Explanatory Notes for 2021 Cervical Cancer Profiles

PROFILE HEADER

Total population, females (2019): The total population estimates for females for the year 2019 were taken from the most recent United Nations Population Division World Population Prospects *(1)*. Data were rounded to two to four significant digits depending on the value.

Total deaths, females (2019): Mortality estimates for all deaths were taken from the WHO Global Health Estimates 2019 (*2*). Values were rounded to two to four significant digits depending on the value.

MORBIDITY AND MORTALITY

Crude and age-standardized cervical cancer incidence per 100 000 women (2020): Incidence reflects the estimated number of new cervical cancer cases arising in the year 2020. They were calculated by the International Agency for Research on Cancer (IARC) based upon the best available data on cancer incidence nationally (*3*), including information collected routinely by national or subnational population-based cancer registries and national WHO mortality data. Crude rates are calculated by dividing the number of new cancers in 2020 by the corresponding number of individuals in the corresponding population. The age-standardized rate is a weighted mean of the age-specific rates, with the weighting based on the population distribution of the world standard population (*4*). The measure allows comparisons between populations adjusted for differences in age structures.

Cumulative risk of cervical cancer, ages 0-74 (2020): Cumulative risk of incidence is the number of newborn children (out of 100) who would be expected to develop a particular cancer over a lifetime (defined for the age range 0-74 years), assuming that they had the rates of cancer observed in the period of observation and that there is an absence of competing causes of death. Further details on the calculation are available in *Cancer Incidence in Five Continents* (*4*).

Cervical cancer deaths (2019) & age-standardized death rate per 100 000 women for cervical cancer (2019): Estimates for cervical cancer deaths as well as age-standardized death rates for cervical cancer were taken from the WHO Global Health Estimates 2019 (*2*). Cervical cancer deaths were rounded to the nearest 100 for values greater than or equal to 1000 and to the nearest 10 for values greater than or equal to 100 but less than 1000. Values less than 100 were rounded to the nearest one.

Cervical cancer mortality-to-incidence ratio (2020): The ratio of new cancer cases to deaths in 2020. Both incidence and mortality rates used in the calculation were calculated by IARC and are available online in their Global Cancer Observatory (https://gco.iarc.fr/).

Population-based cancer registry exists (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (NCD CCS) (https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs). The NCD CCS

is a web-based survey of NCD focal points or designated colleagues within the Ministry of Health or a national institute or agency in all WHO Member States. Responses were validated against supporting documents provided by the country as well as cancer registry data compiled independently by IARC. While all Member States responded to the NCD CCS, it is possible for countries to leave questions blank or respond "don't know", resulting in "no data" or "don't know" values on the profiles.

PRIMARY PREVENTION

HPV Vaccination Programme (2020) : Data are derived from official country reporting to the Department of Immunization Vaccine and Biologicals (IVB) in WHO through the WHO/UNICEF Joint Reporting Form on Immunization (JRF) (https://immunizationdata.who.int/). A country is recognized as having introduced HPV vaccination when the vaccine is included into the national immunization schedule and is accessible at no cost to primary target population cohorts in the country. While WHO identified 9- to 14-year-old girls as the primary target, every country identifies its own specific primary target cohort according to the country context. While most countries introduce in the whole territory, some countries may introduce stepwise though subnational introductions. **HPV vaccination programme coverage** describes the vaccination coverage according to the national schedule and the program's eligibility criteria for each calendar year. It represents the number of doses of HPV vaccines provided in the calendar year as a fraction of the program's target population up to 14 years of age. Note that most countries vaccinate a single cohort and current estimates exclude reported doses provided to the population aged 15 and above. **HPV vaccination coverage by age 15** represents the proportion of population turning 15 in the reporting year that have been vaccinated against HPV at any time between ages 9 to 14, normally in previous calendar years. This indicator is highly dependent on the consistency and quality of reporting from the previous years, as the number of doses administered to a specific birth cohort are accumulated over time. This indicator allows to assess the population protection level by age 15, and hence is a standardized cohort-based measure, independent of vaccination strategy. In theory this indicator allows for a better comparison of vaccine coverage trends over time and across countries.

Tobacco use prevalence, women aged 15+ (2020): Crude-adjusted estimates are reported for tobacco use prevalence for women aged 15 years or older. Estimates are based on a modelling process published elsewhere (*5*). Estimates were produced only for countries who had at least two nationally-representative population-based surveys with prevalence rates broken down by age and sex, completed from 1990-2020 (and if only two, they were at least two years apart), one of which was in the field since 2013. Twenty-nine countries did not meet these criteria and thus do not have any estimates. For 56 countries, the estimate only reflects tobacco smoking as there was insufficient survey data on all tobacco use. These are noted with a footnote on these countries' profiles. (*6*)

Condom use at last high-risk sex (2020): Percentage of the population aged 15-49 years who say they used a condom the last time they had sex with a non-marital, non-cohabitating partner, among those who have had sex with such a partner in the last 12 months. These data are predominantly drawn directly from Demographic and Health

Surveys (http://www.dhsprogram.com/) or similar population-based surveys or surveys targeting key populations, such as the Integrated Biological and Behavioral Surveillance Survey (https://www.aidsdatahub.org/taxonomy/term/268).

HIV incidence per 1000, women aged 15+ (2020): Number of new HIV infections per 1000 uninfected population. The incidence rate is the number of new cases per population at risk in a given time period. This rate is obtained by taking the number of new HIV infections and dividing by the uninfected population (which is the total population minus people living with HIV). Data sources are described in the metadata available in WHO's Global Health Observatory (*6*). To calculate the uninfected population per 1000, the estimate of the number of people living with HIV is subtracted from the previous year's population estimates produced by the United Nations Population Division (*1*).

SECONDARY PREVENTION

National screening programme for cervical cancer (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (see above for more details). Respondents indicating the existence of a national screening programme for cervical cancer were asked to provide a copy of the country's screening programme strategy and/or the latest report from the screening programme.

Programme/guidelines exist to strengthen early detection of first symptoms at primary health care level (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (see above for more details). Data shown are the responses to the question: "Please indicate if early detection of the following cancers by means of rapid identification of the first symptoms is integrated into primary health care services: Cervix" Countries responding affirmatively were asked to provide documentation in support of their response.

Clearly defined referral system exists from primary care to secondary and tertiary care (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (see above for more details). Data shown are the responses to the question: "Please indicate if there is a clearly defined referral system [for cervical cancer] from primary care to secondary / tertiary care for suspect cases (in low- and middle-income countries this set of measures may be designated as an 'early diagnosis' programme)." Countries responding affirmatively were asked to provide documentation in support of their response.

Screening for cervical cancer (2019): Comparable national estimates for the percentage of women aged 30-49 years who have been screened for cervical cancer in the last 5 years or ever in their lives are reported in the graph. The latter is also highlighted in the text below the graph. National official recommendations for cervical cancer screening as well as screening coverage data from survey data and official administrative estimates were used to calculate the screening coverage estimates. The full details of the estimation process will be published soon (*8*).

TREATMENT AND SUPPORTIVE CARE

National guidelines on cervical cancer management exist (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (see above for more details). Respondents indicated whether evidence-based national guidelines/protocols/ standards are available for the management (diagnosis and treatment) of cancer through a primary care approach recognized/approved by government or competent authorities. Documents received were then reviewed to confirm the existence of guidelines specifically for cervical cancer.

Cancer diagnosis and treatment services generally available (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (see above for more details). Respondents were asked to detail the availability of cancer diagnosis and treatment services in the public sector where "generally available" was defined as reaching 50% or more of patients in need.

Number of radiotherapy and brachytherapy units per 10 000 cancer patients (year varies): These indicators were calculated using data available in the International Atomic Energy Agency (IAEA) Directory of Radiotherapy Centres (DIRAC) and IARC. The number of radiotherapy centres and number of brachytherapy centres was taken from the DIRAC database (https://dirac.iaea.org/). The year reported for the indicator reflects the year of the data in the DIRAC database. For the number of cancer patients, the estimated number of new cases for all cancer types for both sexes for the year 2020 was used, which was extracted from IARC's Global Cancer Observatory (https://gco.iarc.fr/).

Number of medical staff per 10 000 cancer patients (year varies): These workforce indicators were calculated from two data sources. Data on the number of radiation oncologists, medical physicists, nuclear medicine physicians, and radiologists are drawn from the International Atomic Energy Agency (IAEA) IMAGINE database (IAEA Medical imaging and Nuclear mEdicine global resources database) (https://humanhealth.iaea.org/HHW/DBStatistics/IMAGINE.html). The year reported for the indicator reflects the year of data in the IMAGINE database. Data on the number of surgeons and medical & pathology lab scientists are drawn from Global Health Observatory, WHO (https://www.who.int/data/gho/indicator-metadata-registry). For the number of cancer patients, the estimated number of new cases for all cancer types for both sexes for the year 2020 was used. These data were extracted from IARC's Global Cancer Observatory (https://gco.iarc.fr/).

Palliative care for patients with noncommunicable diseases in the public health system generally available (2021): Data were drawn from country responses to the WHO 2021 NCD Country Capacity Survey (see above for more details). Respondents were asked to indicate the availability of palliative care for patients with NCD in the public health system where "generally available" was defined as reaching 50% or more of patients in need.

Reported annual opioid consumption - excluding methadone - in oral morphine equivalence per capita (2017): These data represent the amount of opioids reported to the International Narcotics Control Board (INCB) as having been distributed legally in a country for medical use to health care institutions and programmes that are licensed to dispense to

patients (i.e. hospitals, nursing homes, pharmacies, hospice and palliative care programmes). Opioids included were morphine, fentanyl, hydromorphone, codeine, oxycodone and pethidine. Data were obtained from the International Narcotics Control Board (INCB), which provides the data in kilograms (kg) per country. The oral morphine equivalence, ME metric, (also referred to as DOME by the Lancet Commission) was then calculated using internationally accepted and approved conversion values developed by the WHO Collaborating Centre for Data Statistics and Methodology in Oslo, Norway and converted to milligrams (mg) per person based on population data for the same year (i.e. 2017) obtained from the United Nations Population Division estimates (*1*) and cross-referenced with World Bank population data in order to calculate per capita consumption. The ME metric was calculated for the countries with values reported to the INCB for at least one or more of the included medicines. There are several countries who reported extremely low amounts and appear as <1. Some other countries actually reported "zero" (0) and appear as such. These values are to be distinguished from countries who did not report data to the INCB for any of the included opioids and these are signified as "ND" (no data). It is possible that actual opioid consumption may have been higher or lower as countries may report updated data in subsequent year(s).

References

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2. Global Health Estimates 2019: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2019. Geneva, World Health Organization; 2020.
3. Ferlay J, Colombet M, Soerjomataram I, et al. Cancer statistics for the year 2020: An overview. *Int J Cancer.* 2021.
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8. Bruni L et al. Cervical Cancer Screening Worldwide: Programmes and age-specific coverage estimates for 202 Countries and Territories. *In prep.*