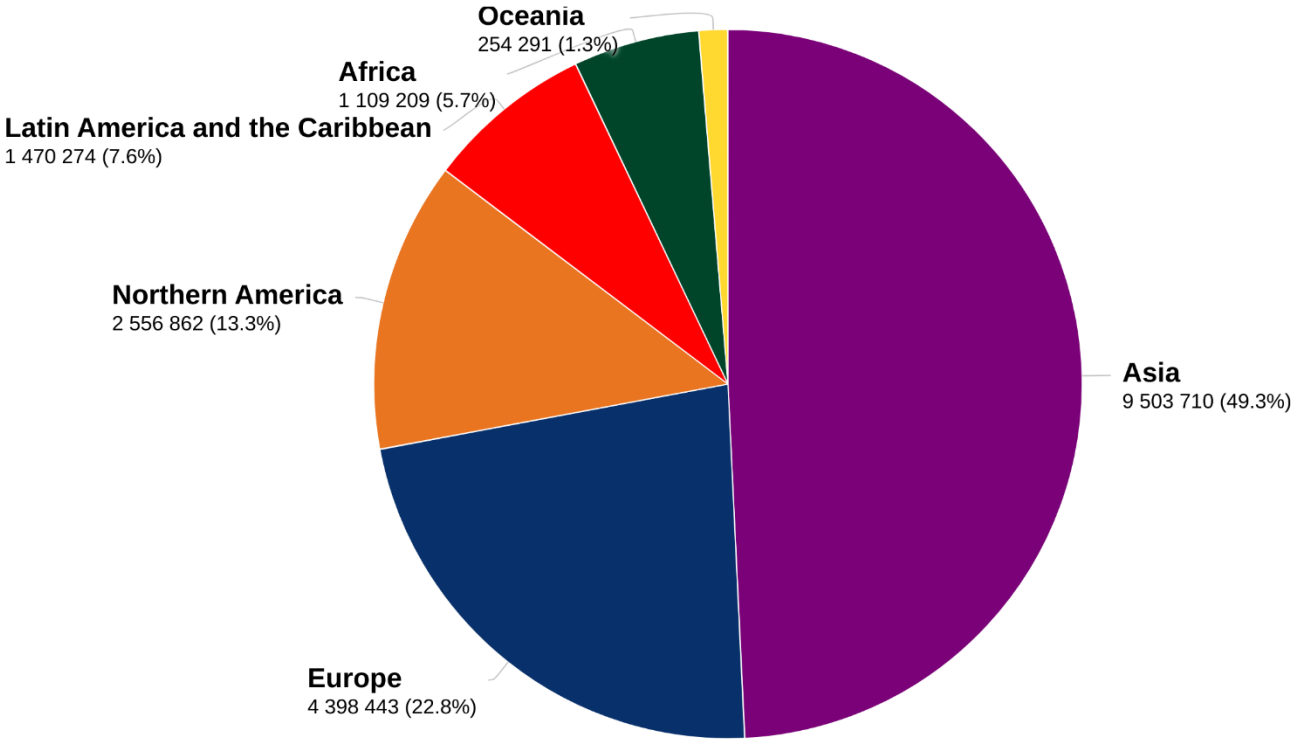
Number needed to treat – is a corollary concept that may be used for preventive medication (e.g., aspirin) - it is the number of individuals who would need to undergo the treatment or intervention to prevent a single case of disease (e.g., heart disease).

Risk factor - is a condition that is associated with an increased likelihood of a disease (e.g., smoking is a risk factor for and a proven cause of lung cancer; a smoker is many times more likely than a nonsmoker to develop lung cancer in his or her lifetime).

Risk factors may be considered:

- modifiable (can be changed) such as smoking, cholesterol level, body weight
- non-modifiable, such as age, gender, family history, race.

Estimated number of new cases in 2020, all cancers, both sexes, all ages



Total : 19 292 789

Data source: Globocan 2020
Graph production: Global Cancer Observatory (http://gco.iarc.fr)

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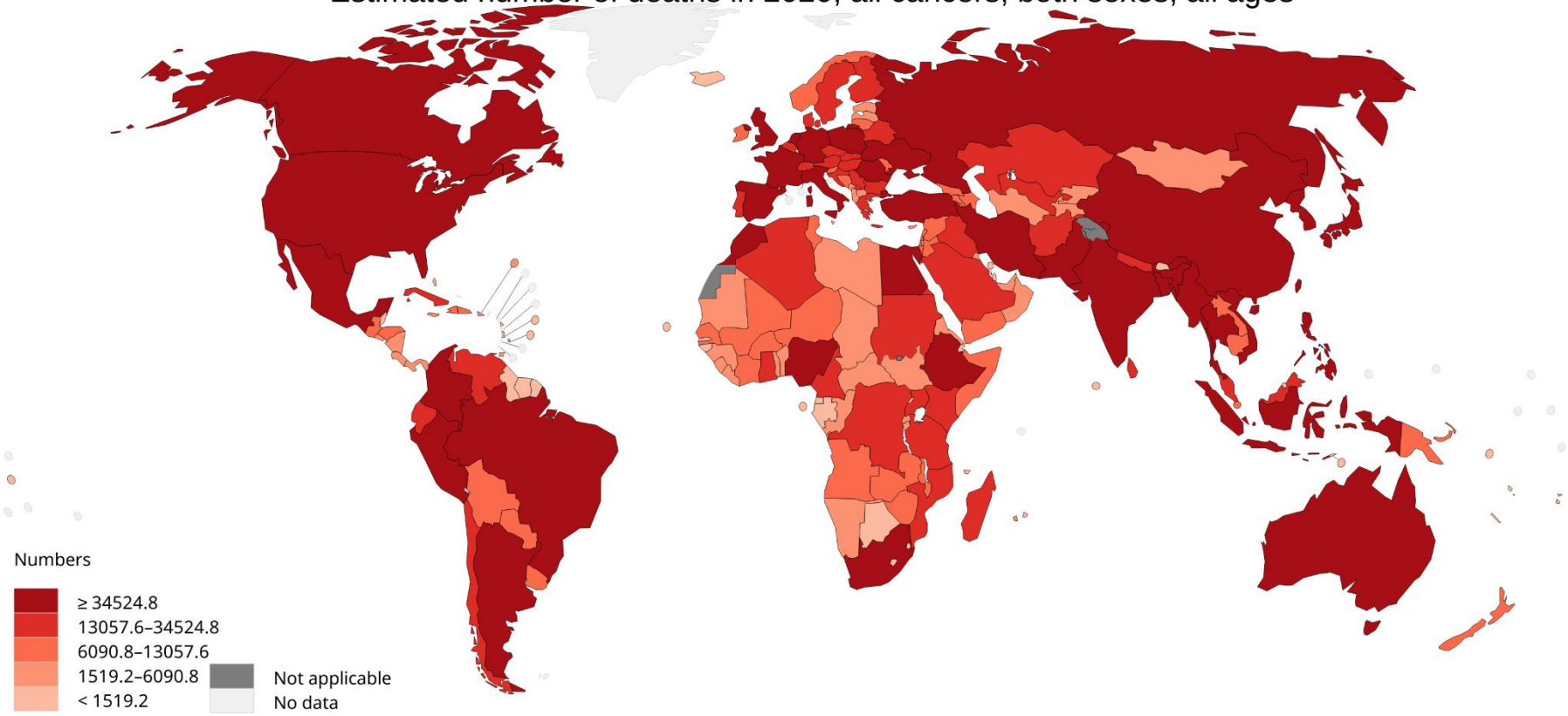
Estimated number of deaths in 2020, all cancers, both sexes, all ages



Data source: GLOBOCAN 2020
Graph production: IARC
(http://gco.iarc.fr/today)
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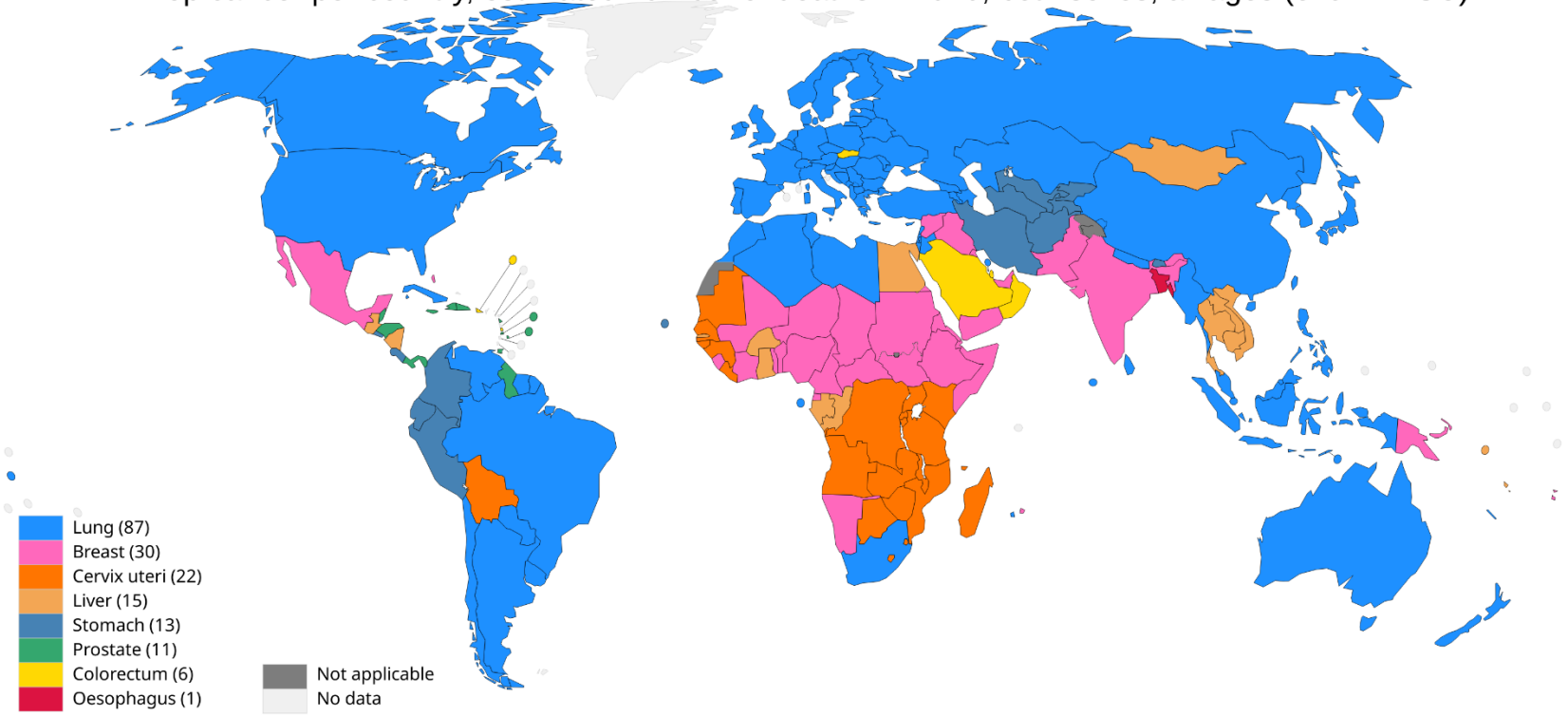
Top cancer per country, estimated number of deaths in 2020, both sexes, all ages (excl. NMSC)



Data source: GLOBOCAN 2020
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(http://gco.iarc.fr/today)
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For colorectal cancer, use faecal immunochemical testing (FIT) as the preferred triage test for referring individuals for follow-up colonoscopy.

Screening for colorectal cancer involves analysing traces of blood in stool using FIT, the guaiac faecal occult blood test (gFOBT) or by colonoscopy/sigmoidoscopy to look for the presence of adenomas and/or malignant tumours.

In terms of accuracy, FIT is a better triage test than the older gFOBT as the latter is more susceptible to false positives and requires several stool samples. Colonoscopy-based screening has higher sensitivity than testing for blood in stool, but it is less acceptable to participants and requires costly equipment and highly trained staff. Based on available evidence we recommend the use of FIT as a triage test.

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Extend breast cancer screening for women below the age of 50 with mammography or digital breast tomosynthesis and for women with dense breasts with magnetic resonance imaging (MRI).

The risk of cancer increases with age. Most countries in the EU operate national screening programmes, usually targeting women in the age group between 50 and 69. The evidence presented in the ERR (SAPEA, 2022) supports the extension of mammographic screening to women from the age of 45, as also recommended in current European Commission Initiative on Breast Cancer (ECIBC) guidelines.

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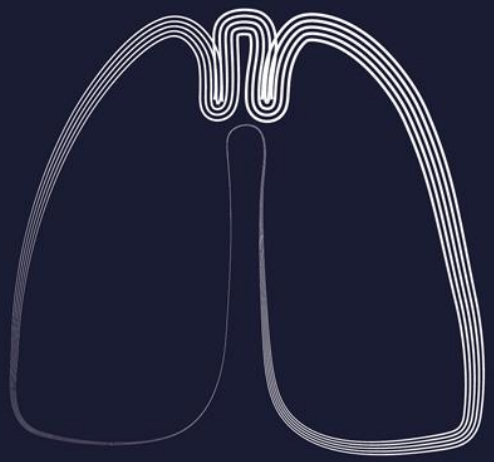
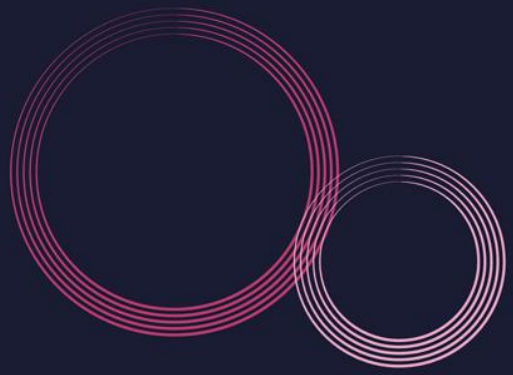
Female breast cancer

has become the most commonly diagnosed cancer in the world, overtaking lung cancer.





An estimated

2.3 million new cases

and 685 000 deaths

occurred in 2020.

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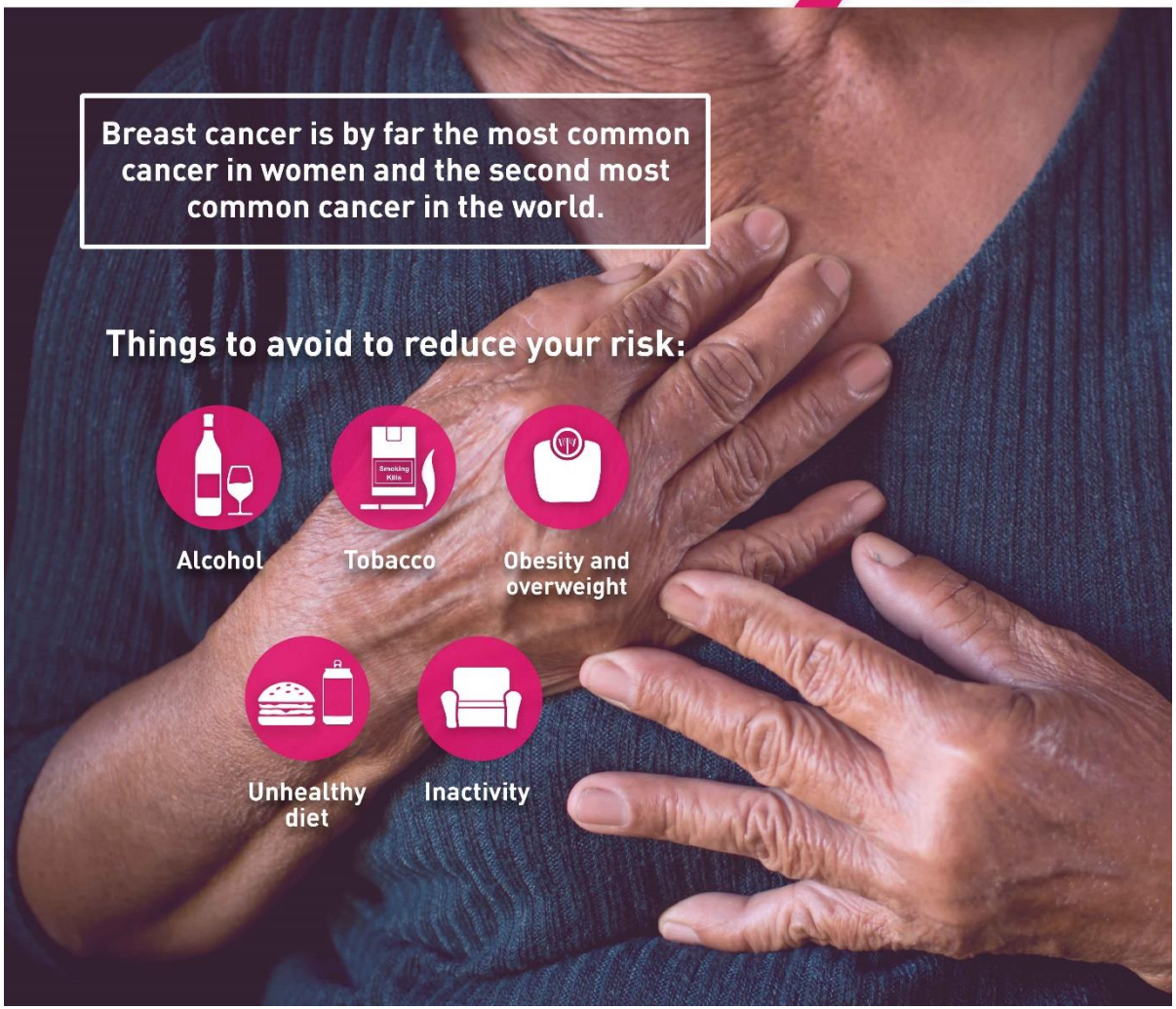
Breast Cancer Awareness Month

October 1-31

There were almost 2.1 million new breast cancer cases and over 625 000 deaths from breast cancer in 2018



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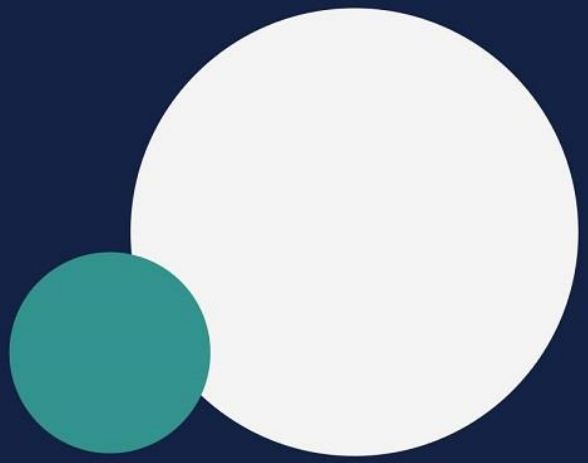
Extend screening programmes to lung cancer using low-dose computed tomography for current and ex-smokers, particularly in the light of the high numbers of deaths caused by this disease and the strength of the evidence.

Randomised clinical trials show that LDCT screening can detect more cancers and early-stage disease, reduce the mortality of lung cancer, and allow for the design of cost-effective screening programmes.

Screening for lung cancer can be combined with preventive measures encouraging people to stop smoking.

1 in 5 cancer cases in Europe are attributable to tobacco. Tobacco smoking is the primary cause for lung cancer.



Almost 9 out of 10 cases of lung cancer can be prevented.

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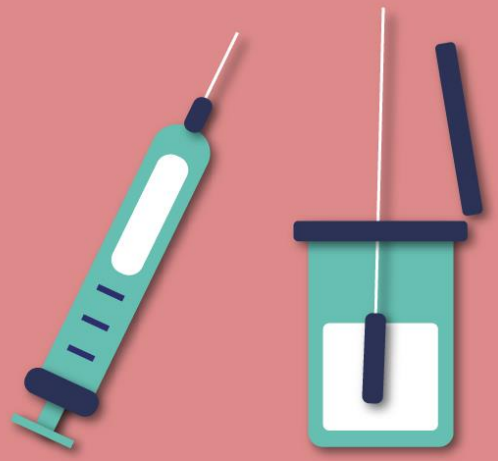
For cervical cancer, prioritise screening by testing for human papilloma virus (HPV) and support its eradication through the uptake of vaccination against HPV below 15 years of age.

HPV-based screening is more effective than cytology testing (SAPEA, 2022) and having a negative HPV test is associated with a low risk of developing cervical cancer for 6 years. Therefore, we recommend supporting the further roll out of testing for HPV. Once HPV testing programmes are generalised, traditional cytology testing can be reserved for individuals with persistent HPV infection.

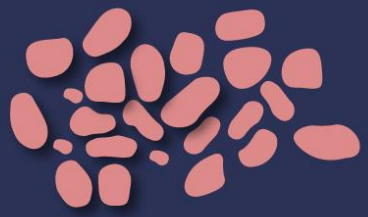
The vaccination of girls against HPV at young age gives full protection and could lead to the eradication of cervical cancer in future generations

Cervical cancer is one of the most preventable and treatable types of cancer



Yet in 2020, more than **600 000 women were diagnosed** with cervical cancer worldwide and almost **350 000 died** from the disease

Screening and vaccination are key to prevent the disease



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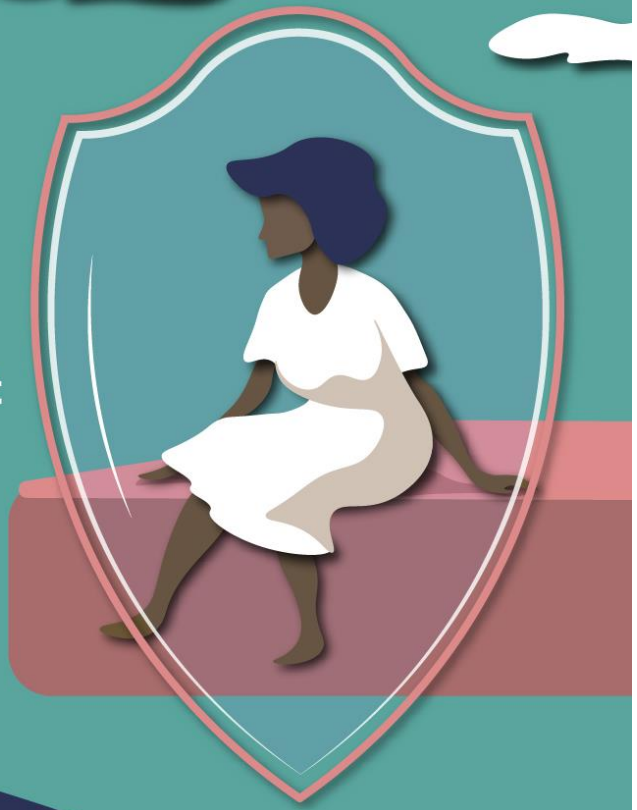
More than 99% of cases of cervical cancer are caused by infection with **human papillomavirus (HPV)**

HPV16

HPV18

Vaccines exist that protect against carcinogenic HPV types



Screening programmes can detect **early signs of disease,** allowing time for effective treatment

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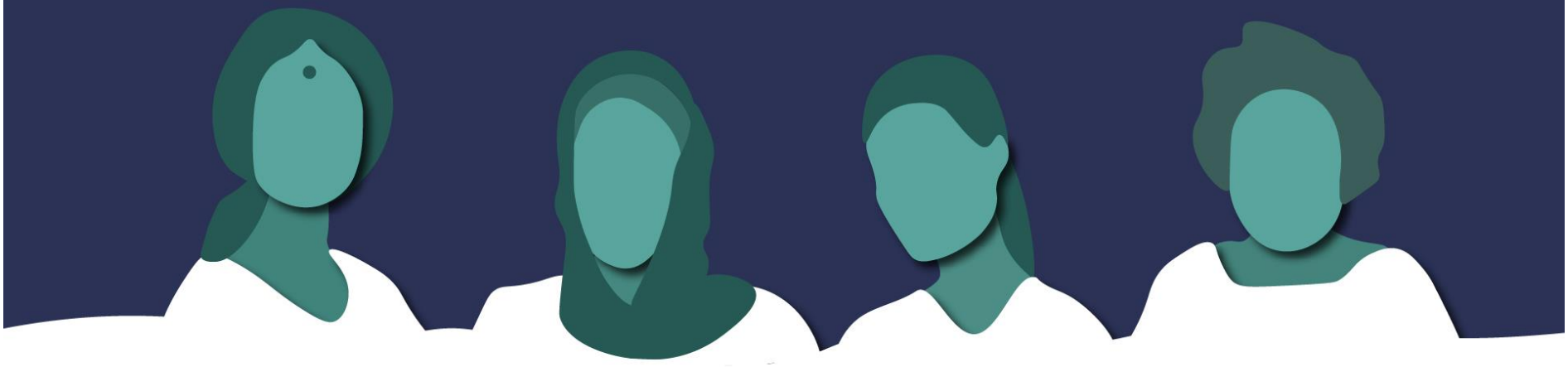
In many high-income countries, cervical cancer is rare. Almost 90% of cases and **more than 90% of deaths occur in low- and middle-income countries.**



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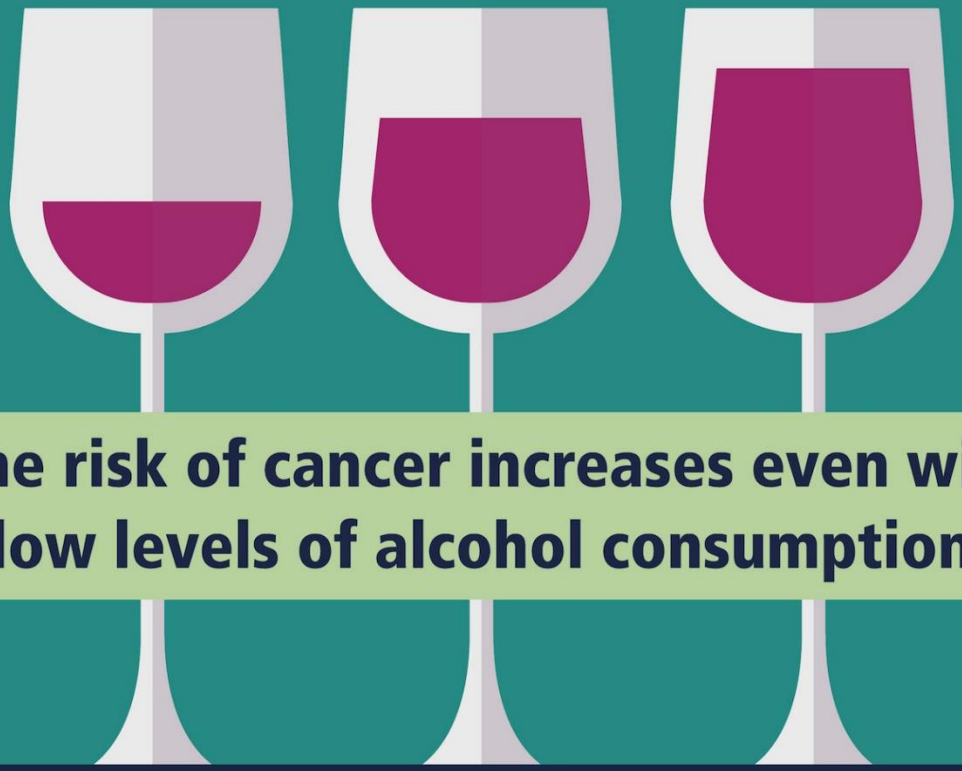
Efficient screening programmes and vaccination against HPV **can save lives**

There is no safe level of alcohol consumption.



The risk of cancer increases even with low levels of alcohol consumption.

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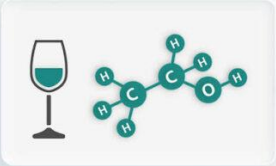
ALCOHOL AND CANCER
in the WHO European Region

Cancer is linked to a number of modifiable risk factors, **including alcohol use.**

One of the ways that **alcohol (as ethanol)** can cause cancer is through **DNA damage.**



Ethanol

DNA damage

Cancer

In the **WHO European Region** alone, alcohol is responsible for about

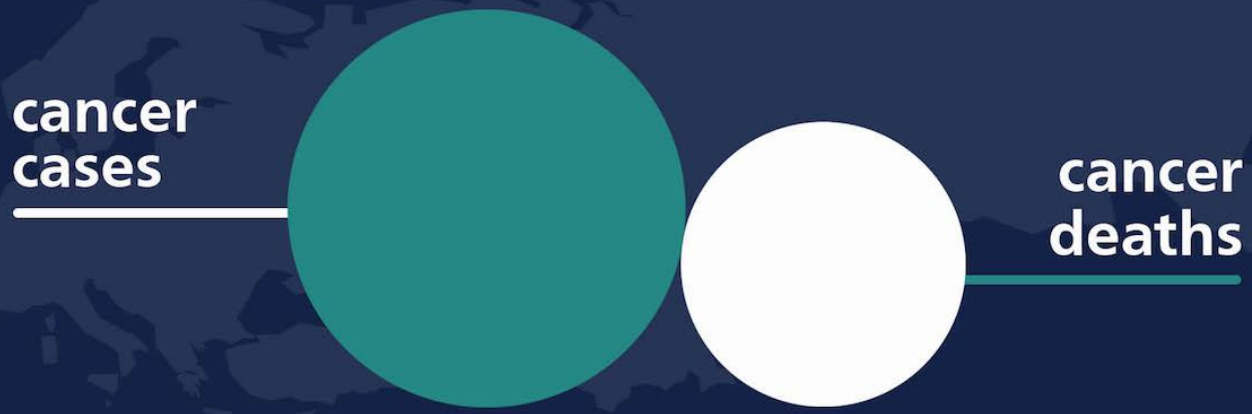
92 000

cancer deaths every

250

cancer deaths every

Approximately 180 000 cases of cancer and 92 000 cancer deaths were caused by alcohol in the WHO European Region in 2018.



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People who use both alcohol and tobacco have a **5 times** increased risk of developing cancers of the oral cavity, oropharynx, larynx and oesophagus, compared to people who use either alcohol or tobacco alone.

For heavy users, the risk is up to **30 times** higher.

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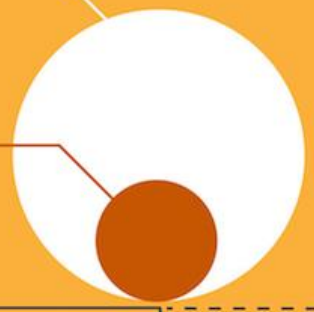
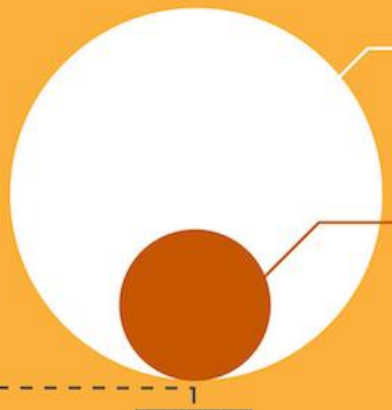
MELANOMA WORLDWIDE

325 000
new cases of melanoma were diagnosed worldwide

57 000
people died from the disease



2020



2040

510 000
new cases

96 000
deaths should be expected by 2040

Skin cancers are the most common groups of cancers diagnosed worldwide, with more than 1.5 million new cases estimated in 2020

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