SITUATION ANALYSIS

of Capacities for Cervical Cancer Prevention, Treatment and Palliative Care in Eastern Europe and Central Asia

ICCPA International Cervical Cancer Prevention Association

UNFPA

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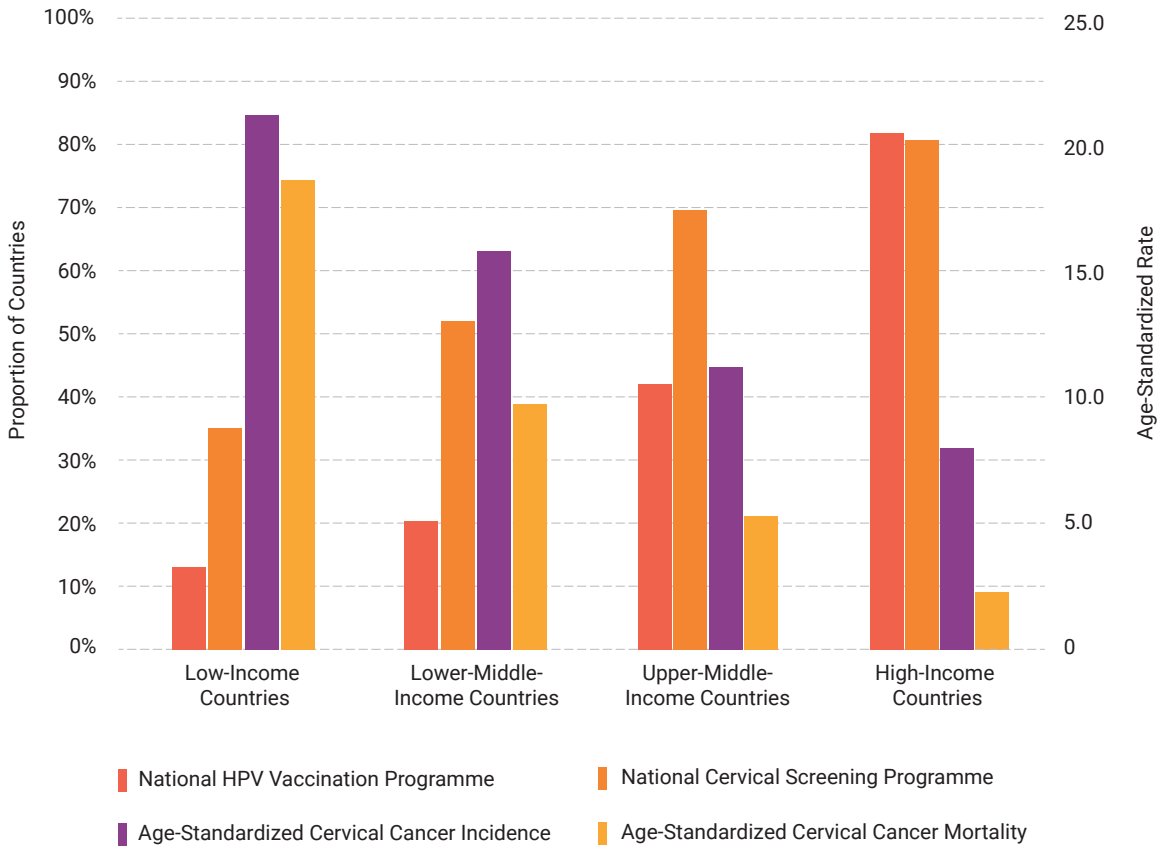
** All references to Kosovo shall be understood to be in the context of Security Council Resolution 1244 (1999).

ABBREVIATIONS AND ACRONYMS

AGC	atypical glandular cells
AIS	adenocarcinoma in situ
ASC-H	atypical squamous cells
BiH	Bosnia and Herzegovina
CIN	cervical intraepithelial neoplasia
CME	continuing medical education
CTE	country, territory or entity
CVX	Cervarix
EU	European Union
G-4	Gardasil 4
G-9	Gardasil 9
HIC	high-income country
HPV	human papillomavirus
HSIL	high-grade squamous intraepithelial lesion
ID	identification
INV	invasive carcinoma
KAP	knowledge, attitudes and practices
LMIC	low- or middle-income country
ND	no data available
NR	no official recommendations
PCR	polymerase chain reaction
PHC	primary health care
QA	quality assurance
SCH	school-based
SRH	sexual and reproductive health
UHC	universal health care
UNFPA	United Nations Population Fund
UNSAT	unsatisfactory
VIA	visual inspection of the cervix with acetic acid
WHO	World Health Organization

CERVICAL CANCER: THE GLOBAL SITUATION

Figure 1: HPV vaccination and cervical screening vs. cervical cancer incidence and mortality



Globally, there are more than 570,000 new cases and 311,000 deaths from cervical cancer every year, and these numbers are predicted to increase to more than 700,000 new cases and 400,000 deaths per year by 2030.[1] The vast majority of cases of this disease and resulting deaths occur among disadvantaged women living in low-, lower-middle- and upper-middle-income countries (LMICs—collectively, low- and middle-income countries). The main reason for this is the lack of effective cervical cancer prevention programmes (HPV vaccination and cervical screening) and treatments that are common in high-income countries (HICs) (Figure 1).[2]

Proven and cost-effective methods to prevent cervical cancer exist but have not yet been widely implemented in the countries where the disease burden is highest. The World Health Assembly, in May 2020, adopted a global strategy to accelerate the elimination of cervical cancer as a

1 International Agency for Research on Cancer (IARC), Global Cancer Observatory (GLOBOCAN) 2018 Estimates. Available at http://gco.iarc.fr/.

2 Freddie Bray and others, "Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries", *CA: A Cancer Journal for Clinicians*, vol. 68, No. 6 (2018), pp. 394–424.

public health problem, with the aim of all countries achieving an incidence rate below 4 per 100,000 woman-years.[3]

To attain this, the World Health Organization (WHO) outlined the required actions in its Global Strategy towards Eliminating Cervical Cancer as a Public Health Problem,[4] which rests on three main pillars:

- prevention through vaccination,
- screening and treatment of precancerous lesions, and
- treatment and palliative care for invasive cervical cancer.

WHO also provided a set of targets (the 90-70-90 targets) that all countries should achieve by 2030:

- 90 percent of girls fully vaccinated with HPV vaccine by 15 years of age,
- 70 percent of women screened with a high-performance test (a test with performance equivalent to or better than a nucleic-acid amplification test) by the age of 35 and again by the age of 45, and
- 90 percent of women identified with cervical disease treated[5] (90 percent of women with precancer treated; 90 percent of women with invasive cancer managed).

This strategy is projected to result in mortality-rate reductions of 33.9 percent by 2030 and 96.2 percent by 2070, saving the lives of more than 62 million women by 2120.[5] But achieving this will be possible only through the adoption of national programmes delivered by health services that address the personal, cultural, social, structural and economic barriers that currently impede access by women and girls.

Compared with Western Europe, the number of new cervical cancer cases and deaths is up to 10 times higher in UNFPA's Eastern Europe and Central Asia region, where this disease is the second-most-common cause of cancer-related death among women of reproductive age.[6]

3 World Health Organization (WHO), "World Health Assembly adopts global strategy to accelerate cervical cancer elimination", 19 August 2020.

4 WHO, *Global strategy to accelerate the elimination of cervical cancer as a public health problem* (Geneva, 2020).

5 Karen Canfell and others, "Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries", *The Lancet*, vol. 395, No. 10224 (February 2020), pp. 591–603.

6 IARC, Global Cancer Observatory (GLOBOCAN) Cancer Tomorrow, 2018 Estimates. Available at http://gco.iarc.fr/tomorrow.

PREVENTING CERVICAL CANCER

Almost every case of cervical cancer could be prevented by effective primary and secondary prevention programmes.

PRIMARY PREVENTION

There is now overwhelming evidence showing that HPV vaccination of adolescent girls is the most effective long-term strategy to reduce HPV infections and prevent the resulting precancerous cervical lesions and cervical cancers.[7,8,9]

For optimal protection, WHO currently recommends that adolescent girls between 9 and 14 years of age receive two doses of HPV vaccine six months apart.[10] There is also strong evidence that high HPV vaccine coverage produces herd immunity, affording protection to unvaccinated individuals and therefore increasing the benefits for the community as a whole.[11]

To achieve high population coverage, HPV vaccination should be provided free of charge, and vaccination programmes must include strong communication strategies for advocacy and social mobilization to ensure people are aware of the efficacy, safety and benefits of the vaccine.[12,13] In addition, evidence-based strategies must be prepared to address the misinformation spread by anti-vaccination campaigns that have undermined implementation of these programmes in some countries.

SECONDARY PREVENTION

The objective of secondary prevention by cervical screening is to identify women with clinically relevant precancerous cervical lesions that can be removed to prevent them progressing to cervical cancer.[14] Cervical screening can reduce cervical cancer rates by up to 80 percent, but reductions of this magnitude will come only from well-organized programmes with high

7 Marc Arbyn and others, "Prophylactic vaccination against human papillomaviruses to prevent cervical cancer and its precursors", *Cochrane Database of Systemic Reviews* (May 2018).

8 Silvia de Sanjose and others, "Human papillomavirus genotype attribution in invasive cervical cancer: a retrospective cross-sectional worldwide study', *The Lancet Oncology*, vol. 11, No. 11 (November 2010), pp. 1048–1056.

9 Davit Bzhalava and others, "A systematic review of the prevalence of mucosal and cutaneous human papillomavirus types", *Virology*, vol. 445, Nos. 1–2 (October 2013), pp. 224–231.

10 WHO, Immunization, Vaccines and Biologicals: Data and Statistics: Human papillomavirus (HPV). Available at https://www.who.int/immunization/diseases/hpv/en/.

11 Mélanie Drolet and others, "Population-level impact and herd effects following the introduction of human papillomavirus vaccination programmes: updated systematic review and meta-analysis", *The Lancet*, vol. 394, No. 10197 (August 2019), pp. 497–509.

12 Diviya Santhanes and others, "Factors influencing intention to obtain the HPV vaccine in South East Asian and Western Pacific regions: A systematic review and meta-analysis", *Scientific Reports*, vol. 8 (February 2018).

13 Vicky Mengqi Qin and others, "The impact of user charges on health outcomes in low-income and middle-income countries: a systematic review", *BMJ Global Health*, vol. 3 (January 2019).

14 IARC, *Cervix Cancer Screening*, IARC Handbooks of Cancer Prevention, vol. 10 (Lyon, IARC Press, 2005).

coverage of the target population (>70 percent), effective follow-up of all screen-positive women and robust quality assurance (QA).[15]

As for HPV vaccination, achieving high cervical screening coverage of the target population means that the full range of cervical screening services (i.e. screening test, follow-up of screen-positive women and treatment of any clinically relevant disease) should be provided free of charge, and delivery should be supported by strong communication strategies for advocacy and social mobilization.[13]

The European Guidelines for Quality Assurance in Cervical Screening state that screening should be delivered only through organized programmes and should set out the key elements that are required to optimize effectiveness (Table 1).[15]

Table 1: Key elements of an organized cancer screening programme

1	A central administrative unit responsible for coordinating all elements of the screening process, including recruitment and recall, follow-up of screen-positive women, treatment of clinically relevant cervical disease and QA.
2	Access to a current database of the target population with sufficient detail to coordinate recruitment and recall.
3	A central screening registry or linked registries to record the results of screening, follow-up and treatment that can be used for recruitment and recall, monitoring the follow-up of screen-positive women and QA.
4	Access to a population-based cancer registry for QA and programme audits.
5	Evidence-based guidelines covering the entire screening process and clinical protocols for each component service.
6	A QA system covering the entire screening process and each of the component services.
7	Public health education and knowledge- and awareness-raising campaigns.
8	Mechanisms to identify and recruit underserved women from rural, remote and disadvantaged communities.

Cervical cytology (the Pap smear) has been the main screening test in HICs, where it has successfully reduced cervical cancer rates when implemented within well-organized programmes. However, cervical cytology has proven difficult to implement in LMICs,[16,17] so some countries have instead used visual inspection of the cervix with acetic acid (VIA). While VIA is easier and cheaper to implement than cervical cytology, its effectiveness is very dependent upon the training and skills of the providers, so its performance is highly variable.

More recently, a number of meta- and pooled analyses have shown that screening for HPV infection provides better protection against cervical cancer than cervical cytology or VIA, while its high negative predictive value means that the screening interval for women who have a

15 European Commission, *European guidelines for quality assurance in cervical cancer screening*, 2nd ed. (Luxembourg, Office for Official Publications of the European Communities, 2008).

16 IARC, *Cervix Cancer Screening*.

17 R. Sankaranarayanan, A.M. Budukh and R. Rajkumar, "Effective screening programmes for cervical cancer in low-and middle-income developing countries", *Bulletin of the World Health Organization*, vol. 79, No. 10 (2001), pp. 954–962.

negative test result can be extended to five years or more.[18,19,20] Further, PCR-based HPV tests have been shown to work well with self-sampled low vaginal swabs, which greatly simplifies the sampling process and facilitates screening recruitment in rural and remote communities. Because of this, WHO now recommends that all countries should use HPV testing for cervical screening.[4]

CERVICAL CANCER TREATMENT AND PALLIATIVE CARE

While preventing cervical cancer is the main objective, no preventive actions will be completely successful, so the timely diagnosis of women with cervical cancer and referral for treatment is essential to reducing morbidity and saving lives. Early-stage cervical cancers are highly treatable by surgery and/or radiotherapy, with five-year survival rates of over 80 percent in countries where effective diagnosis and treatment are available.[21] However, clinical practices in many LMICs do not fully comply with international recommendations, and the delivery of potentially curative therapy can be impaired by limited access to surgery, radiation or chemotherapy or by outdated facilities and equipment.

In addition, palliative care must be readily available and integrated into the cervical cancer treatment plan for the entire course of the disease.[22] However, there is also wide variation in the availability and effectiveness of palliative care in LMICs, particularly for the delivery of opioid analgesics, which can be subject to restrictive controls that impede or prevent their legitimate use.

A further consideration is that cancer treatment and palliative care have a high likelihood of imposing catastrophic health expenditures on patients and their families in LMICs.[23,24] It is therefore essential for all or at least a significant proportion of these costs to be paid for by the state.

18 Marc Arbyn and others, "Evidence regarding human papillomavirus testing in secondary prevention of cervical cancer", *Vaccine*, vol. 30, Supp. 5 (November 2012), 88–99.

19 Guglielmo Ronco and others, "Efficacy of HPV-based screening for prevention of invasive cervical cancer: follow-up of four European randomised controlled trials", *The Lancet*, vol. 383, No. 9916 (February 2014), pp. 524–532.

20 Lawrence von Karsa and others, "European guidelines for quality assurance in cervical cancer screening: Summary of supplements on HPV screening and vaccination", *Papillomavirus Research* (June 2015), pp. 22–31.

21 Paul A. Cohen and others, "Cervical cancer", *The Lancet*, vol. 393, No. 10167 (January 2019), pp. 169–182.

22 WHO, "Palliative care", in *Comprehensive Cervical Cancer Control: A Guide to Essential Practice*, 2nd ed. (Geneva, 2014).

23 WHO, *The World Health Report: Research for Universal Health Coverage* (Geneva, 2013), p. 13.

24 Adam Wagstaff and others, "Progress on catastrophic health spending in 133 countries: a retrospective observational study", *The Lancet Global Health*, vol. 6, No. 2 (February 2018), pp. 1–11.

EVALUATING CERVICAL CANCER PREVENTION, TREATMENT AND PALLIATIVE CARE IN EASTERN EUROPE AND CENTRAL ASIA

The UNFPA Regional Office for Eastern Europe and Central Asia and offices in the countries and territories of the region work together to support the implementation of cervical cancer prevention programmes. To facilitate these activities, this analysis of the policies and practices regarding cervical cancer prevention, treatment and palliative care in the region was conducted. The outcomes of this analysis will contribute to evidence-based policy dialogues and the implementation of strategies and actions that will ensure efficient and harmonized capacity-building, knowledge-sharing and advocacy activities throughout the region.

For this analysis, a questionnaire was distributed to the UNFPA offices in Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Moldova, North Macedonia, Serbia, Tajikistan, Türkiye, Turkmenistan, Ukraine, Uzbekistan and Kosovo.

Each UNFPA office then identified a local expert to complete the survey, clarify any outstanding issues and confirm the content of this report. In the case of Bosnia and Herzegovina, responsibility for health care is devolved to the entities, the Federation of Bosnia and Herzegovina and the Republika Srpska, so an expert was recruited from each, and the results are presented separately.

Table 2: Development priorities for cervical cancer prevention, treatment and palliative care

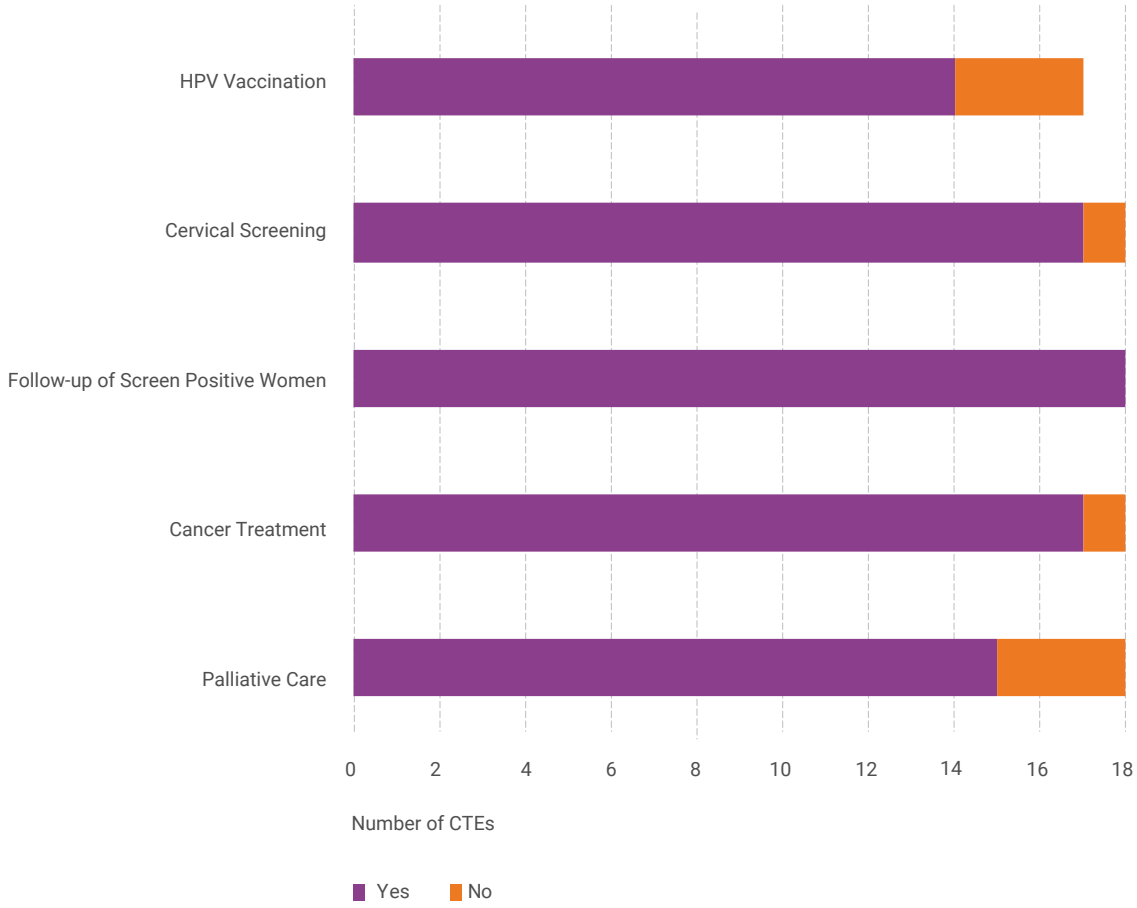
1	Cervical screening organization
2	Introduce HPV testing for primary screening
3	Introduce HPV vaccination
4	Public knowledge- and awareness-raising
5	Revise guidelines and protocols
6	Strengthen colposcopy services
7	Strengthen laboratory services
8	Strengthen oncology services
9	Strengthen palliative care
10	Strengthen primary health care (PHC) services

Each country, territory or entity (CTE) also identified its priorities for strengthening cervical cancer prevention, treatment and palliative care. Conventional content analysis was used to identify 10 themes that were relevant to two or more CTEs and were used to group the priorities (Table 2). Based on this grouping, the maximum number of themes identified by any one CTE was five, so the themes were weighted on a scale from 1 to 5, with 5 being the highest priority; duplicate themes were not counted, and weighting assignments stopped when the themes were exhausted. In this way, the highest priority for each CTE was always 5, the next 4, etc. The scores for each theme were then summed to give an overall weighting to reflect its priority within the region. The questionnaire was distributed to the UNFPA offices on 1 April 2021, with data collected and verified during April and May, and data analysis conducted in June and July 2021.

RESULTS

CERVICAL CANCER PREVENTION, TREATMENT AND PALLIATIVE CARE INCLUDED IN OFFICIAL STRATEGIES OR PLANS

Figure 2: Cervical cancer prevention, treatment and palliative care included in strategies or plans



Seventeen of 18 CTEs (not Azerbaijan) have included cervical cancer screening in an official strategy or plan, and 15 (not Albania, Türkiye and Kosovo) have included HPV vaccination.

Seventeen of 18 CTEs (not Azerbaijan) have included cancer treatment in an official strategy or plan, and 15 (not Azerbaijan, Belarus and Kosovo) have included palliative care (Figure 2).

STATE PAYMENTS FOR CERVICAL CANCER PREVENTION, TREATMENT AND PALLIATIVE CARE

HPV vaccination

Although 15 CTEs have included HPV vaccination in an official strategy or plan, only six (Armenia, Georgia, Republic of Moldova, North Macedonia, Turkmenistan and Uzbekistan) have included it in public programmes. In eight of the other CTEs (Albania, Azerbaijan, Belarus, Federation of Bosnia and Herzegovina, Republika Srpska, Serbia, Türkiye, Ukraine), HPV vaccination is available for a fee, but in the remaining four CTEs (Kazakhstan, Kyrgyzstan, Tajikistan and Kosovo), it is not officially available (Figure 3 and Table 3).

Cervical screening

In order to maximize cervical screening recruitment, the full range of cervical screening services (screening test, follow-up of screen-positive women by colposcopy and biopsy, and treatment of clinically relevant cervical intraepithelial neoplasia, or CIN) should be provided free for all age-eligible women. Only seven CTEs (Albania, Azerbaijan, Belarus, Serbia, Türkiye, Uzbekistan and Kosovo) currently do this, and practices elsewhere vary widely:

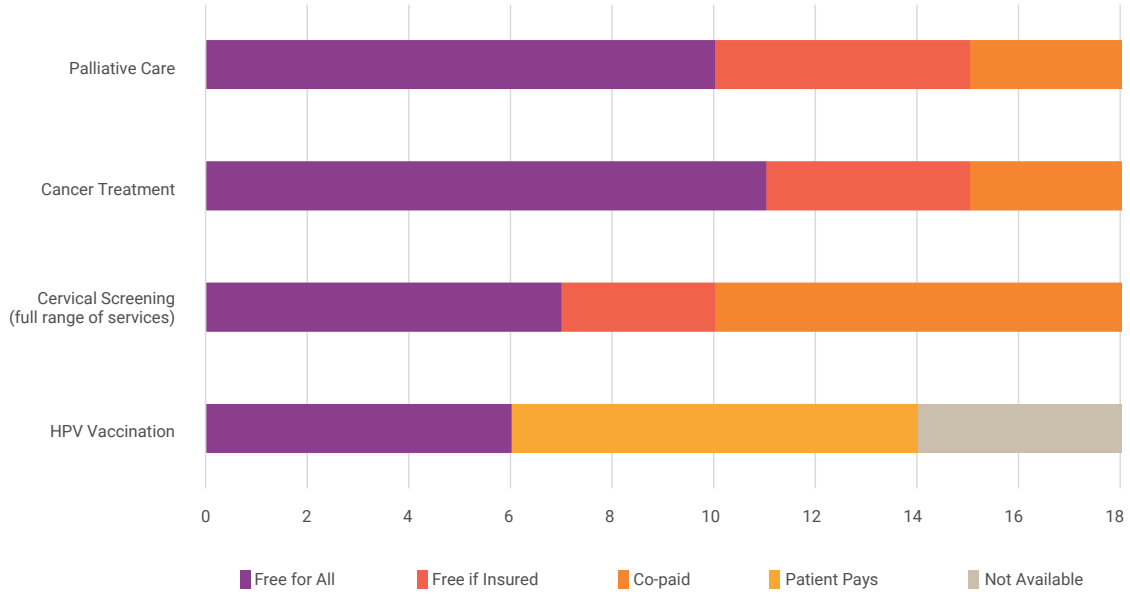
- Ukraine provides all services free to all women except for cervical biopsies, which must be paid for.
- Georgia provides the screening test, colposcopy and biopsy free to all women, but the treatment of CIN is free only for women from vulnerable groups, and other women must make a co-payment.
- Armenia, Kazakhstan and the Republic of Moldova provide the screening test free to all women but then restrict the remaining services to those with health insurance.
- The Federation of Bosnia and Herzegovina, the Republika Srpska and Turkmenistan provide all services free only to women with health insurance.
- North Macedonia provides the screening test free only to women with health insurance and requires co-payment for the remaining services.
- Tajikistan provides the screening test (VIA) free to all women, but the remaining services are free only for women from specific groups (women with a low income, pensioners, vulnerable populations, etc.).
- Kyrgyzstan requires co-payment for the screening test and treatment of CIN, but women must pay the full cost of colposcopy and biopsy.

Cancer treatment

The full cost of cancer treatment for all citizens is paid for by the state in 11 CTEs (Albania, Armenia, Azerbaijan, Belarus, Kazakhstan, Republic of Moldova, Serbia, Tajikistan, Türkiye, Ukraine and Kosovo). A further four CTEs (Federation of Bosnia and Herzegovina, North Macedonia, Republika Srpska, Turkmenistan) pay the full cost only for those with health insurance, while the remaining three CTEs (Georgia, Kyrgyzstan, Uzbekistan) have a limit on state payments for cancer treatment and/or require co-payment (Figure 3 and Table 3). However, several CTEs noted that, regardless of the official policies, stock-outs of chemotherapeutic agents in public institutions are not uncommon, and patients then need to buy these agents privately.

Palliative care

Figure 3: State payments for cervical cancer prevention, treatment and palliative care



The full costs of palliative care are paid by the state for all citizens in 10 CTEs (Albania, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Serbia, Tajikistan, Türkiye, Uzbekistan and Kosovo). A further five CTEs (Armenia, Federation of Bosnia and Herzegovina, North Macedonia, Republic of Moldova, Republika Srpska) pay the full costs only for those with health insurance, and three CTEs (Georgia, Turkmenistan, Ukraine) have a limit on state payments for palliative care and/or require co-payment (Figure 3 and Table 3).

Table 3: State payments for cervical cancer prevention, treatment and palliative care

	Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
HPV vaccination	5	1	5	5	5	5	1	6	6	1	2	5	6	5	1	5	1	6
Cervical screening	1	1	1	1	2	2	1	1	4	1	2	1	1+	1	2	1	1	1
Colposcopy and biopsy	1	2	1	1	2	2	1	2	5	2	4	1	3	1	2	1*	1	1
Treatment of CIN	1	2	1	1	2	2	3,4	2	4	2	4	1	3	1	2	1	1	1
Treatment of cancer	1	1	1	1	2	2	3,4	1	4	1	2	1	1	1	4	1	3	1
Palliative care	1	2	1	1	2	2	3,4	1	1	2	2	1	1	1	4	4	1	1

1. State pays the full cost regardless of health insurance status.
2. State pays the full cost only for those with health insurance.
3. State pays the full cost only for specific groups, such as people with low income, pensioners, vulnerable populations, etc.
4. State pays costs to a specified limit or proportion (co-payment).
5. No state payment. Patient pays the full cost.
6. Service not available publicly or privately.

\+ VIA is officially free, but stock-outs of consumables (gloves, specula, etc.) mean that women often need to buy these.

* Colposcopy is free, but biopsies must be paid for by the patient.

HPV VACCINATION POLICIES AND PRACTICES

Vaccine licensure

Fourteen CTEs have licensed one or more of the three WHO-pre-qualified HPV vaccines: Cervarix Bivalent (GlaxoSmithKline Biologicals SA), Gardasil Quadrivalent and Gardasil Nonavalent (Merck Vaccines). Kazakhstan previously licensed all three, but the licensing period expired in September 2021, and three CTEs (Kyrgyzstan, Tajikistan and Kosovo) do not currently license any HPV vaccines (Table 5).

Public sector provision of HPV vaccination

Six CTEs provide HPV vaccination through public sector programmes: Armenia, Georgia, North Macedonia, the Republic of Moldova, Turkmenistan and Uzbekistan have included HPV vaccination in their immunization calendars for age-eligible adolescents and adults. For eight of the other CTEs (Albania, Azerbaijan, Belarus, Federation of Bosnia and Herzegovina, Republika Srpska, Serbia, Türkiye and Ukraine), HPV vaccination is available only on a fee-for-service basis at a cost that ranges from US$35 to US$240 per dose, depending on the CTE. In the remaining four CTEs (Kazakhstan, Kyrgyzstan, Tajikistan and Kosovo), HPV vaccination is not officially available at all (Table 5).

For the six CTEs with public sector provision of HPV vaccination, North Macedonia, Turkmenistan and Uzbekistan have school-based programmes supported by PHC delivery, while Armenia, Georgia and the Republic of Moldova use only PHC delivery.

HPV vaccination registries

Recording the identification of those who have been vaccinated in a central electronic registry would provide accurate data on coverage rates, identify subpopulations with low coverage rates and allow the cervical screening schedules of vaccinees to be modified in the future to reflect their reduced risk so screening resources could be focused on those who have not been vaccinated.

All six CTEs with public sector provision of HPV vaccination record the identification details of vaccinees in the paper-based medical records that are located in PHC clinics distributed around the CTE, but only Armenia, Georgia, North Macedonia and Turkmenistan also record these data in a central electronic registry that would allow recipients of an HPV vaccine to be easily identified in the future (Table 5).

KAP studies and knowledge- and awareness-raising campaigns

Achieving high HPV vaccination rates requires well-coordinated knowledge- and awareness-raising campaigns based on evidence from knowledge, attitudes and practices (KAP) studies conducted in the target populations. Eight CTEs (Armenia, Georgia, Kazakhstan, North Macedonia, Republic of Moldova, Serbia, Türkiye, Uzbekistan) have conducted KAP studies to analyse the barriers to and enablers of HPV vaccination, and four of these (Armenia, Georgia, North Macedonia and Uzbekistan) have also conducted knowledge- and awareness-raising campaigns to support their vaccination programmes (Table 5).

HPV vaccination rates

Table 4: HPV vaccination programme characteristics vs. coverage rate

	Armenia	Georgia	Republic of Moldova	North Macedonia	Turkmenistan	Uzbekistan
School-based delivery	No	No	No	Yes	Yes	Yes
PHC delivery	Yes	Yes	Yes	Yes	Yes	Yes
KAP studies	Yes	Yes	Yes	No	No	Yes
Knowledge- and awareness-raising	Yes	Yes	No	No	No	Yes
WHO-reported coverage (2020)	8%	36%	40%	44%	99%	99%

There are substantial differences in the HPV vaccination rates (from 8 to 99 percent) between the six CTEs that have public sector provision, but there is not an obvious relationship between these rates and either the delivery platform or the use of knowledge- and awareness-raising campaigns.

Regarding delivery platforms, of the three CTEs with school-based programmes (supported by PHC delivery), Turkmenistan and Uzbekistan both have WHO-reported coverage rates of 99 percent, but the rate in North Macedonia is only 44 percent. Meanwhile, coverage rates in the three CTEs with only PHC delivery (Armenia, Georgia and Republic of Moldova) are 6 percent, 36 percent and 40 percent respectively.[25] Regarding knowledge- and awareness-raising campaigns, the coverage rates in the four CTEs that reported having conducted knowledge- and awareness-raising campaigns (Armenia, Georgia, North Macedonia and Uzbekistan) are 8 percent, 36 percent, 44 percent and 99 percent respectively.

25 WHO, Immunization, Vaccines and Biologicals. Available at https://immunizationdata.who.int/pages/coverage/hpv.html.

Clearly a range of other factors will have influenced the coverage rates in each CTE, and an examination of these could provide insights into the barriers to and enablers of HPV vaccination uptake that would be valuable for the CTEs that need to increase their rates or plan to introduce HPV vaccination.

Table 5: HPV vaccination policies and practices

		Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
HPV vaccination in national strategy		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Licensed vaccines[1]		CVX	G-4	G-4	CVX, G-4	CVX, G-4	CVX, G-4	G-4	CVX, G-4,9	ND	G-4	CVX, G-4	CVX, G-4,9	ND	CVX, G-4	ND	CVX	G-4	NA
Public sector provision		No	Yes	No	No	No	No	Yes	No*	No	Yes	Yes	No	No	No	Yes	No	Yes	No
Immunization calendar, year		No	Yes 2017	No	No	No	No	Yes 2019	No	No	Yes 2022	Yes 2009	No	No	No	Yes 2016	No	Yes 2019	No
Sexes and ages	**Females**	NA	13–45	NA	NA	NA	NA	10–12	NA	NA	9–14	12	NA	NA	NA	9	NA	9	NA
	Males	NA	14–45	NA	NA	NA	NA	NA	NA	NA	9–14	NA	NA	NA	NA	9	NA	NA	NA
Target population size[2]		NA	1.4m	NA	NA	NA	NA	64k	NA	NA	18k	11k	NA	NA	NA	123k	NA	325k	NA
Delivery platforms		NA	PHC	NA	NA	NA	NA	PHC	NA	NA	PHC	SCH, PHC	NA	NA	NA	SCH, PHC	NA	SCH, PHC	NA
Cost/dose (US$)		240	NA	ND	60	225	225	NA	NA	150	NA	NA	132	NA	85	NA	35	NA	NA
WHO-reported coverage,[3] year		ND	8%+ 2020	ND	ND	ND	ND	36%+ 2020	ND	ND	40%+ 2020	44%+ 2019	ND	ND	ND	99%+ 2020	ND	99%+ 2020	ND
HPV vaccination registry[4]		No	Yes	ND	ND	ND	ND	Yes	No	No	No	Yes	ND	No	No	Yes	No	No	No
KAP studies for HPV vaccination, year		No	Yes 2017–2019	No	No	No	No	Yes 2016	Yes 2017, 2020	No	Yes 2017, 2020	No	Yes various	No	Yes various	No	No	Yes various	No
Knowledge- and awareness-raising[5]		NA	a,b,c	NA	NA	NA	NA	a	a,b	NA	No	a,b	NA	NA	NA	No	NA	a,b,c	NA
Strategies to reach vulnerable groups[5]		NA	d,e	NA	NA	NA	NA	d,e	NA	NA	No	e	NA	NA	NA	No	NA	d,e	NA

1. Licensed vaccines: CVX = Cervarix; G-4 = Gardasil 4; G-9 = Gardasil 9
2. UNdata, population by age, sex and urban/rural residence: http://data.un.org/Data.aspx?d=POP&f=tableCode%3A22
3. HPV vaccination coverage: https://immunizationdata.who.int/pages/coverage/hpv.html
4. A national or regional database that records personal identifiers of vaccinees and that could be used to modify cervical screening schedules for vaccinated vs. unvaccinated in the future.
5. Knowledge- and awareness-raising campaigns and strategies to reach underserved/vulnerable people:

a. National, territorial and/or regional communication and knowledge- and awareness-raising campaigns.

b. Educational programmes for health workers to facilitate their communication with the public.

c. Crisis communication campaigns prepared to deal with anti-vaccination messaging.

d. Health workers mobilized to contact disadvantaged families living in their catchment areas.

e. HPV vaccination widely available to all groups—access in rural and/or remote communities is not considered a problem.

* Kazakhstan started a school-based HPV vaccination pilot in 2013, but it was stopped in 2016 because of the high refusal rate, which was attributed to health care providers' inability to adequately respond to the concerns of girls and their parents.

\+ Programme coverage (fully immunized females)

NA = not applicable; ND = no data available

CERVICAL CANCER SCREENING POLICIES AND PRACTICES

Availability of cervical screening

Seventeen of 18 CTEs make cervical screening available through primary facilities, including PHC clinics, women's health clinics, SRH clinics, etc., while Georgia and Türkiye also have dedicated cancer screening centres. In one CTE (Federation of Bosnia and Herzegovina), cervical screening is delivered through gynaecology clinics in polyclinics and hospitals. Cervical screening is therefore, in theory, widely available in all CTEs (Table 6). However, Ukraine also provided data on the proportion of PHC providers that actually offer cervical screening, and these showed that 52 percent of district therapists and 55 percent of general practitioners and family physicians did not. Further, a pilot project in the rural Gurjaani district of Georgia found that family doctors were very reluctant to take cervical samples for Pap smears, even when incentive payments were offered.[26]

Cervical screening test

The main screening test in 12 CTEs is cervical cytology, with 10 of these (Armenia, Azerbaijan, Federation of Bosnia and Herzegovina, Georgia, Kazakhstan, North Macedonia, Republic of Moldova, Republika Srpska, Serbia and Kosovo) using Papanicolaou staining, and two (Belarus and Ukraine) using Romanowsky staining. Four of the five Central Asian CTEs (Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) use VIA as their main screening test, although two of these (Turkmenistan and Uzbekistan) also offer cervical cytology and HPV testing for a fee through public sector clinics. Only two CTEs (Albania and Türkiye) have implemented HPV testing as their main cervical screening test, although North Macedonia and Uzbekistan are currently conducting HPV primary screening pilots (Table 6).

Cervical screening age range and interval

The European Guidelines specify a core cervical screening age range of 30–60 years,[15] while WHO specifies that the screening interval should be three to five years for VIA- or cytology-based screening and at least five years for HPV-based screening.[27]

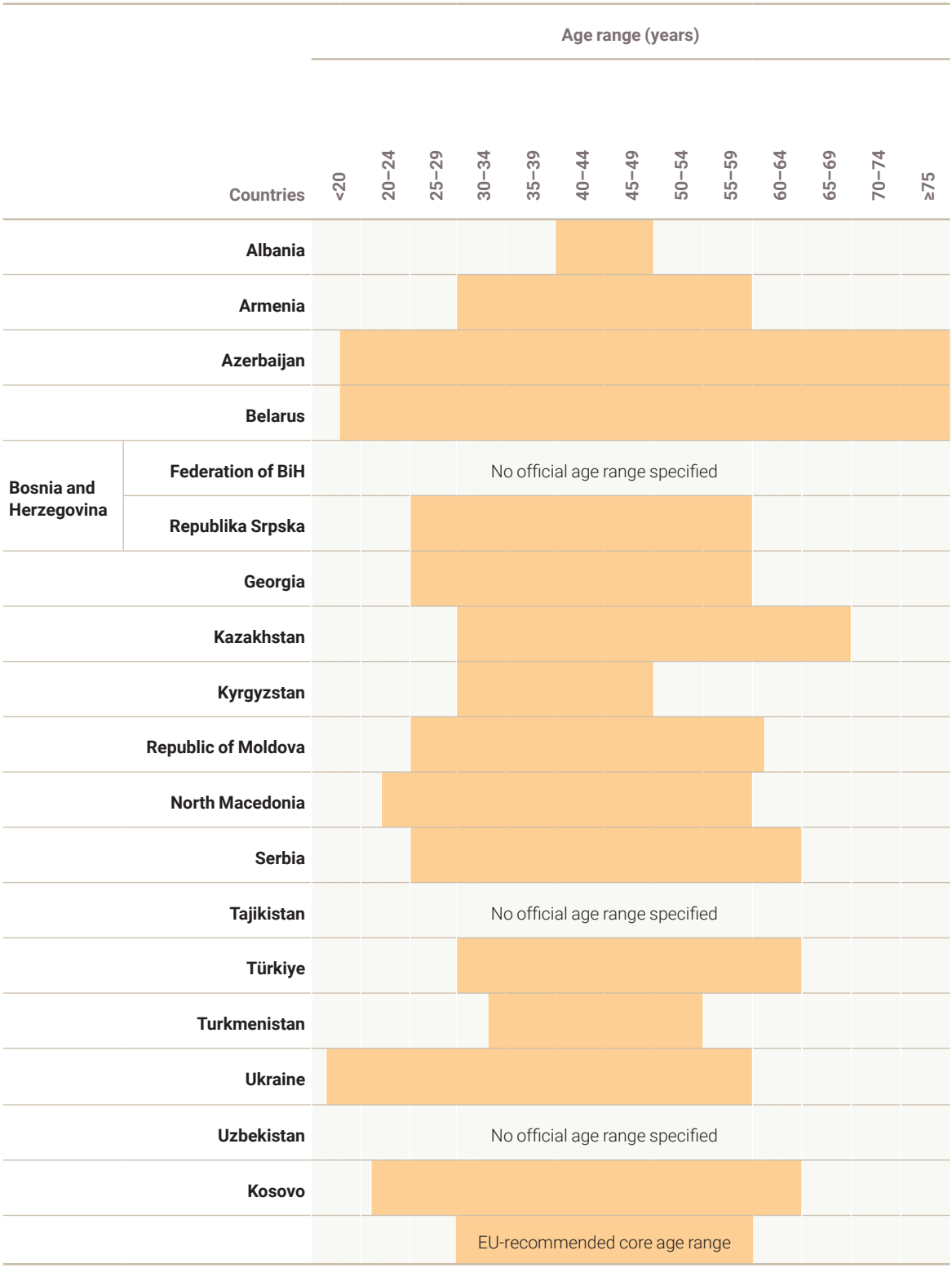
For the screening age range, most of the 15 CTEs that have specified an age range include women aged 30–60 years. The exceptions are Kyrgyzstan (30–49), Turkmenistan (33–55) and Albania, where HPV testing is the main screening test with an age range of 40–49 years (although this will be expanded as the programme becomes more established). Apart from the recommended core age range of 30–60 years, there is substantial variation around the lower

26 P. Davies, *Gurjaani Cervical Screening Pilot Analysis and Recommendations for the Implementation of a National Cervical Screening Program in Georgia*, technical report for the UNFPA Georgia Country Office, August 2018.

27 WHO, *WHO Guidelines for Screening and Treatment of Precancerous Lesions for Cervical Cancer Prevention* (Geneva, 2013).

and upper age limits, starting at 18 years in Azerbaijan, Belarus and Ukraine, and with no upper age limit in Azerbaijan and Belarus (Figure 4 and Table 6).

Figure 4: Cervical screening age ranges across Eastern Europe and Central Asia



For the screening interval, of the 16 CTEs that use VIA or cervical cytology as their main screening test, three CTEs (Azerbaijan, Tajikistan and Uzbekistan) do not specify a screening interval, one CTE (Belarus) has a one-year interval, and the remaining 11 all have intervals between three and five years. The two CTEs that use HPV testing as their main screening test (Albania and Türkiye) have a five-year screening interval.

Screening coverage

Most CTEs calculate screening coverage on the basis of the reported number of screening tests without a link to the identification details of the women who have been screened. As a result, these rates could be affected by a number of factors, such as screening women outside the recommended age range and/or screening them more often than the recommended interval.

Three CTEs (Albania, Georgia and North Macedonia) have systems in place to measure screening recruitment on the basis of which women have been screened, so their rates should be more accurate. The reported cervical screening coverage rates across the region vary from a low of 2 percent (Kosovo) to a high of 70 percent (Turkmenistan), while the rates for Albania and Georgia are 40 percent and 15 percent (Tbilisi) / 11 percent (outside Tbilisi) respectively (Table 6).

Table 6: Key aspects of cervical screening

					Bosnia and Herzegovina														
	Albania	Armenia	Azerbaijan	Belarus	Federation of BiH	Republika Srpska	Georgia (Tbilisi)	Georgia (outside Tbilisi)	Kazakhstan	Kyrgyzstan*	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
Geographical availability[1]	Nat	Nat	Nat	Nat	Reg Nat♦	Reg	Mun Nat	Reg	Nat	Nat	Nat	Nat	Nat[§]	Nat	Nat	Nat	Nat	Nat	Nat[‡]
Main delivery platforms[2]	a	a	a	a,b	b	a,b	a,c	a	a	a	a,b	a,b	a	a	a,b,c	a	a,b	a,b,c	a
Main screening test[3]	HPV	Cyto	Cyto	Cyto	Cyto	Cyto	Cyto	Cyto	Cyto	VIA	Cyto	Cyto	Cyto	VIA	HPV	VIA+	Cyto	VIA+	Cyto
Cytology stain[4]	-	Pap	Pap	Rom	Pap	Pap	Pap	Pap	Pap	-	Pap	Pap	Pap	-	-	-	Rom	-	Pap
Age range	40–50	30–60	≥18	≥18	NR	25–60	25–60	25–60	30–70	30–49	25–61	22–60	25–64	NR	30–65	33–54	18–60	NR	21–64
Screening interval (years)	5	3	NR	1	NR	3	3	3	4	3	3	3	3	NR	5	5	3	NR	3
CTE reported coverage—year	40% 2020	35% 2020	ND	50%–70%[5]	ND	33% 2013	15% 2020	11% 2020	66% 2020	ND	25% 2020	22% 2017	56% 2016	ND	44% 2020	70%	45%	ND	2% 2020

1. Geographical availability: Nat = entire country, territory or entity; Reg = regional; Mun = municipal
2. Main delivery platforms:

a. Primary health care clinics, including women's health clinics, SRH clinics and gynaecology departments of polyclinics.

b. Gynaecology departments in polyclinics or hospitals.

c. Cancer screening centres.

3. Main screening test: HPV = HPV testing; Cyto = cervical cytology; VIA = visual inspection with acetic acid.
4. Cytology stain: Pap = Papanicolaou staining; Rom = Romanowsky staining.
5. WHO Cancer Country Profile 2020: https://www.who.int/cancer/country-profiles/BLR_2020.pdf?ua=1

* Kyrgyzstan is currently conducting an organized cervical screening pilot in Khaidarkan.

♦ Excluding Brčko District.

‡ PHC providers in four municipalities covering about one quarter of the national target population invite women for screening. Elsewhere, screening is also available, but recruitment is opportunistic.

§ PHC providers in 18 municipalities covering about one third of the national target population invite women for screening, and the screening recruitment rate relates to these 18 municipalities: https://www.skriningsrbija.rs/eng/statistics/0/135/208/details/total/. Elsewhere, screening is also available, but recruitment is opportunistic.

\+ VIA is free; cervical cytology and HPV testing are also available for a fee through public sector clinics.

NR = no official recommendations; ND = no data available.

ORGANIZED VS. OPPORTUNISTIC SCREENING

The European Guidelines recommend that screening should be delivered only through organized programmes that have the eight elements set out in Table 1 above.[15] All of the participating CTEs understand the benefits of organized screening and are working to implement the elements that are most compatible with their health care systems and budgets, but none have implemented all of these elements, so screening throughout the region cannot be considered "organized" according to EU recommendations. However, these recommendations were prepared for the EU and therefore may not be fully applicable to Eastern Europe and Central Asia, at least in the near to medium term. Nonetheless, the eight sections below compare the current situation in each CTE with the corresponding elements set out in Table 1.

1. Central administrative unit responsible for screening coordination

Eight of the participating CTEs (Albania, Belarus, Georgia, Kazakhstan, North Macedonia, Republic of Moldova, Serbia and Türkiye) reported having a central cervical screening administrative unit. However, none of these units are currently responsible for identifying and inviting women to be screened (either directly or indirectly through the screening providers) or for monitoring screening test results to identify screen-positive women and to ensure they are fully followed up. As such, none comply with the objective of the European Guidelines, which is to have a central mechanism to ensure the entire cervical screening process is well coordinated, effective and equitably delivered.

2. Access to a current database of the target population for recruitment, recall and QA

While all CTEs have access to age- and sex-stratified census data needed to estimate the screening population size and screening coverage rate, these data are not sufficient to coordinate screening recruitment, recall or QA. Only one CTE (Georgia) reported that its central administrative unit has access to data from the civil registry and universal health care (UHC) programme with sufficient detail to be able to identify which women are eligible for screening, which women are due for screening and which PHC providers should invite them. (Note that, while this capacity exists in Georgia, this function has not yet been initiated, as the screening registry was launched in June 2019 and therefore needs to collect more screening history data.)

In 12 CTEs (Albania, Armenia, Georgia, Kazakhstan, North Macedonia, Republic of Moldova, Republika Srpska, Türkiye, Turkmenistan and Uzbekistan), screening recruitment and recall have been delegated to PHC providers, who are responsible for identifying women to be screened from their lists of the lists of women registered with their clinics based on the age and screening history as recorded in their local medical records. Here it should be noted that PHC medical records in most CTEs are paper-based, so identifying who should be screened requires a manual review of each woman's record.

Serbia and Kosovo have mixed systems, with PHC providers in 4 and 18 municipalities, respectively, inviting women from the lists of women registered with their clinics to be screened, with women elsewhere being screened opportunistically. Meanwhile, women in the remaining six CTEs (Azerbaijan, Belarus, Federation of Bosnia and Herzegovina, Kyrgyzstan, Tajikistan and Ukraine) are screened opportunistically.

3. A central screening registry to record and manage screening data

Only three CTEs (Albania, Georgia and North Macedonia) currently record who has been screened together with their screening test results in a central registry that could be used to monitor screening attendance and identify who should be followed up. The Georgian registry also records who has been followed up together with their results, so screen-positive women who are lost to follow-up can be identified, contacted and encouraged to attend (the Albanian registry is now implementing this function).

In all 18 CTEs, PHC providers are responsible for recording each woman's screening test result in her medical record (note that Albania, Georgia and North Macedonia have local and central recording). In addition, PHC providers in eight CTEs (Azerbaijan, Federation of Bosnia and Herzegovina, Kazakhstan, Republic of Moldova, Republika Srpska, Serbia, Türkiye and Turkmenistan) are also officially responsible for monitoring the follow-up of screen-positive women and recording these results in their medical records. However, the monitoring process in most of these CTEs requires the women to bring their (paper-based) colposcopy reports back to the PHC providers so losses to follow-up will be discovered only if the PHC providers actively monitor the submission of these reports and contact the women when their reports do not arrive.

4. Access to a population-based cancer registry for QA and programme audits

Population-based cancer registries are an essential component of cancer-control programmes for providing information on current and future service requirements and for monitoring the effects of programmes for prevention, early detection and treatment.[28] Sixteen CTEs have cancer registries covering their entire territories, Kyrgyzstan has a regional cancer registry (Chuy region), and Armenia is currently implementing a national cancer registry. Of these cancer registries, 11 (Albania, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Republika Srpska, Serbia, Türkiye and Ukraine) are members of the International Association of Cancer Registries, and four (Belarus, Republika Srpska, Serbia and Ukraine) are also members of the European Network of Cancer Registries.

All CTEs with cancer registries will have access to the incidence and mortality data needed to evaluate the impact of HPV vaccination, cervical screening and cancer treatment, although the cancer registries in Albania and the Federation of Bosnia and Herzegovina do not record the stage at diagnosis, so stage shifts could not be used to evaluate the early effects of screening.

Only one CTE (Georgia) reported that it has access to the data required to audit its screening programme, as its new screening registry is fully integrated with its cancer registry, so tracing the screening history of women who develop cervical cancer will be easy to conduct once a sufficient amount of screening history data has been recorded.

5. Evidence-based screening guidelines and colposcopy clinical protocols

Cervical screening programmes require the carefully coordinated interaction of multiple health services, so evidence-based cervical screening guidelines are essential to describing the duties of each service and how they must work together to deliver the programme. In addition, the related clinical protocols must be carefully coordinated with the guidelines to ensure there is no confusion in service delivery.

Eleven CTEs (Albania, Armenia, Federation of Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Republika Srpska, Türkiye, Ukraine and Kosovo) reported having cervical screening guidelines. In addition, 11 CTEs (Albania, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Serbia, Türkiye, Ukraine, Uzbekistan and Kosovo) reported that they have clinical protocols for colposcopy. However, the majority of these guidelines and protocols are more than five years old (with the oldest one dating from 2003), so these should be reviewed and updated as required to ensure they comply with current recommendations, including the new WHO cervical cancer strategy.

28 Donald M. Parkin, "The evolution of the population-based cancer registry", *Nature Reviews Cancer*, vol. 6 (August 2006), pp. 603–612.

6. QA system covering the entire screening process

Table 7: Cervical screening QA indicators and targets

Country	Indicator	Target
Albania	Coverage of the target population	90%
	Proportion of women receiving a screening test result within two months	96%
	Proportion of screen-positive women who attend colposcopy	90%
Kazakhstan	Coverage of the target population	90%
	Time between taking the screening test sample and completing the entire screening cycle (including colposcopy, biopsy and gynaecologist consultation)	60 days
	Cytological precancer (ASC-H, HSIL, AGC, AIS, INV) detection rate	0.55%
Serbia	Proportion of women invited for screening	100%
	Proportion of women who respond to invitation	75%
	Proportion of women screened	75%

The European Guidelines and WHO both specify that strict quality control of the entire cervical screening process and each of the component services is essential to ensuring that screening is safe and cost-effective.[15,27]

Only three CTEs (Albania, Kazakhstan and Serbia) reported that cervical screening is currently subject to active QA monitoring, although the indicators are limited (Table 7). The new Georgian cervical screening registry includes a QA module that will be activated in 2022 with a more comprehensive set of indicators and targets (Appendix 2).

Eight CTEs (Albania, Georgia, Kyrgyzstan, Republika Srpska, Tajikistan, Türkiye, Uzbekistan and Kosovo) reported that cervical cytology and/or gynaecological histology laboratories have QA procedures, but no details of the performance indicators or targets were provided.

7. Public health education and knowledge- and awareness-raising campaigns

As with HPV vaccination, cervical screening programmes require high coverage of the target population and therefore must be accompanied by effective knowledge- and awareness-raising campaigns based on evidence from KAP studies conducted in the local target populations. Only five CTEs (Albania, Armenia, Georgia, Republic of Moldova and Serbia) reported having conducted KAP studies to analyse the barriers to and enablers of cervical screening uptake, and four of these (Armenia, Georgia, Republic of Moldova and Serbia) have also conducted knowledge- and awareness-raising campaigns (Table 8). A further five CTEs (Kazakhstan, Kyrgyzstan, Republika Srpska, Uzbekistan and Kosovo) reported that their PHC providers regularly participate in knowledge- and awareness-raising activities to encourage participation in disease prevention programmes that include cervical screening, but these activities were not based on evidence from KAP studies.

The knowledge- and awareness-raising campaigns noted by the CTEs included marking cervical cancer prevention week, which is held every year at the end of January, producing posters and brochures, and organizing media events with doctors and well-known personalities.

8. Mechanisms to identify and recruit underserved women

Eight CTEs (Albania, Armenia, Republika Srpska, Serbia, Türkiye, Ukraine, Uzbekistan and Kosovo) reported that they have implemented measures to identify and recruit underserved women. In most cases, these measures involved PHC providers identifying and educating underserved women within their catchment areas.

Table 8: Elements of organized screening that have been implemented

	Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan*	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
Central administrative unit[1]	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	No
Central access to population data[2]	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No
Recruitment[3]	Loc	Loc	Opp	Opp	Opp	Loc	Loc	Loc	Opp	Loc	Loc	Loc, Opp	Opp	Loc	Loc	Opp	Loc	Loc, Opp
Data recording and management[4]	b,e	c,e	d	e	c,d	c,d	a,e	c,d	e	c,d	b,e	c,d	e	c,d	c,d	c,e	c,e	c,e

		Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan*	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
Central access to a cancer registry[5]		No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No
Screening guidelines[6]—year		Yes 2019	Yes 2014	No‡	No	Yes 2008	Yes 2003	Yes 2010	Yes 2012	Yes 2015	Yes 2020	No	No	No	Yes 2017	No	Yes 2014	No	Yes 2018
Colposcopy clinical protocols[7]—year		Yes 2019	Yes 2014	No‡	No	No	No	Yes 2010	Yes 2012	Yes 2020	Yes 2020	No	Yes 2013	No	Yes 2017	No	Yes 2014	Yes 2019	Yes 2018
QA[8]	Screening	Yes	No	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No
	Labs	Yes	No	No	No	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	Yes
Cervical screening KAP studies—year		Yes 2017	Yes 2018	No	No	No	No	Yes 2017	No	No	Yes 2017, 2020	No	Yes 2014, 2017	No	No	No	No	No	No
Knowledge- and awareness-raising		No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes
Programmes to reach vulnerable groups		Yes	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	Yes

1. Central administrative unit: a central (national/regional/municipal) administrative unit with direct responsibility for coordinating all elements of the screening process, including recruitment, recall, follow-up, monitoring and QA.
2. Central access to population data: the central administrative unit officially has access to a current database that can be used to characterize the target population with sufficient detail so women who should be screened can be identified and invited.
3. Recruitment:

Loc = the local screening providers identify the women who should be screened from the lists of women registered with their clinics and invite them.

Opp = women are screened opportunistically upon request or when attending for other reasons.

4. Data recording and management:

a. Central screening registry recording of ID details for each woman screened together with her screening test results and any follow-up procedures or treatments.

b. Central screening registry recording of ID details for each woman screened together with her screening test results but not monitoring the follow-up/treatment of screen-positive women.

c. Central monitoring of the number of screening tests delivered but not linked to any identification details.

d. Provider-level recording of ID details for each woman screened together with her screening test results and follow-up procedures or treatments.

e. Provider-level recording of ID details for each woman screened together with her screening test results but not the follow-up or treatment of screen-positive women.

5. Central access to a cancer registry: the central administrative unit officially has regular access to a population-based cancer registry for QA and programme audit (i.e. the central administrative unit can identify the women who develop cervical cancer with sufficient detail to be able to trace their screening histories).

6. Screening guidelines: guidelines for the entire screening process describing the roles of all the component services as well as the interaction between them.
7. Colposcopy clinical protocols: protocols describing the management of screen-positive women depending on the results of their screening and/or follow-up tests as well as the clinical procedures that are required at each step in the process.
8. QA system: a centrally managed QA system covering the cervical screening process or cytology/histology laboratories.

* Kyrgyzstan is currently conducting an organized cervical screening pilot in Khaidarkan.

‡ Both cervical screening guidelines and the related clinical protocols are currently being prepared.

CERVICAL CANCER TREATMENT

The purpose of this assessment was to support UNFPA contributions to evidence-based policy dialogue and to ensure efficient and harmonized advocacy, capacity-building and knowledge-sharing activities across Eastern Europe and Central Asia. It therefore focused on aspects of cervical cancer treatment that could be supported by UNFPA actions such as advocating the strengthening of specific treatment options, facilitating specialist training by strengthening local medical educational institutions and/or establishing international partnerships, and supporting the preparation or updating of evidence-based screening guidelines and clinical protocols. It was not intended that this assessment would include a comprehensive, quantitative analysis of cervical cancer treatment services in each CTE.

Availability of cervical cancer treatment services

Based on the number of centres providing different cancer treatment options in the participating CTEs, surgery and chemotherapy are the most widely available treatment options in Eastern Europe and Central Asia. The availability of radiotherapy (external beam and/or brachytherapy) was more restricted and in eight CTEs (Albania, Armenia, Azerbaijan, Kyrgyzstan, Republic of Moldova, Republika Srpska, Tajikistan and Kosovo) was available only through a single treatment centre (Table 9). However, access to radiotherapy can also be affected by the age and condition of the equipment. Ukraine reported having the largest number of radiotherapy units, but a study conducted in 2017 by Starenkiy and others found that 35 percent of the Co-60 machines required maintenance or replacement of the Co-60 source to keep them in service.[29]

Clinical protocols for cervical cancer treatment

Evidence-based clinical protocols for cervical cancer treatment are essential to ensuring consistency and quality of service provision and should therefore exist in all CTEs. Nine CTEs (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Republic of Moldova, Tajikistan, Türkiye, Ukraine and Uzbekistan) reported having clinical protocols for cancer treatment, and the majority were less than five years old (Table 9).

29 V. P. Starenkiy, O. O. Petrichenko and L. O. Averyanova, "External Beam Radiotherapy Facilities in Ukraine: Trends and Challenges", *Вопросы атомной науки и техники*, vol. 112, No. 6 (2017), pp. 112–116.

Training programmes for surgical, radiological and medical oncologists

Seventeen CTEs reported that they have formal training programmes for medical oncologists, 16 CTEs have programmes for surgical oncologists, and 15 CTEs have programmes for radiation oncologists (Table 9).

Training exchange agreements for cervical cancer treatment

Training exchanges are an efficient way to improve clinical practice in LMICs by transferring knowledge and expertise from specialist institutions in HICs. However, only six CTEs (Albania, Kazakhstan, Republika Srpska, Tajikistan, Uzbekistan and Kosovo) reported that they have agreements between local and foreign institutions for training exchanges related to cervical cancer treatment (Table 9).

Table 9: Key aspects of cervical cancer treatment

	Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
Number of specialist centres for:																		
Surgery	3	12	9	7	7	1	96	20	4	4	ND	Gen	5	Gen	5	27	16	1
External beam	1	1	1	7	3	1	5	19	1	1	ND	Gen	2	Gen	4	58	6	1
Brachytherapy	1	1	1	7	3	1	2	17	1	1	ND	Gen	1	Gen	4	34	3	1
Chemotherapy	1	11	9	7	7	1	96	20	4	4	ND	Gen	5	Gen	5	27	16	1
Clinical protocols for cancer treatment[1]	No	Yes 2019	No	Yes 2018	No	No	No	Yes 2017	Yes 2020	Yes 2020	No	Yes	Yes 2014	Yes	No	Yes 2014	Yes 2019	No
Specialist training programmes for:[2]																		
Surgical oncology	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ND	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Radiation oncology	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ND	Yes	No	Yes	No	Yes	Yes	Yes
Medical oncology	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ND	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Training exchange agreements[3]	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes	Yes

1. Formally approved, evidence-based protocols for the treatment of cervical cancer.
2. Formal training programmes (either as separate training programmes or as dedicated modules within other training programmes) that provide people with the knowledge and expertise required to work as specialists in each of the listed fields.
3. Training exchange agreements between local and foreign institutions, with locals going abroad for training and/or foreigners coming to conduct local training.

ND = no data provided; Gen = generally available, access to services is not considered a problem.

PALLIATIVE CARE SERVICES

Availability of palliative care services

The delivery of palliative care services varies widely across Eastern Europe and Central Asia. Ten CTEs (Albania, Armenia, Federation of Bosnia and Herzegovina, Kazakhstan, Kyrgyzstan, North Macedonia, Republika Srpska, Serbia, Tajikistan and Kosovo) have stratified services, with more complex care supervised and delivered by specialists through dedicated clinics and less complex care supervised and delivered by PHC providers through PHC clinics or home care. In five CTEs (Belarus, Georgia, Türkiye, Ukraine, Uzbekistan), the supervision of all palliative care is restricted to specialists, with the services delivered through dedicated clinics, mobile teams, PHC clinics or home care. In two CTEs (Republic of Moldova, Turkmenistan), all palliative care services are supervised by PHC providers and delivered through PHC clinics or home care. Azerbaijan did not provide any data on the delivery of palliative care services (Table 10).

Table 10: Key aspects of palliative care services

	Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
Palliative care training programmes[1]	No	Yes i, iii	No	Yes iii	No	No	Yes ii	No	Yes i, ii	Yes i, ii	Yes ii	Yes i,ii,iii	Yes ii	Yes i, ii	No	Yes ii, iii	Yes i, ii	No
How services are delivered[2]	a,b,c	a,b,c	ND	a	a,b,c	a,b,c	a,b	a,b,c	a,b,c	c	a,b,c	a,b,c	a,b,c	a,b	c	a	a	a,b,c
Where services are delivered[3]	e,f,g	e,f,g	ND	e,g	e,f,g	e,f,g	e,g	e,f,g	e,f,g	f,g	e,f,g	e,f,g	e,f,g	e,g	f,g	e,g	e,f,g	e,f,g
Integrated with social care services	No	Lmtd.	ND	Yes	No	Yes	No	Yes	No	Lmtd.	No	No	No	Yes	No	No	No	No
Psychological support	Lmtd.	Yes	ND	Yes	Lmtd.	Yes	No	Yes	Yes	Lmtd.	No	Yes	No	Yes	No	Yes	No	No

	Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
Education programmes to reduce stigma	No	No	ND	No	No	No	No*	No	No	No	No	No	No	No	No	No	No	No
Programmes for cancer survivors	No	No*	ND	No	No	No	No*	No	No	No	No	No	No	No	No	No	No	No*

1. Formal palliative care training programmes:

i. Short courses to give PHC staff the skills needed to provide community-level support to palliative care services.

ii. Palliative care modules included in residency programmes for another speciality (family physicians, oncologists, etc.).

iii. Longer and more comprehensive courses (such as residency programmes) designed to train palliative care specialists.

2 and 3. How and where palliative care services are delivered.

a. Supervised and delivered by palliative care specialists and/or oncologists.

b. Supervised by palliative care specialists and/or oncologists but delivered by primary health care providers.

c. Supervised and delivered by primary health care providers.

d. No state services—only charities and/or private care.

e. Hospital specialized care centres.

f. PHC-level clinics.

g. Mobile teams or home care.

* No state programmes, but some services are provided by charities, NGOs, etc.

ND = no data available; Lmtd. = Limited

Integration of palliative care with social services and psychological support

WHO recommends that palliative care services should be integrated with social services and should include psychological support for patients and their families.[4] Only six CTEs (Armenia, Belarus, Kazakhstan, Republic of Moldova, Republika Srpska and Türkiye) reported that palliative care services were integrated with social services (Table 10). However, two of these CTEs (Armenia and Republic of Moldova) also reported that this integration is to some extent theoretical, as the capacity of their social care services is very limited.

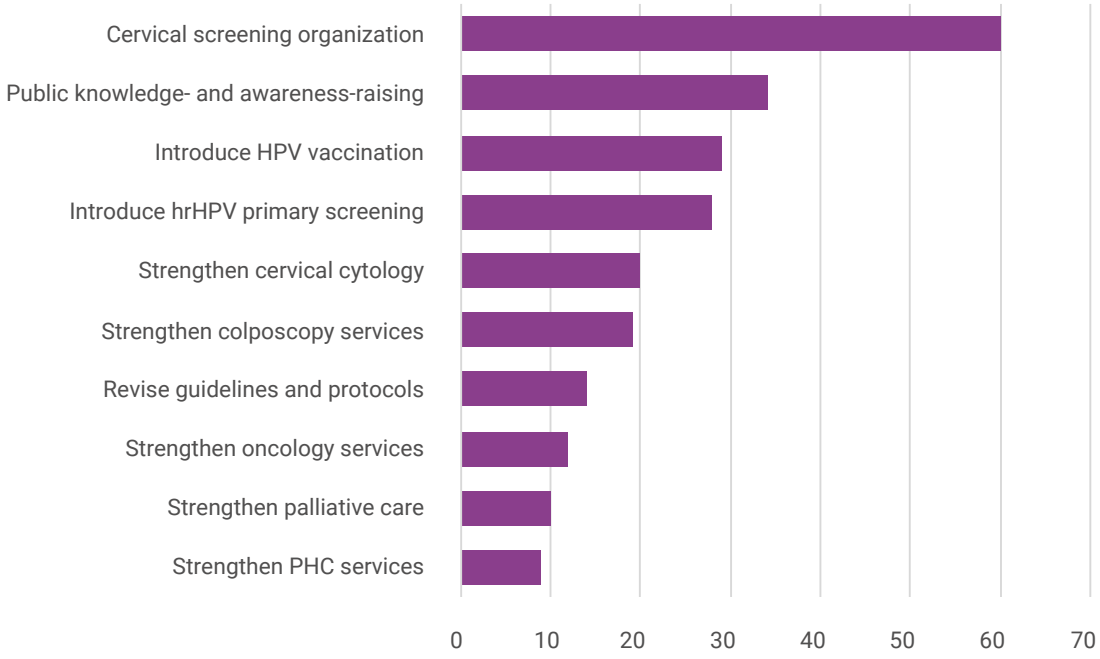
Regarding psychological support, 11 CTEs (Albania, Armenia, Belarus, Federation of Bosnia and Herzegovina, Kazakhstan, Kyrgyzstan, Republic of Moldova, Republika Srpska, Serbia, Türkiye and Ukraine) reported that their palliative care services include psychological support for patients and their families (Table 10). However, as noted for social services, some CTEs (Albania, Federation of Bosnia and Herzegovina and Republic of Moldova) reported that, while psychological support is officially provided to patients, the availability of these services is very limited.

Palliative care training programmes

Eleven CTEs (Armenia, Belarus, Georgia, Kyrgyzstan, North Macedonia, Republic of Moldova, Serbia, Tajikistan, Türkiye, Ukraine and Uzbekistan) reported that they have formal palliative care training programmes. However, the nature of these programmes varies widely from short continuing medical education (CME) courses designed to give PHC providers the skills needed to provide community-level support, to longer and more comprehensive postgraduate residency programmes designed to train palliative care specialists (Table 10).

PRIORITIES FOR CERVICAL CANCER PREVENTION, TREATMENT AND PALLIATIVE CARE

Figure 5: Priorities for cervical cancer prevention, treatment and palliative care



All CTEs were asked to provide and rank their development priorities for cervical cancer prevention, treatment and palliative care services, and summary results for the region are presented in Figure 5 and Table 11.

Priority 1: Cervical screening organization

These results indicate that the most important priority at the regional level (with almost twice the ranking of the next most important priority) is the organization of cervical screening. In this regard, a number of CTEs specifically noted the need to improve screening recruitment and/or ensure that all screen-positive women attend for colposcopy and are treated if required.

Table 11: Summary of development priorities and weighting scores

	Albania	Armenia	Azerbaijan[1]	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan[2]	Republic of Moldova	North Macedonia[3]	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo	Totals
Cervical screening organization		5		5	4	5	4	5	5	3	5	3	3	5		3		5	60
Public knowledge- and awareness-raising	4	4	2	3			5	3	4				5				4		34
Introduce HPV vaccination			4	4	5	4		4					4			4			29
Introduce HPV testing for primary screening							3	2			4	4			5	5	5		28
Strengthen laboratory services					3		2		2	2	2	5						4	20
Strengthen colposcopy services	5	3								4	1			3				3	19
Revise screening guidelines/protocols			5		1	2			3		3								14
Strengthen oncology services					2		1						2	4			3		12
Strengthen palliative care						3							1	2			2	2	10
Strengthen PHC services			3					1		5									9

Development priorities that were noted by a single CTE and therefore not included in the combined analysis:

1. Preparing and approving a cervical cancer strategy and action plan was their top priority.
2. Lobbying the government to have all cervical screening services provided free of charge was listed as a separate priority by the CTE but for this analysis was included within the strengthening of cervical screening organization.
3. Strengthening cancer registration was listed as a priority but falls outside the scope of this project.

Priority 2: Public knowledge- and awareness-raising

The second-highest priority is public knowledge- and awareness-raising for both HPV vaccination and cervical screening. In the case of HPV vaccination, interest came from CTEs with suboptimal vaccination coverage as well as from CTEs that would like to introduce HPV vaccination programmes. Several CTEs specifically noted the need for campaigns to counter misinformation being spread by anti-vaccination groups, although this was not considered a problem in all CTEs. For cervical screening, the interest was in campaigns that would improve screening recruitment, which is related to the concerns expressed for priority No. 1.

Priority 3: Introducing HPV vaccination

The third-highest priority is the introduction of HPV vaccination. As noted above, 14 CTEs have included HPV vaccination in an official strategy or plan, but eight of these have not yet introduced HPV vaccination programmes. Of these eight CTEs, seven (Azerbaijan, Belarus, Federation of Bosnia and Herzegovina, Kazakhstan, Republika Srpska, Tajikistan and Ukraine) are among those that listed the introduction of an HPV vaccination programme as one of their priorities, while the eighth (Kyrgyzstan, which has a Gavi application pending for the introduction of HPV vaccination) listed "public knowledge- and awareness-raising" related to HPV vaccination as its highest priority. Unsurprisingly, three of the four CTEs that have not included HPV vaccination in an official strategy or plan (Albania, Türkiye and Kosovo) also did not include this in their priorities (Table 12).

Table 12: HPV vaccination policies, practices and priorities

	Albania	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina: Federation of BiH	Bosnia and Herzegovina: Republika Srpska	Georgia	Kazakhstan	Kyrgyzstan	Republic of Moldova	North Macedonia	Serbia	Tajikistan	Türkiye	Turkmenistan	Ukraine	Uzbekistan	Kosovo
HPV vaccination in official strategy—year	No	Yes 2014	Yes[a]	No	Yes 2012	Yes 2019	Yes 2019	Yes 2018	Yes 2019	Yes 2016	Yes 2008	Yes	Yes 2009	No	Yes 2016	Yes[b]	Yes 2014	No
HPV vaccination in public programme—year	No	Yes 2017	No	No	No	No	Yes 2019	No[c]	No	Yes 2016	Yes 2009	No	No	No	Yes 2016	No	Yes 2019	No
Priorities included implementing HPV vaccination—(ranking)	No	-	Yes (3)	Yes (4)	Yes (5)	Yes (4)	-	Yes (4)	No[d]	-	-	No	Yes (4)	No	-	Yes (4)	-	No

a. Included in draft national cancer control plan.

b. Included in draft national sexual and reproductive health plan.

c. Kazakhstan started a school-based HPV vaccination pilot in 2013, but it was stopped in 2016 because of the high refusal rate, which was attributed to health care providers' inability to adequately respond to the concerns of girls and their parents.

d. Kyrgyzstan has a Gavi application pending for the introduction of HPV vaccination and listed "public knowledge- and awareness-raising" related to HPV vaccination and cervical screening as its top priority.

Priority 4: Introducing HPV testing for primary screening

The fourth-highest priority is the introduction of HPV testing for primary cervical screening. For some CTEs, this reflects their interest in complying with the WHO recommendation and moving from low-performance screening tests (cervical cytology or VIA) to a high-performance screening test. But some CTEs specifically noted an interest in having a technology that would allow self-sampling, both in the clinical setting (to avoid a vaginal examination) and in the home (to avoid a clinic visit).

However, it should be noted that some politicians and health professionals in LMICs will rule out HPV primary screening because of the belief that it is too expensive to be cost-effective. As a result, its ranking at the CTE and regional levels would likely be higher if this perception were corrected.

Priorities 5–6 and 8–10: Strengthening clinical and/or laboratory services

Priorities 5–6 and 8–10 all relate to the strengthening of the clinical or laboratory services that are involved in cervical screening, treatment of invasive disease and palliative care (Table 11).

With regard to the strengthening of cervical cytology services, this could be considered unimportant given the WHO recommendation that all countries should switch from low-performance screening tests (VIA and cervical cytology) to a high-performance test (HPV testing). However, implementing HPV testing will take many years, and cervical cytology will remain the main screening test for most CTEs in the near to medium term, so ensuring its quality is essential.

Priority 7: Updating cervical screening guidelines and related clinical protocols

Finally, priority 7 relates to updating cervical screening guidelines and related clinical protocols. However, cervical screening guidelines and clinical protocols are required for the effective organization of screening programmes (and are included in the list of key elements of an organized screening programme), so this should be included as a component of priority 1.

Note on the priorities:

These results represent averages for Eastern Europe and Central Asia and therefore do not directly reflect the priorities for individual CTEs. For example, a theme that was ranked 5 (the highest score) by two CTEs would be ranked 10 (a low score) in the combined analysis reflecting its priority for the region. For a more detailed understanding of the priorities at the CTE level, the original priority descriptions, thematic groupings and weighting scores for each CTE are listed in Appendix 1.

Appendix 1: Priorities for improving cervical cancer prevention, treatment and palliative care

	Priorities	Theme	Code	Weight
Albania	Strengthening colposcopy services outside of Tirana to ensure the effective follow-up of screen-positive women.	Strengthen colposcopy services	SCS	5
	Rebuilding confidence in the cervical screening programme in the post-COVID period.	Public knowledge- and awareness-raising	PKA	4
Armenia	Improving the efficacy of cervical screening by progressively implementing key elements of organized screening programmes.	Cervical screening organization	CSO	5
	Increasing HPV vaccination and cervical screening coverage through public education and promotion campaigns.	Public knowledge- and awareness-raising	PKA	4
	Strengthening follow-up of screen-positive women and colposcopy services.	Strengthen colposcopy services	SCS	3
Azerbaijan	Prepare and approve a national cervical cancer prevention strategy and action plan that is in line with the new WHO cervical cancer prevention recommendations.	Cervical cancer strategy and action plan	CSA	5
	Prepare and approve national cervical cancer screening guidelines to ensure compatibility with the new WHO cervical cancer prevention recommendations.	Revise guidelines and protocols	RGP	4
	Prepare for the introduction of an HPV vaccination programme.	Introduce HPV vaccination	IHV	3
	Education of primary health care staff so that they are better prepared to deliver HPV vaccination.	Strengthen PHC services	SPS	2
	Raise awareness of HPV vaccination among parents and the population.	Public knowledge- and awareness-raising	PKA	1
Belarus	Strengthening cervical cancer screening by introducing key elements of an organized screening programme such as a screening registry to support programme management and raising awareness to increase coverage.	Cervical screening organization	CSO	5
	Introduce an HPV vaccination programme.	Introduce HPV vaccination	IHV	4
	Knowledge- and awareness-raising campaigns for cervical screening and HPV vaccination.	Public knowledge- and awareness-raising	PKA	3

	Priorities	Theme	Code	Weight
Bosnia and Herzegovina: **Federation of Bosnia and Herzegovina**	Introducing an HPV vaccination programme, school-based but supported by delivery through primary care facilities.	Introduce HPV vaccination	IHV	5
	Strengthening cervical cancer screening by introducing key elements of an organized screening programme.	Cervical screening organization	CSO	4
	Training cytoscreeners and cytopathologists.	Strengthen laboratory services	SLS	3
	Strengthening the CME training programmes and exchanges for cancer treatment specialists in the Sarajevo, Tuzla and Mostar clinical centres.	Strengthen oncology services	SOS	2
	Update and approve cervical cancer screening guidelines to ensure compatibility with the new WHO cervical cancer prevention recommendations.	Revise guidelines and protocols	RGP	1
Bosnia and Herzegovina: **Republika Srpska**	Implementation of an organized national cervical screening programme that ensures regular screening of eligible women and follow-up of screen-positive women, including implementation of a screening registry.	Cervical screening organization	CSO	5
	Introducing an HPV vaccination programme. This is included in the UHC strategy, but it needs to be implemented.	Introduce HPV vaccination	IHV	4
	Improvement of palliative care through improvement of social conditions for the people in need of this service.	Strengthen palliative care	SPC	3
	Update and approve cervical cancer screening guidelines to ensure compatibility with the new WHO cervical cancer prevention recommendations.	Revise guidelines and protocols	RGP	2
Georgia	Improving coverage within the HPV vaccination programme.	Public knowledge- and awareness-raising	PKA	5
	Strengthening cervical cancer screening by the ongoing introduction of more elements of an organized screening programme and ensuring full functionality of the screening registry.	Cervical screening organization	CSO	4
	Introduction of HPV testing for primary screening.	Introduce HPV testing for primary screening	IHT	3
	Improve quality of cervical screening service provision, especially cervical cytology services.	Service quality	SLS	2
	Strengthening the CME training programmes and exchanges for cancer treatment specialists.	Strengthen oncology services	SOS	1

	Priorities	Theme	Code	Weight
Kazakhstan	Strengthening cervical cancer screening by introducing key elements of an organized screening programme, including data collection and epidemiological monitoring, tracking the follow-up of screen-positive women, quality assurance with performance indicators and standards, etc.	Cervical screening organization	CSO	5
	Introduction of HPV vaccination, including development of a successful algorithm, reporting, monitoring and long-term follow-up of vaccinated girls.	Introduce HPV vaccination	IHV	4
	Raising awareness of HPV vaccination among target groups using modern communication strategies, including strategies to address the growing anti-vaccination movement. Technical support is needed to develop a national strategy in the early stage of introducing HPV vaccination.	Public knowledge- and awareness-raising	PKA	3
	Introduction of HPV testing for primary screening, including self-collection to increase coverage among women in remote areas.	Introduce HPV testing for primary screening	IHT	2
	Strengthening the CME training programmes and exchanges for PHC staff involved in cervical screening.	Strengthen PHC services	SPS	1
Kyrgyzstan	Strengthening cervical cancer screening by introducing key elements of an organized screening programme, including data collection and epidemiological monitoring, tracking the follow-up of screen-positive women, quality assurance with performance indicators and standards, etc.	Cervical screening organization	CSO	5
	Awareness-raising to dispel myths about HPV vaccination and cervical cancer.	Public knowledge- and awareness-raising	PKA	4
	Lobby government to have all cervical screening services provided free of charge to all women.	Government advocacy	ADV	3
	Updating of national cervical cancer screening guidelines and clinical protocols.	Revise guidelines and protocols	RGP	2
	Strengthening of cervical cytology and gynaecological histology services—training of staff and upgrading of laboratories.	Strengthen laboratory services	SLS	1
Republic of Moldova	Training of primary care staff for HPV vaccination and for cervical screening.	Strengthen PHC services	SPS	5
	Strengthen colposcopy services for the diagnosis of cervical cancer and treatment of preinvasive cervical disease.	Strengthen colposcopy services	SCS	4
	Strengthening cervical screening organization.	Strengthen cervical screening organization	CSO	3
	Strengthening of laboratory services.	Strengthen laboratory services	SLS	2

	Priorities	Theme	Code	Weight
North Macedonia	The national committee for early detection and prevention of cervical cancer, the Ministry of Health and the Public Health Insurance Fund are currently collaborating on a redesign of the cervical screening programme that should improve screening uptake, screening data recording and management, as well as a proposal to shift towards HPV-based cervical cancer screening. North Macedonia is currently running an HPV primary screening pilot.	Cervical screening organization	CSO	5
		Introduce HPV testing for primary screening	IHT	4
	Prepare cervical screening guidelines/protocols.	Revise guidelines and protocols	RGP	3
	Strengthen laboratory services.	Strengthen laboratory services	SLS	2
	Strengthen colposcopy, palliative care, oncology, PHC.	Strengthen colposcopy services	SCS	1
Serbia	Strengthen cervical cytology—centralize laboratory services at 15 laboratories. Education and reallocation of people for cervical cytology screening and cytopathology.	Strengthen laboratory services	SLS	5
	Implementation of an HPV screening pilot.	Introduce HPV testing for primary screening	IHT	4
	A cervical cancer screening registry should be built as a link between screened women and the cancer registry.	Cervical screening organization	CSO	3
Tajikistan	Raising awareness of cervical cancer among the population and health workers.	Public knowledge- and awareness-raising	PKA	5
	Introduction of an HPV vaccination programme for girls and boys aged 9–15.	Introduce HPV vaccination	IHV	4
	Introduction of a national organized cervical screening programme.	Cervical screening organization	CSO	3
	Strengthening cancer treatment services—improving access to chemotherapy drugs and upgrading radiotherapy units.	Strengthen oncology services	SOS	2
	Strengthening palliative care services through improved access to analgesics and staff training.	Strengthen palliative care	SPC	1
Türkiye	Further strengthening of cervical screening programme.	Cervical screening organization	CSO	5
	Strengthen cancer treatment services.	Strengthen oncology services	SOS	4
	Strengthen colposcopy services for the follow-up of screen-positive women.	Strengthen colposcopy services	SCS	3
	Strengthen palliative care services.	Strengthen palliative care	SPC	2
Turkmenistan	Innovative screening methods that are low-cost, effective and can be delivered in a single home or PHC visit.	Introduce HPV testing for primary screening	IHT	5

	Priorities	Theme	Code	Weight
Ukraine	Introduction of HPV testing for primary screening.	Introduce HPV testing for primary screening	IHT	5
	Introduction of a national HPV vaccination programme.	Introduce HPV vaccination	IHV	4
	Strengthening cervical cancer screening by introducing key elements of an organized screening programme.	Cervical screening organization	CSO	3
Uzbekistan	Introduce HPV testing for primary screening in multi-profile centres in all regions of the country.	Introduce HPV testing for primary screening	IHT	5
	Develop a unified communications strategy for the prevention of cervical cancer.	Public knowledge- and awareness-raising	PKA	4
	Review and update existing standards for the diagnosis and treatment of cervical cancer in accordance with recommendations of the National Comprehensive Cancer Network. Provision of national standards for international expertise. Strengthen referral systems across health levels. Invest in training radiologists, surgeons and chemotherapists, morphologists (histologists and cytologists), medical physicists and radiotherapy technicians.	Strengthen oncology services	SOS	3
	Organize palliative care training courses for advanced training of oncologists, and clinical residents at the oncology departments of higher medical educational institutions and the Tashkent Institute of Advanced Medical Education.	Strengthen palliative care	SPC	2
Kosovo	Strengthening cervical cancer screening by introducing key elements of an organized screening programme, including data collection and epidemiological monitoring, tracking the follow-up of screen-positive women, quality assurance with performance indicators and standards, etc.	Cervical screening organization	CSO	5
	Strengthen cervical cytology services.	Strengthen laboratory services	SLS	4
	Strengthen colposcopy services.	Strengthen colposcopy services	SCS	3
	Strengthen palliative care services.	Strengthen palliative care	SPC	2

Appendix 2: Georgian cervical screening performance indicators

Indicator	Description	Stratification	Reason	Calculation	Data Source	Data Requirements	Notes
Screening coverage	The proportion of eligible women who have at least one adequate screening Pap smear result recorded within the previous 36 months.	• Programme	Screening coverage is required to establish the current status of the programme and measure the impact of actions conducted to increase coverage.	Numerator: number of eligible women with at least one adequate screening Pap smear result in the previous 36 months. Denominator: number of eligible women in the target population.	• Screening registry • Civil registry • UHC registry • Migration registry • Cancer registry	Must distinguish screening from repeat and follow-up Pap smear results. The denominator must exclude women who • do not have access, • are not actually living in the area, • have had a hysterectomy and • are being treated for cervical cancer.	Instead of a strict 36-month cut-off, it may be more informative to calculate cumulative screening coverage by one-month intervals from 36 to 48 months.
Screening interval	The proportions of eligible women rescreened at <24 months, 24 to <27 months, 27 to <30 months, 30 to <33 months, 36 to <39 months, 39 to <42 months, 42 to <45 months, 45 to 48 months, >48 months of the previous screening date.	• Cervical screening provider	Maintaining the cervical screening interval at 36 months is required to optimize the benefits, harms and cost-effectiveness of screening.	Numerator: number of eligible women with two or more adequate screening Pap smear results recorded in the screening registry, stratified by three-month intervals from <24 months to >48 months Denominator: number of eligible women screened in the same period	• Screening registry • Screening registry	Must distinguish screening from repeat and follow-up Pap smears. Must exclude women who are screened at shorter intervals due to increased risk (such as women who are HIV-positive).	The range of <24 months to >48 months is to assess the proportions of women who are not screened at the recommended 36-month interval.

Indicator	Description	Stratification	Reason	Calculation	Data Source	Data Requirements	Notes
Pap smear UNSAT rate	The proportion of Pap smears classified as UNSAT.	• Smear-taker • Laboratory	Excessively high Pap smear UNSAT rates negatively affect public perceptions of the screening programme and reduce screening uptake. They are an indicator of problems with sample collection, smear preparation or Pap smear processing and screening.	Numerator: number of Pap smears reported as UNSAT	• Screening registry		This indicator relies on the ability of the laboratory staff to accurately classify Pap smears as adequate or UNSAT.
				Denominator: number of Pap smears reported in the same period	• Screening registry		
Distribution of adequate screening Pap smear results	The proportions of all adequate screening Pap smear results (i.e. excluding UNSAT results).	• Laboratory	The proportions of screening Pap smear results should remain within certain ranges, and departures from these indicate there may be problems with screening and/or interpretation.	Numerator: number of adequate screening Pap smear results stratified by result	• Screening registry	Must be able to distinguish screening Pap smears from repeat and follow-up Pap smears.	
				Denominator: number of adequate screening Pap smear results reported in the same period	• Screening registry		
Loss to follow-up rate.	The proportion of screen-positive women who fail to comply with referral recommendations at any stage in the follow-up pathway.	• Programme • Cervical screening provider	Losses to follow-up delay diagnosis as well as the initiation of treatment and therefore undermine the cost-effectiveness of screening. In addition, they indicate faults in the screening process.	Numerator: number of screen-positive women who do not have a completed screening event recorded in the registry	• Screening registry	Must account for women who have left the country before the follow-up process has been completed.	Criteria for follow-up default need to be defined (such as time period since referral, number of reminders, etc.)
				Denominator: number of screen-positive women in the same time period	• Screening registry • Migration registry		
Colposcopy biopsy rate	The number of women attending colposcopy who had a punch or diagnostic loop biopsy.	• Laboratory • Colposcopist	Referral to colposcopy causes substantial stress and anxiety for women, so the number who are referred to colposcopy but then have no clinically relevant lesions requiring a biopsy should be minimized.	Numerator: number of screened women attending colposcopy and having a biopsy	• Screening registry	Must distinguish colposcopy attendance as a result of a screening Pap smear from other reasons such as follow-up of previous colposcopies, suspicious cervix, etc. Must distinguish diagnostic loop biopsies from loop excisions for treatment.	
				Denominator: number of screened women attending colposcopy	• Screening registry		

Indicator	Description	Stratification	Reason	Calculation	Data Source	Data Requirements	Notes
Benign biopsy rate	The proportion of women who have a biopsy with a normal or benign histological outcome.	• Colposcopist	The number of biopsies performed as a result of screening that prove to be benign should be as low as possible.	Numerator: number of biopsies with a normal or benign histological outcome	• Screening registry	Must be able to distinguish diagnostic loop biopsies from loop excision (treatment) specimens.	
				Denominator: number of biopsies reported in the same period	• Screening registry		
Positive predictive value of colposcopy referral	The proportion of women attending colposcopy because of an abnormal Pap smear who are found to have histologically confirmed ≥CIN1.	• Laboratory • Colposcopist		Numerator: number of women attending colposcopy because of an abnormal Pap smear who are found to have histologically confirmed ≥CIN1	• Screening registry		
				Denominator: Number of women attending colposcopy because of an abnormal Pap smear in the same period	• Screening registry		
Interval cancer rate	The number of interval (non-screen-detected) cancers diagnosed per 1,000 women screened.	• Time since previous screening test	Interval cancers indicate failures in the screening process that should be investigated and corrected.	Numerator: number of women presenting with an invasive cervical cancer within 36 months of a screening Pap smear	• Cancer registry • Screening registry		
				Denominator: number of women screened in the same period	• Screening registry		

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