A European Network on cervical cancer surveillance and control in the new Member States

D3 - Analysis of the local contexts

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AURORA

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D3 - ANALYSIS OF THE LOCAL CONTEXTS
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Aurora Project

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EXECUTIVE SUMMARY

Background
The demographic trends in Europe lead to expect a greater burden due to cancer in the next years. The research and development in the field of diagnosis and therapy on the one hand and the increase in the health demand by citizens on the other hand will increase exponentially the costs for the National Health Systems. Therefore prevention activities become more and more important. To minimize the economic and social burden population-based approach is requested, ensuring that prevention could reach the less fortunate part of the population, who may be in greatest need of prevention.

Among the cancer prevention opportunities cervical cancer screening (CCS) is historically one of the most effective (Miller, 1993) because can detect also precancerous lesions and because of the easiness of test execution. CCS began in the 1960s and the incidence of CC has declined since the 1970s, with a significant decline in cervical cancer incidence and mortality rates in Europe over recent decades. These results have been particularly noticeable in those countries which have implemented organized population-based screening programs with quality assurance at all levels and high acceptance of personal invitation (such as Finland, UK); from 60% to more than 80% of invasive CC cases or deaths from the disease can be prevented (IARC, 2005).

Unfortunately huge differences are observed among European countries in CC incidence and mortality. 34 000 new cases and over 16 000 deaths due to cervical cancer are reported annually in Europe 27 (Arbyn et al., 2007). The burden of cervical cancer is particularly high in the newer EU Member States, and reaches levels approximately 10-fold greater than the lowest mortality observed elsewhere in the EU. According with the Report on the implementation of the Council Recommendation on cancer screening “the burden of disease is particularly unevenly distributed in the case of cervical cancer: the proportion of cases and deaths is markedly elevated in all but one of the Member States which acceded to the EU in 2004 and 2007.” With the exception of Malta, all 11 other newly acceded members have higher incidence and mortality rates for cervix cancer than the 15 countries belonging to the European Union before the expansion in 2004 and 2007. The incidence W-ASR for 2004 was estimated to be 9.5 (per 100 000 women) in the 15 older member states, situated in West and South Europe, but was about 17 among the ten new member states that joined the EU in 2004 and that are predominantly situated in Central or Eastern Europe. Moreover, in Bulgaria and Romania, the two newest member states that acceded to the EU in 2007, rates were still higher (incidence W-ASR of respectively 20 and 22 per 100 000). The highest annual world-standardized mortality rates are currently reported in Romania and Lithuania (13.7 and 10.0/100 000, respectively) and the lowest rates in Finland (1.1/100 000). The survival estimate in Eastern European countries (Czech Republic, Poland) was somewhat lower than the averages in other parts of Europe (Verdecchia et al., 2007).
Geographical variations in CC burden are mainly due to the influence of cytology-based screening programmes. Obviously mortality is affected by the presence of the screening more than incidence, increasing detection of precancerous lesions or early stages of the disease in asymptomatic women. Implementation of organized screening programs for cervical cancer has been recommended by the Council of the European Union (2003). The national authorities and the policy makers should be aware about the impact of cervical cancer disease in their countries considering number of cases, mortality rates and the fact that cervical cancer primarily affects young women (the majority of cases between the ages of 35 and 50), women in the fertile age, involved in working or taking care of their families. Moreover they should know that, as confirmed by the experience in other European countries, if an optimal CCS policy is implemented in their countries, with adequate funds and supports, the figures of cervical cancer cases and deaths could substantially decrease. An optimal program is a screening program with quality assured at every step in the process: identification and personal invitation of the target population, performance of the test, compliance, call/recall system, second level diagnosis and treatment of the lesions detected, data registration, communication and training. As far as today many European countries have developed population-based screening programs for cervical cancers, although they differ greatly in terms of organizational characteristics, implementation stage, coverage and quality assurance (von Karsa et al., 2008, Antilla et al., 2009).

Methodology
AURORA project aims to identify a common and feasible strategy on how to promote Cervical Cancer Screening in the New EU Member States targeting women in the target age group (30-69 years old) and ensuring the coverage of the hard to reach groups, to assist the New EU Member States in the implementation of evidence-based screening for cervical cancer and to promote a European exchange of information and expertise on the development and implementation of good practices in Cervical Cancer Prevention and Advocacy.
AURORA's analysis of the local context has been carried out in all the project participating countries with the aim to collect information about Cervical Cancer epidemiology, Screening and vaccination programmes, and on hard to reach population groups; these groups have been identified in each context and their particular needs have been assessed as part of the analysis. This research activity has been considered as a fundamental step in AURORA project, since it deepened partner’s knowledge about the local situation and allowed the understanding of the general framework in which activities will be carried out.
The common methodological tool used by AURORA partners to collect, report and analyse data and information in their countries has been a questionnaire (annex 1) made of 7 sections:
Section 1: Epidemiological data
Section 2: National Health System
Section 3: Cervical Cancer Screening
Section 4: Organized Cervical Cancer Screening Programme
Section 5: Population-based organized Cervical Cancer Screening Programme
Section 6: Hard-to-reach Populations
Section 7: Vaccination

Each section has been identified according to its relevance to AURORA project’s aims and expected results. In addition, with the willing not to miss the opportunity to exploit the AURORA partners’ specific knowledge of their contexts, open fields have been edited to record information difficult to capture through the questionnaire. In particular:

National Health System organization/structure: according to our opinion it is essential to deeply understand the national health system and how it works, in order to integrate the screening program.

Hard to Reach population (HTRP): the definition chosen is “sections of the community that are difficult to involve in public participation”. The term can be used to refer to minority group such as ethnic group, sometimes to hidden populations such as illegal immigrants, sometimes to unserved groups (no services available for these groups) or service “resistants” (people failing to access the services that are available). Several factors can be involved: demographic, cultural, behavioural and attitudinal, structural. The discussion among the partners stated that there is not homogeneity in the term, certain groups may be “hard to reach” in some contexts or locations and not in others. Moreover, the term can bring some prejudices about the people “hard to reach”, thinking of HTR only as people with a low socio-economic position.

The methodology has been validated by all AURORA partners and adapted to the available information in the participating countries. This procedure allowed to gather data in an organized, homogenous and comparable way. The partners have been asked to report, in a specific table the history of the research; some international sources have been suggested, but the partners had the full responsibility about the choice of the scientific sources (scientific journals, grey literature, national reports, etc.) their representativeness, reliability and quality.

Key findings
The wide variations about epidemiology of cervical cancer among Aurora partners have been confirmed. Each partner has chosen the published data he has considered as most reliable for his local context, therefore the data are not homogeneous (different years for different countries; for cervical cancer incidence and mortality some of partners use crude rates, others – age-standardized rate.) and difficult to compare. Anyway the well-known “east-west contrast” is confirmed: in all AURORA countries, except Cyprus, Greece and Italy, the CC incidence rates are higher than in EU15. In Cyprus and Greece the lowest incidence and mortality rates are reported, but in Cyprus there are no specific epidemiological data for cervical cancer (uterus unspecified) and in Greece a large underreporting of cancer morbidity data has been estimated. On the other side the highest CC incidence rate is reported in Romania, followed by Bulgaria and Latvia; the highest mortality
rates are reported in Romania, Bulgaria, Poland - about two times (Bulgaria and Poland) and four times (Romania) higher than average rate for EU15.
The information collected about the National Health systems show once again the huge heterogeneity among the different scenarios. Diversity in political and administrative conditions, diversity in cultural aspects and behaviors, diversity in health systems organization.
Cervical cancer screening varies widely among EU countries: it is absent in two countries and not activated in one other country. In the other countries it is either population-based or opportunistic, at national or regional level with different coverage and adherence results.
From AURORA analysis of the local context one can argue that it’s very important to collect data on local basis and to check the information provided with experts working in the field. As for example in Romania, the CCS legislation and program have been published and announced, but are not implemented: practically, cytological screening program is not yet functional and has been run with interruptions due to budgetary constraints. In Bulgaria the previously (1970-1985) existing population based cervical cancer screening was replaced in the early 1990s with an opportunistic model as consequence of the slow transformation of the healthcare system.
European countries show some variability in the screening interval and target age ranges. Anyway most of the countries have chosen a 3-years interval; a wide variability can be noted for the age ranges with the extreme case of Czech Republic.
In different countries different health professionals can be involved in the CCS process, i.e. physicians (gynecologists, GPs), nurses or paramedics (midwives) and laboratory technicians, cytopathologists, but also epidemiologists, statistics, informatics, administrative, communication responsible and public health specialists. Different are also the places where CCS is performed.
According to the Report on the implementation of the Council Recommendation on cancer screening, eighteen out of 22 responding Member States (82%) reported that action is taken to ensure equal access to screening, taking due account of the possible need to target particular socio-economic groups. The situation as described in the analysis of the local context by the Aurora partners seems quite different; each country has defined one or more HTRP relevant for their countries. For most of them there are very few activities finalized to increase their adherence to CCS and very few data collected. After a long discussion involving both all the participants and the Advisory Board was decided that in countries were a Cervical Cancer Screening is not yet implemented the general population represents, for structural factors, the hard to reach population. AURORA project has been evaluated as an important opportunity for the countries where the CCS has not yet implemented to improve the local situation. It is very interesting that in some countries there are some age groups difficult to involve in public participation (in Slovenia older women, in Slovakia women 40-55 yy), in other countries have been selected women living in particular regions (Czech Republic: women living in Ustecky region or Slovenia: women from health
regions Koper, Maribor and Murska Sobota). Rural populations have been considered as HTR in Hungary and Romania, but paradoxically in Poland the available data from the screening program indicate that low educated women living in big cities attend the screening much less often than women in rural areas and in Slovakia there are worse results in participation of urban women in comparison with rural ones. Special attention is required for the CCS of Roma population, numerically significant in several AURORA countries. As reported by Greece, many Roma lack basic identity documents (police identity, health book, birth certificates, tax reports, etc), and at the same time lack basic health knowledge. Only few receive health and social benefits or have social security. The habit of migration makes periodical follow-ups or building loyalty to the health facilities almost impossible.

An organized vaccination campaign has been developed in 4 countries of the AURORA consortium: Greece, Italy, Latvia and Slovenia. In Romania, a national school-based HPV vaccination programme targeting females aged 11 was started in 2008, but was stopped due to very poor uptake (≈3%). The lack of a proper health education campaign to prepare the public in advance with accurate information of the implementation of the programme is considered to be the main reason for this result.

**Key conclusions**

**Importance of data collection**
Reliable and updated data are the first and essential step for an optimal CCS (planning, implementation and evaluation of the entire process). The epidemiological data about incidence and mortality are very important for defining the dimension of the problem and for the advocacy and lobbying activities.

According to the analysis of the local context performed by AURORA partners it is not possible to draw reliable conclusions about the incidence and prevalence of cancer in Greece (including cervical cancer) because in the official website of Hellenic Center for Disease Prevention and Control underreporting of cancer morbidity data reaches 60% (as is evident from comparison between data recorded by the Cancer registry and those reported by the Hellenic Statistical Authority).

Cancer registration and linkage of screening data with cancer registry data is essential to evaluate the impact of screening programs and the potential incidence of interval cancers; complete, national based cancer registries are still not present in all countries (Italy, as for example).

Unfortunately for CC data are still missing; in some countries, due to the problems in the accuracy of death certificates, many deaths are recorded as ‘uterus cancer, not otherwise specified’ (ICD-9 179). When the proportion ‘uterus unspecified’ is large, adjustments are difficult and may be misleading. Disease experts have to contact and inform their national epidemiological and statistics institute and their colleagues about the problem, about the huge differences about corpus and cervix cancer diseases, and about
the importance to have accurate data. Another aspect to define is the classification of the micro-invasive (FIGO stage Ia) cancers. As well known is very difficult to collect information about the number of opportunistic screening performed. The main problem with opportunistic screening is the quality level assured, with the potential risk for women health. Moreover opportunistic screening represents a potential source of waste of money because can drive towards an overuse by a portion of the target population, with the effect of consuming health resources, useful for those women who would benefit more from attending screening. Before implementation of a screening program, an inventory of baseline included information on opportunistic screening should be made. It is recognized that is very difficult obtaining data from opportunistic activity, but it is very important because opportunistic activity is widespread in many European countries. If present, the opportunistic screening should guarantee the quality-assurance process and provide all the data about patient registration, specimen collection and result (Schaffer et al., 2000).

An administrative database containing updated list of all women included in the target population is needed. The data should include name, date of birth, relevant health or social security numbers, usual doctor (where appropriate), and address for contact. The source of these lists is important for the success of the population-based screening programs; suitable registries might include population, electoral, social security, health service registries or other screening program lists. Population registries can in general provide such data but must be updated regularly to account for population migration, deaths and changes. The choice of the list of the target population is crucial for some HTRP (such as migrants, Roma population, etc).

Identify reliable process indicators and monitor the screening activities provide early feedback in order to identify problems in terms of coverage or adherence and to make all the needed changes. As for example from the analysis of the local context of the Aurora Project it follows that some population groups have relevant problems of adherence (older women in Slovenia, women 40-55 in Slovakia, women living in rural or urban areas or in particular country regions). From these data arose the decision to consider them as HTRP for that context, and therefore to direct all the efforts to increase the adherence to screening program.

The cervical cancer screening database should be able to collect information about opportunistic or organised HPV vaccination in order to evaluate in the next years the impact of this primary prevention tool on the disease epidemiology and to evaluate possible adjustments in CSS process.

All the activities related to data collection have to be compliant with the EU Data Protection Directive 95/46/EC of 24 October 1995 of the European Parliament and of the Council and with the privacy protection legislation in the member states. The secure processing and anonymization of personal data has to be guaranteed; aggregate data allow to the Health services to evaluate community benefits and to minimize negative effects and unnecessary costs.

In order to increase the awareness in the public and the policy makers it is
recommended to produce and publish regularly a statistical report about the disease epidemiology and the screening activities, showing the effectiveness and the cost effectiveness of the program.

**Importance of communication**
The success of a screening program requires adequate communication with authorities responsible for the health care system, health professionals and women in order to obtain a high population acceptance and adherence. The communication strategy for CCS has to develop evidence-based, ‘women-centered’ information. The information have to be delivered effectively, to allow women to make an informed choice about participation at each step in the screening process and taking into account the needs of particular groups. The communication about cervical cancer prevention it’s not easy: the fear of cancer, the viral cause of cancer, the sexual transmission, the long natural history of the infection are only some of the main topics to be clearly communicated.

**Importance of coordination**
In all countries the CCS programs involve several professionals and in many countries a lack of coordination is evident. It is recommended that a comprehensive, organized program is coordinated by an independent administrative body with legal and budgetary responsibility. Furthermore a board in which all professionals are represented should be created in the aim to adapt the framework of the European recommendations and guidelines to the local contexts and requirements and to monitor the CCS activities in terms of quality assurance. A common platform of knowledge and an adequate level of quality assurance could be reached through coordinated educational and training activities.

**Importance of the involvement of the HTRP**
The involvement of HTRP in prevention program is needful both for ethical reasons (guarantee equal access to all citizens) and health economics reasons; decision makers have to be aware that women of HTRP, with a low compliance to screening are usually those who for several reasons have a greater risk of cervical cancer (incidence and mortality). These women will possibly access to health system at an advanced stage of the disease, with a greater burden in term of human and financial costs. After the individuation of the HTRP relevant for each country, the specific obstacles that decrease the adherence of the group population to the screening have to be analyzed in depth. This is the essential assumption for removing such barriers. Personal invitations have been shown to reduce differences in access (IARC, 2005). Inequalities in the use of cancer screening according to SocioEconomicPosition are higher in countries without population-based cancer screening programs (Palencia et al., 2010). Access could be effectively enhanced by eliminating out-of pocket payments
and by removing geographical barriers (Spadea et al., 2010) Several studies (Atri et al., 1997, Earp et al., 2002, Michielutte et al., 2005) show that intensive interventions including tailored counseling or involving trained lay health advisors sharing the same cultural and linguistic background are more effective in women showing several indicators of disadvantage or with lower rather than higher income. This means that the really “hard” to reach population can be reached, but the cost effectiveness and the long-term sustainability of these interventions need to be closely monitored.

**Importance of the European synergy**
The naked higher dimension of the Cervical Cancer problem in the east of the EU requires special attention. A strong political intervention is needed in those countries where cervical screening programs are absent or not implemented; these countries are obviously also those with the highest disease impact. An urgent activation is required: the experience learns that the preparation and completion of the implementation of a CCS requires many years and a good quality assurance level is result of long-lasting monitoring and adjustment activities. Hopefully the collaboration and cooperation among Member States providing an exchange of information on strengths and weaknesses of the previous experiences in implementing CCS, will avoid duplications of efforts and will improve the cost effectiveness of the activities. The synergy among EU countries is expected to accelerate CCS improvements and therefore the epidemiological figures. The final objective of cervical screening, in fact, is to reduce the incidence and mortality from cervical cancer, with the lowest burden and least adverse effects for women (human costs) and at the lowest economic cost.
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1. INTRODUCTION

1.1 Background of the project and of the report

1.1.1 Background of the project

AURORA project aims to identify a common and feasible strategy on how to promote Cervical Cancer Screening in the New EU Member States targeting women in the target age group (30-69 years old) and ensuring the coverage of the hard to reach groups, assist the New EU Member States in the implementation of evidence-based screening for cervical cancer and promote a European exchange of information and expertise on the development and implementation of good practices in Cervical Cancer Prevention and Advocacy. Knowledge acquired through AURORA will be disseminated in the EU, particularly to the EU 11 Member States participating to the project: Bulgaria, Cyprus, Czech Republic, Greece, Hungary, Italy, Latvia, Poland, Romania, Slovakia, Slovenia.

AURORA has been developed according to the priorities of the Call for Proposal 2009 - Public Health Programme aiming to promote the exchange of good practices on promotion of Cervical Cancer Screening in New Member States, and in particular regarding hard to reach populations. In addition, according to the DECISION No 1350/2007/EC establishing a second programme of Community action in the field of health (2008-13), AURORA will also foster appropriate coordination and synergies among Community initiatives regarding the collection of comparable data on major diseases, including cancer.

AURORA has been structured in 6 macro-tasks. Firstly, the project partners will carry out the analysis of the local context studying the literature in the participating countries concerning Cervical Cancer Epidemiology, Screening programmes and presentation of the project target group needs. The analysis of the local context and the subsequent analysis of the good practices will be useful to the identification of best strategies in the fight against Cervical Cancer and on how to promote the Cervical Cancer Screening among the project target groups. Then, in line with the COUNCIL RECOMMENDATION of 2 December 2003 on Cancer Screening stating that “adequate training of personnel is a prerequisite for high quality screening” and with the European guidelines for quality assurance in cervical cancer screening - Second Edition, stating that the function of advocacy groups in cancer screening is increasingly essential, AURORA will organise a training course for healthcare professionals and a training course for advocacy leaders. Both the courses will be organized at EU level but specific modules will be targeted on the partners local needs and specific situation of the cervical cancer screening. Moreover, AURORA consortium will establish a network of pilot centers already active in the field of Cervical Cancer Prevention to test the AURORA methodology involving trained, during the project, healthcare professionals.
Finally, thanks to the mapping and analysis of all the prevention and training actions implemented in the participating countries, an E-Learning environment will be developed to serve all the users of the participating countries interested to be trained on the project issues. According to its objectives and activities, AURORA expected outcomes will be the activity of analysis of the local context, the identification of good practices to increase in the participating countries the number of quality cervical cancer screenings, the organization of methodologically advanced prevention activities in the participating countries, the training of healthcare professionals and advocacy leaders, the dissemination within the countries thanks to the pilot action and finally, to transfer the knowledge of AURORA partners to the healthcare professionals of the participating countries thanks to the e-learning environment. Furthermore the share of the good practices and the transfer of the project results to the not participating countries.

1.1.2. Background of the report

AURORA’s analysis of the local context has been carried out in all the project participating countries (most of them from Eastern Europe) with the aim to study the available literature and the fundamental texts concerning Cervical Cancer epidemiology, Screening and vaccination programmes, and on hard to reach population groups. These groups have been identified in each context and their particular needs have been assessed as part of the present analysis. This research activity has been a fundamental step in AURORA project, since it deepened partner’s knowledge about the local situation and allowed the understanding of the general framework in which activities will be carried out.

The project Scientific Coordinator and WP Leader played a key role in the realization of the present analysis: they defined the methodology to apply and supported the partners during the investigation. As foreseen in EU projects, the methodology has been validated by all AURORA partners and adapted to the available information in the participating countries. This procedure allowed to gather data in an organized, homogenous and comparable way. All data have been gathered through a structured study of the literature of such sources to guarantee the scientific coherence: scientific journals, grey literature, national reports, etc. Only publications from year 2000 have been included in the analysis to perform an updated review of local contexts. A reference list per country has been included in the present publication, reporting, through a common methodology, all sources consulted and selected as the most representatives by project partners. The quality of local data has been under the responsibility of project partners that have declared to refer to relevant and reliable sources of information for the referring country. In addition to the reference list, the history of the research report, in a specific table, the following information: main sources
selected, number of items recalled, number of items selected, number of items excludes and main reason for exclusion.
The common resources proposed by AURORA Scientific Coordinator and WP Leader, according to their liability at international level, were:

- PubMed;
- Google Scholar;
- WHO Europe;
- International Agency for Research on Cancer (IARC);
- European Centre for Disease Prevention and Control (ECDC);
- European Cervical Cancer Association (ECCA);
- European Network for Indicators on Cancer (EUNICE);
- European Network of Cancer Registries (ENCR);
- International Federation of Gynaecology and Obstetrics (FIGO).

Finally, it has to be highlighted that the analysis of local contexts has been performed by each partner through a research plan including the following steps:

- Definition of the hard to reach populations in the specific context;
- Definition of the term descriptive for “Cervical neoplasm uterine”;
- Query of the data about prevalence, incidence, mortality, primary prevention, secondary prevention in the specific Member State;
- Query of the specific data referring to the hard-to-reach populations identified in each Member State.

The common methodological tool used by AURORA partners to collect, report and analyse data and information in their origin countries has been a questionnaire (annex 1) made of 7 sections:

- Section 1: Epidemiological data;
- Section 2: National Health System;
- Section 3: Cervical Cancer Screening;
- Section 4: Organized Cervical Cancer Screening Programme;
- Section 5: Population-based organized Cervical Cancer Screening Programme;
- Section 6: Hard-to-reach Populations;
- Section 7: Vaccination;

Each section has been identified according to its relevance to AURORA project’s aims and expected results.
In addition, with the willing not to miss the opportunity to exploit the AURORA partners’ specific knowledge of their contexts, a short report has been edited containing all the peculiarities registered in the participating countries and difficult to capture through the questionnaire. In particular, the short reports contain information regarding:

- National Health System organization /structure;
- Cervical Cancer Screening organization;
- Cervical Cancer epidemiological data;
- Hard to Reach population.
1.2. Definition of the cervical cancer and HPV

1.2.1. Cervical cancer

Cervical cancer (CC) is cancer that forms in tissues of the uterine cervix. Worldwide, CC is the third most common cancer in women, and the seventh overall, with an estimated 530,000 new cases in 2008; it primarily affects younger women, with the majority of cases appearing between the ages of 35 and 50. Studies published by the International Agency for Research on Cancer (IARC) indicate vast regional variation across the world in relation to the incidence of CC. The frequency of screening and HPV infection are the strongest determinants of international differences in CC incidence. There is a striking difference between developed and developing countries in CC prevalence and deaths, mainly due to the existence of effective CC-prevention and -control programmes in developed countries. In addition, in every population, including those for which screening programmes do not exist, the risk of cervical cancer is approximately two-fold higher in poorer women than in more affluent women.

More than 85% of the global burden occurs in developing countries, where it accounts for 13% of all female cancers. High-risk regions are Eastern and Western Africa (ASR greater than 30 per 100,000), Southern Africa (26.8 per 100,000), South-Central Asia (24.6 per 100,000), South America and Middle Africa (ASRs 23.9 and 23.0 per 100,000 respectively). Rates are lowest in Western Asia, Northern America and Australia/New Zealand (ASRs less than 6 per 100,000). CC remains the most common cancer in women only in Eastern Africa, South-Central Asia and Melanesia.

Overall, the mortality: incidence ratio is 52%, and CC is responsible for 275,000 deaths in 2008, about 88% of which occur in developing countries: 53,000 in Africa, 31,700 in Latin America and the Caribbean, and 159,800 in Asia.

In global health agenda CC is part of the comprehensive Millennium Development Goal 5 (MDG5), a reproductive health component, and hence included in the universal access target.

Persistent infection with one or more of the oncogenic human papillomavirus (HPV) types is necessary but not sufficient for the development of CC. The current concept of invasive CC is that the invasive stage of the disease is preceded by a precancerous stage known as dysplasia or cervical intraepithelial neoplasia (CIN) and more recently squamous intraepithelial lesion (SIL). The concept of CC precursors dates back to the late nineteenth century, when areas of non-invasive atypical epithelial changes were recognized in tissue specimens adjacent to invasive cancers. The term carcinoma in situ (CIS) was introduced in 1932 to denote those lesions in which the undifferentiated carcinomatous cells involved the full thickness of the epithelium, without disruption of the basement membrane. The association between CIS and invasive CC was subsequently reported. Reagan and Hamonic (1956) introduced term dysplasia to designate the cervical epithelial atypia that is intermediate between the normal epithelium and CIS. Dysplasia was further
categorized into three groups – mild, moderate and severe – depending on the degree of involvement of the epithelial thickness by the atypical cells. Subsequently, for many years, cervical precancerous lesions were reported using the categories of dysplasia and CIS, and are still widely used in many developing countries. The term cervical intraepithelial neoplasia (CIN) was introduced in 1968 to denote the whole range of cellular atypia confined to the epithelium. CIN was divided into grades 1, 2 and 3. CIN 1 corresponded to mild dysplasia, CIN 2 to moderate dysplasia, and CIN 3 corresponded to both severe dysplasia and CIS. The distinction between low-grade CIN and high-grade CIN was based upon an assessment of cytological atypia and the presence or absence of abnormal mitotic figures. In the 1980s, the pathological changes such as koilocytic or condylomatous atypia associated with human papillomavirus (HPV) infection were increasingly recognized. Koilocytes are atypical cells with a perinuclear cavitation or halo in the cytoplasm indicating the cytopathic changes due to HPV infection. This led to the development of a simplified two-grade histological system. Thus, in 1990, a histopathological terminology based on two grades of disease was proposed: low-grade CIN comprising the abnormalities consistent with koilocytic atypia and CIN 1 lesions and high-grade CIN comprising CIN 2 and 3. The high-grade lesions were considered to be true precursors of invasive cancer. In 1988, the US National Cancer Institute convened a workshop to propose a new scheme for reporting cervical cytology results aiming to unify the terminology and thereby improve patient management. The recommendations from this workshop and the subsequent revision in a second workshop held in 1991 became known as the Bethesda system (TBS). The main feature of TBS was the creation of the term squamous intraepithelial lesion (SIL), and a two-grade scheme consisting of low-grade (LSIL) and high-grade (HSIL) lesions. TBS classification combines flat condylomatous (HPV) changes and low-grade CIN (CIN 1) into LSIL, while the HSIL encompasses more advanced CIN such as CIN 2 and 3. The term lesion was used to emphasize that any of the morphological changes upon which a diagnosis is based do not necessarily identify a neoplastic process. Though designed for cytological reporting, TBS is also used to report histopathology findings. TBS was reevaluated and revised in a 2001 workshop convened by the National Cancer Institute, USA, which forms the basis for the system currently in use throughout much of the world.

Most low-grade lesions are transient and regress to normal within relatively short periods. High-grade CIN, on the other hand, carries a much higher probability of progressing to invasive cancer, although a proportion of such lesions also regress or persist. It is appears that the mean interval for progression of cervical precursors to invasive cancer is some 10 to 20 years. Invasive CCs display two primary modes of extension: local spread and metastasis via lymphatic and hematogenous routes. CC may exhibit an ulcerative or exophytic appearance. There are 2 main types of CC - squamous cell carcinoma and adenocarcinoma. Most tumors (80%-90%) exhibit squamous histology. Cervical adenocarcinoma develops from the mucus-producing gland cells of the endocervix. Less commonly, CC has
features of both squamous cell carcinomas and adenocarcinomas (called adenosquamous carcinomas). There are no specific symptoms and no characteristic clinical features that indicate the presence of CIN. On the other hand, patients with advanced cancer often experience symptoms - irregular vaginal bleeding, postcoital spotting, metrorrhagia, vaginal discharge, pain in the lower abdomen, pelvis, or back, hematuria or rectal bleeding - if bladder or rectal invasion exists. Treating all pre-cancers can prevent almost all true cancers. For the past 60 years, the Papanicolaou smear test (Pap test) developed by George Papanicolaou\(^\text{17}\) has been used to screen for pre-cancerous lesions and early invasive CC in asymptomatic women. Detection of cytological abnormalities by microscopic examination of Pap smears and subsequent treatment of women with high-grade cytological abnormalities avoids development of cancer. Pap smears screen for precancers and cancer, but do not make a final diagnosis. Confirmation of the diagnosis requires a histopathological examination of a cervical punch biopsy or excision specimen.

### 1.2.2. HPV

Epidemiologic evidence had long suggested that cervical cancer might be caused by a sexually transmitted agent, but the nature of this agent was not known until the 1980s\(^\text{18, 19}\). Experiments trying to establish a relationship between papillomavirus infections and cervical cancer were initiated in 1972. In 1983 zur Hausen, Gissmann and their co-workers identified HPV 16 in precursor lesions of genital cancer and in 1985 they demonstrated the presence of HPV DNA in cervical cancer cells\(^\text{20}\). Further, global epidemiological studies identified HPV 16, 18 and a few others as major risk factors for cervical cancer\(^\text{21, 22}\). Today, it is well established that virtually all cases of cervical cancer are caused by specific types of human papillomavirus (HPV)\(^\text{6, 23}\). Over 100 types of HPV exist, of which more than 40 can be sexually transmitted. Among these, about 15 are considered to be high-risk types and can cause CIN 3 and cervical cancers, both of the squamous and of the adenocarcinoma histologic types, but with varying carcinogenic risk. There are evidences that HPV16 and HPV18 are the most oncogenic types. Together, HPV16 and HPV18 account for approximately 35% and 52% of HPV-positive low- and high-grade cervical lesions respectively and for 70% of all cervical cancers worldwide. Combined HPV16/18 prevalence among invasive cervical cancer cases is slightly higher in Europe, North America and Australia (74-77%) than in Africa, Asia and South/Central America (65-70%). The World Health Organization has recognized HPV 16 and HPV 18 as carcinogenic agents for humans\(^\text{24}\). The next most commonly identified genotypes after HPV16 and HPV18 in squamous cell carcinoma worldwide are HPV 45, 31 and 33 in all regions except Asia, where HPV types 58 and 52 were more frequently identified\(^\text{25-28}\). These five genotypes are found in about 40% of HPV-positive low-grade lesions but are responsible for about 15-20% of
cervical cancer worldwide. The viral life cycle is initiated by the infection of basal epithelial cells at sites of minor injury and proceeds with expression of various gene products intimately linked to epithelial cell differentiation. However, infection alone is not sufficient to cause cervical cancer. Recently the importance of HPV persistence/clearance has been recognized. Viral persistence is necessary for the progression of HPV infection to precancer and cancer, but fortunately is uncommon compared with clearance. Persistent infections and precancer are established typically from less than 10% of new infections\textsuperscript{29}. The incidence of HPV infection is very high after onset of sexual activity, it has been estimated that 75% of the sexual active women has been infected with longlife\textsuperscript{30}, however most HPV infections (in about 70% of infected women within 1 year, and about 90% within 2 years) can be cleared spontaneously by the cell-mediated immune system\textsuperscript{6, 31-33}; the remaining develops detectable lesions that may regress after the HPV infection is cleared\textsuperscript{34}. More than 50% of low-grade lesions regresses within 1 year, while only a smaller fraction of high-grade lesions regresses. The timing from HPV infection to CIN3 varies from 1 to 10 years\textsuperscript{35, 36}. It has been described that the peak prevalence of CIN1 occurs at approximately 28 years of age, CIN 2/3 at 42 years of age, and cervical cancer at approximately 50 years of age.

HPV prevalence varies 20-fold worldwide, but HPV infection also affects various age groups differently in different world areas. In high-income countries, for example, HPV is much more prevalent in women younger than 25 or 30 years than in older women. Conversely, in some low-income countries, middle-aged women have at least as many HPV infections as young women, mainly because of variations in the age-specific sexual behaviour of women and their partners\textsuperscript{3}.

The linking of HPV infection to cervical cancer resulted in the development of test systems to detect virus nucleic acids as well as prophylactic and therapeutic vaccines. Combined strategies of HPV vaccination and HPV-based screening tests could theoretically control cervical cancer in any population in which a large coverage with both preventive options is ensured. Currently the most widely used HPV testing methods are based on the detection of HPV DNA and include the Hybrid Capture 2 (HC2) and polymerase chain reaction (PCR)-based methods. The Hybrid Capture 2 assay (QIAGEN) is a FDA-approved, CE-marked, clinically validated HPV test available worldwide. Multiple studies indicate that HPV testing is more sensitive and has a higher negative predictive value (approaching 100%) compared to cervical cytology for identifying cervical cancer and its precursors\textsuperscript{37-39}. Several applications for HPV DNA detection have been proposed: 1) primary screening for oncogenic HPV types alone or in combination with cytology; 2) triage of women with equivocal cytological results; 3) follow-up of women treated for CIN to predict success or failure of treatment. There is concern that HPV testing, especially in young women, is less specific than Pap testing and with poor positive predictive value because cannot differentiate between women who test positive and who are truly at risk of
high-grade lesions and cancer. A new approach, mRNA-based detection of HPV E6/E7 oncoproteins, is expected to be a better indicator of HPV infection associated with increased risk of progression to neoplasia than detection of HPV DNA. Detection of E6/E7 mRNA may be of higher prognostic value and may improve the specificity and positive predictive value compared with HPV DNA testing in screening. Assays detecting E6/E7 transcripts from the most common high-risk HPV types in cervical carcinoma are now available on the market (PreTect™ HPV-Proofer, NorChip AS, Klokkarstua, Norway; NucliSENS EasyQ®, BioMerieux SA, France; APTIMA, GenProbe, San Diego, CA).

1.2.3. Cervical cancer prevention and treatment

The long interval between the development of cervical dysplasia and the onset of invasive CC provides an opportunity for screening programs to identify premalignant lesions. The objective of cervical screening is to prevent invasive CC by detecting and treating women with CIN 2/3 lesions (high-grade cervical cancer precursor lesions). The effectiveness of screening is evaluated by the reduction in CC incidence and mortality observed following screening. Cytological screening at the population level every 3–5 years can reduce CC incidence up to 80%24. Such benefits, however, can only be achieved if quality is optimal at every step in the screening process and, if necessary, in the treatment of women with screen-detected abnormalities2. In countries with well-established screening programmes, the incidence of CC has fallen significantly40.

Organised screening programmes for CC exist in several countries of the European Union and the screening policies, organisation and practices vary between countries24. The Council of the EU has recommended implementation of population-based cervical cancer screening programmes to the EU member states, with quality assurance at all levels and in accordance with European guidelines41. Five main types of tests are currently used in the course of CC screening in Europe: Conventional Pap smear; Liquid-based cytology; Automated cytological screening; Colposcopy; HPV nucleic acid detection. Primary screening with combined cytology and HPV testing is an approved option in the United States for women over the age of 30 years. Cervical cytology is the currently recommended standard test in EU for cervix screening, which should start in the age range 20–3041, 42, but preferentially not before age 25 or 30 years, depending on the burden of the disease in the population and the available resources42, 43. It is recommended to continue screening at 3- to 5-year intervals until the age of 6042, 44 or 6524, 45. Stopping screening in older women is probably appropriate among women who have had three or more consecutive previous (recent) normal cytology results (HPVs)2. Guidelines are provided for the management of screen-positive women according to the severity of cytological abnormalities46. A woman with a
high-grade cytological lesion, a repeated low-grade lesion or an equivocal cytology result and a positive HPV test should be referred for colposcopy in order to identify the location of the abnormal cells, to target taking of biopsies and to decide whether any treatment is required\textsuperscript{47, 48}. Vaccination against HPV represents an important tool to obtain a primary prevention of CC. There are two prophylactic HPV vaccines containing HPV16 and HPV18 licensed in the EU\textsuperscript{2}. These HPV types are causally linked with about 70\% of CC in Europe\textsuperscript{6, 49}. Clinical trials demonstrate that prophylactic HPV vaccines are safe, well tolerated, and highly efficacious in preventing persistent infections and cervical diseases associated with vaccine-HPV types\textsuperscript{50}. However, long-term efficacy and safety needs to be addressed in future trials. While prophylactic vaccination, primarily in young girls, may provide important future health gains, cervical screening will need to be continued\textsuperscript{51}. Neglecting CC screening due to the current availability of a vaccine could lead to an increase in cancer cases and deaths. Development of comprehensive European guidelines on prevention of CC that appropriately integrate screening and vaccination strategies is a key aim of the next phase of guideline development activities supported by the EU Health Programme\textsuperscript{2}. The WHO position paper on HPV vaccines\textsuperscript{52} indicates that HPV vaccines should be part of a coordinated strategy to prevent CC that includes education about HPV and risk factors for acquisition, screening for, and the diagnosis and treatment of precancerous lesions. Vaccination will not eliminate the need for screening, as not all cancer-associated HPV types are included in current vaccine formulations. The statement also indicates that introduction of the HPV vaccine should not detract from effective screening programmes. Cervical cancer can be treated with surgery (conization, cryosurgery, laser surgery, loop electrosurgical excision procedure – LEEP, hysterectomy), radiation therapy (external beam application or intracavitary treatment) and chemotherap, or a combination of these methods. Choice of therapy is based on the clinical stage\textsuperscript{53}. Evaluation of the CC patient after therapy is imperative. When treated appropriately, 5-year survival exceeds 80\% for patients with stage I disease, exceeds 70\% for patients with stage IIA disease, is approximately 40–50\% for patients with stage IIB and stage III disease and is less than 10\% in patients with stage IV disease\textsuperscript{54}.
2. OVERVIEW ON THE EPIDEMIOLOGY OF CERVICAL CANCER IN THE AURORA’S PARTICIPATING COUNTRIES

2.1 European cervical cancer epidemiology - history and trends

The incidence of cervical cancer varies widely among countries with world age-standardised rates (W-ASR) ranging from <1 to >50 per 100 000. In EU-27 in the year 2008 (last available data) newly diagnosed with cervical cancer were 31 038 women (incidence W-ASR of 9.0 per 100 000) and 13 430 died from cervical cancer (the mortality W-ASR of 3.0 per 100 000). According to the estimates for the year 2004, approximately 34 300 women in the EU-27 developed cervical cancer and about 16 300 died from the disease with the W-ASR incidence and mortality estimated to be 12.4 and 4.8 per 100 000 women, respectively (Table 2.2.1.). However, the burden of cervical cancer varies widely among the member states of the EU being lowest in Finland with standardised incidence rate of 4.7 and mortality rate of 1.1. Fig.2.2.1. shows the estimated cancer incidence and mortality in Europe, 2008. With the exception of Malta, all 11 other newly acceded members have higher incidence and mortality rates for cervical cancer than the 15 countries belonging to the European Union before the expansion in 2004 and 2007. The incidence W-ASR for 2004 was estimated to be 9.5 (per 100 000 women) in the 15 older member states, situated in West and South Europe, but was about 17 among the ten new member states that joined the EU in 2004 and that are predominantly situated in Central or Eastern Europe. Moreover, in Bulgaria and Romania, the two newest member states that acceded to the EU in 2007, rates were still higher (incidence W-ASR of respectively 20 and 22 per 100 000). The incidence of and mortality from cervical cancer in Romania was approximately five and twelve times higher compared to Finland, the country in Europe with lowest cervical cancer burden. In Eastern Europe, cervical cancer is the gynecological cancer associated with the highest incidence and mortality. The five countries of the EU with the highest mortality from cervical cancer are: in the North-East of the EU (Estonia, Latvia and Lithuania) and two countries in South-East Europe (Bulgaria and Romania). It is expected that the access to EU will improve the CCS situation and therefore the epidemiological data in these countries due to the collaboration and cooperation between Member States and providing at the Community level professional, organizational and scientific assistance to establish and improve population-based cancer screening programmes. A recent analysis of CC mortality trends in the 27 member states since 1970 confirms the large contrasts in the burden of cervical mortality between the old and new member states of the EU. Moreover, the study indicates that these contrasts will increase in the future since mortality rates continue to decrease in the western part of Europe, whereas in Eastern Europe and in the Baltic states they are either decreasing at a lower intensity (Czech Republic, Poland), remaining constant at a high
rate (Estonia, Slovakia) or even increasing (Bulgaria, Latvia, Lithuania, Romania). Another study revealed rising trends of incidence in Lithuania, Bulgaria and Romania and of mortality in Latvia, Lithuania, Bulgaria and Romania. In Estonia, rates were rather stable. Women in these countries born between 1940 and 1960 were at continuously increasing risk of both incidence of and mortality from cervical cancer\textsuperscript{60, 62}.

Geographical variations in CC burden are mainly due to the difference in prevalence and type distribution of high risk-HPV infections and the influence of cytology-based screening programmes. This form of screening began in the 1960s and the incidence of CC has declined significantly since the 1970s. In some European countries, e.g. Finland, the Netherlands, the United Kingdom, screening and adequate follow-up of women with abnormal screen results has been very successful in reducing the CC burden, preventing from 60% to more than 80% of invasive CC cases or deaths from the disease\textsuperscript{24}.

The first screening programmes in Europe were organised in the 1960s in Finland, Iceland, Denmark, Sweden, Luxembourg and the Czech Republic, initially on a regional scale, and later expanded to national coverage. In the 1970s, screening was developed in Saarland (Germany) and in the 1980s in the Netherlands, UK and Tuscany (Italy)\textsuperscript{63}. Analysing the CC incidence and mortality in Europe, Arbyn et al.\textsuperscript{57} provided evidences of screening effectiveness. For example, substantial reductions in incidence and mortality were observed in Nordic countries, and the extent of these reductions correlated with the level of implementation of organised screening\textsuperscript{64, 65}. By improving screening coverage and quality, subsequent to setting up a national screening programme in 1988, the rising trend in young cohorts has been reversed in UK\textsuperscript{66, 67}. In Norway, a 20\% reduction in incidence of cervical cancer has been observed since the initiation of organised screening in 1995\textsuperscript{40}. In Italy, it was shown that, by organised screening, CC incidence can be reduced further in areas with preexisting opportunistic screening\textsuperscript{68}. Opportunistic screening also resulted in a reduction of CC incidence and mortality in several other West European countries\textsuperscript{69, 70}. Nevertheless, in Ireland, Spain and Portugal, a tendency of increased mortality is observed, which is explained by the absence of a population-based screening programme or the ineffectiveness of present opportunistic screening\textsuperscript{69, 71}.

Cervical cancer screening varies widely between EU countries. It is either population-based (mass screening) or opportunistic, with national or regional coverage, aimed at different target age ranges and with different recommended screening intervals. The recommended number of lifetime smears ranges from 7 in Finland to more than 60 in Saarland (Germany) and Luxembourg, and the efficacy and cost-effectiveness of these screening programmes also varies widely\textsuperscript{63, 72, 73}. The population coverage of screening programmes has grown more rapidly since the 1990s. Population-based programmes (Nationwide or Regional) are currently running or being established in 17 Member States\textsuperscript{62, 74, 75}. In the other EU countries, screening is still opportunistic.

Recently, national cytology-based screening programs were initiated in the three Baltic countries and Romania. However, all these programs suffer of
understaffing, insufficient resources and management capacity and reach less than 20% of the target population\textsuperscript{62, 76-79}. Although CC incidence and mortality have been declining in many European populations in the past few decades, upward trends have been reported in younger women in several countries. These trends are attributed to changing sexual lifestyles and increased transmission of HPV in younger generations of women\textsuperscript{80}.

The potential for primary prevention through HPV vaccination offers a new complementary tool to improve the control of CC. Organized vaccination programs against HPV have the potential to prevent >70% of CC\textsuperscript{81}. The introduction of HPV vaccination into the National Immunization Schedule has been done in 18 Member states - one country in 2006 (Austria), seven countries in 2007 (Belgium, France, Germany, Italy, Portugal, Spain and the United Kingdom), seven countries in 2008 (Denmark, Greece, Ireland, Luxembourg, Norway, Romania, and Sweden) and three countries in 2009 (Latvia, the Netherlands, and Slovenia)\textsuperscript{82}. Coverage for routine vaccination with three doses varied between 17% and 81% in 2010. Three countries reached a vaccination coverage between 17% and 30% (France, Luxemburg and Norway), two at 56% and 58% (Denmark and Italy) and two at 80% and 81% (Portugal and the United Kingdom)\textsuperscript{82}. The combination of primary prevention (HPV vaccination) and secondary (screening) prevention strategies will further reduce the cervical cancer incidence and mortality in EU.

Table 2.2.1. Number of cases and deaths from cervical cancer, crude, age-standardized and cumulative rates in the European Union: EU15 (15 member states of the EU before 2004); EU10 (10 member states that acceded the EU in 2007 and the whole of 27 member states that currently compose the EU (EU27)

<table>
<thead>
<tr>
<th>Country</th>
<th>Incidence</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases (\times 100)</td>
<td>Crude rate (per 100 000 women per year)</td>
</tr>
<tr>
<td>EU15</td>
<td>227.4</td>
<td>11.8 9.5 10.7 0.82</td>
</tr>
<tr>
<td>EU10</td>
<td>78.3</td>
<td>20.4 16.7 18.9 1.49</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>9.1</td>
<td>23.1 19.8 21.7 1.70</td>
</tr>
<tr>
<td>Romania</td>
<td>28.6</td>
<td>25.2 22.3 24.5 1.91</td>
</tr>
<tr>
<td>EU27</td>
<td>343.3</td>
<td>13.9 12.4 13.9 0.99</td>
</tr>
</tbody>
</table>

**EU, European Union; W-ASR/E-ASR, age-standardized rate using the World/European standard population as reference. EU15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Portugal, Spain, Sweden, The Netherlands, United Kingdom); EU10 (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia). Source: M. Arbyn, P. Autier and Ferlay J. Burden of cervical cancer in the 27 member states of the European Union: estimates for 2004, Ann Oncol 2007, 18, pp. 1425–1427**
Fig. 2.2.1. Estimated cervical cancer incidence and mortality in Europe, 2008

Estimated incidence and mortality from Cervix uteri cancer in 2008
Age Standardised Rate (European) per 100,000
REFERENCES


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2.2 Current situation in AURORA’s countries

2.2.1. Bulgaria

In Bulgaria exists a compulsory registration of malignant neoplasm, including cervical cancer, since 1964, regulated by a Ministry of Health Instruction № 858/05.03.1964, a Ministry of Health Order № RD-09-451/29.06.1990 and a Ministry of Health Regulation № 34/2005. According to the legislation every physician is required to send a “rapid notification” to the Regional Oncological Center for each newly diagnosed cancer case, for persons suspected of having cancer or for those dying from a malignant neoplasm, and since 1975 for carcinoma in situ. All information is collected and analysed by the Bulgarian National Cancer Registry, part of the Bulgarian National Oncological Hospital. In January 2005 the Xth revision of the International Classification of Diseases (ICD), 1992 was introduced in Bulgaria. All cases of malignant neoplasm dated after 1993 were recorded according to the new classification requirements. The cervical cancer was coded C53. A software product “Oncology-2005” that meets all requirements of “Standards and Guidelines for Cancer Registration in Europe”, IARC Technical Publication № 40, 2003, for coding of certain variables has been developed and implemented in 2005.

At the end of year 2010 the general female population in Bulgaria was 3 875 059 of which 3 373 249 women ages 15 years and older were at risk of developing cervical cancer (National Statistical Institute of Bulgaria, 2010). According to the Bulgarian National Cancer Registry (Valerianova Z et al, Bulgarian National Cancer Register, 2010) the number of new registered CC cases in 2008 (the latest national data) were 1165 representing 7.0% (7.6% for 2006) of all female cancer cases (Valerianova Z. et al., Tumori 2010). Cervical cancer ranks as the 5th most frequent cancer among women in Bulgaria (Fig. 2.2.1.1.), and the 2nd most frequent cancer among women between 15 and 44 years of age. In 2008 the deaths from cervical cancer were 346, representing 4.6% of all cancer mortality in females. The Crude rates (CR) of cervical cancer incidence and mortality for 2008 were 29.6 and 8.8 per 100000 women respectively (denominator: all ages female population for 2008 -3 932 910 women). The age-standardised rates (ASR)-World standard (WS) of cervical cancer incidence and mortality were 20.6 and 5.3 per 100000 women respectively. Age-specific incidence rates for 2008 showed that cervical cancer was rare by the age of 24. It started to increase after the age of 30 and the highest incidence rates were in the age group 40-44 years (Table 2.2.1.1.). Of the newly diagnosed in 2008 CC cases 43.6% were in I stage and 4.0% in IV stage (Table 2.2.1.2).

The data on cervical cancer incidence and mortality in Bulgaria by districts (administrative units) showed the highest rates (Age Adjusted) for CC incidence in Pernik and Veliko Tarnovo– 41.8/100 000 and 34.6/100000 respectively and lowest – in Kurdjali and Smolyan – 7.3/100000 and 9.7/100000 respectively.

Comparison of cervical cancer incidence and mortality rates in Bulgaria for the period 1981-2008 (Table 2.2.1.3.; Fig. 2.2.1.2.) indicates approximately
twofold increase in both, incidence and mortality. A recent analysis (Valerianova Z. et al., Tumori 2010) revealed an increase in the total number of new diagnosed cervical cancer cases and in the age-specific incidence rates for almost all age groups in 2006 in comparison to 1986. The increase was highest for the age group 40-49 years, nearly three times, doubled in the age groups 50-59 and 60-69 years old. Very similar indicators for cervical cancer mortality were found by the authors: increasing in the number of deaths and age-specific mortality rates in all age groups after the thirties and the highest increasing in 40-49 years – from 5.6 to 12.9 per 100,000 females between 1986 and 2006. Further, unfavorable was stage distribution for CC cases diagnosed in 2006: late diagnosed cases in III and IV stage and those without stages were increasing for the whole period.

Bulgaria is one of the countries with highest cervical cancer incidence and mortality in the EU (Arbyn M. et al., 2007, 2009, 2010). The ASR-WS incidence rate for 2004 was estimated to be 10 (expressed per 100,000 women-years) in the 15 older member states and 17 among the ten new member states that joined the Union in 2004. In Bulgaria rates were still higher (ASR-WS incidence rate [2004] of 20 per 100 000).

Table 2.2.1.1. Incidence and mortality of cervical cancer in Bulgaria by age groups, 2008

<table>
<thead>
<tr>
<th>Age</th>
<th>Incidence</th>
<th></th>
<th>Mortality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Crude rate</td>
<td>ASR</td>
<td>Number</td>
</tr>
<tr>
<td>20-24</td>
<td>2</td>
<td>0.8</td>
<td>0.06</td>
<td>1</td>
</tr>
<tr>
<td>25-29</td>
<td>19</td>
<td>7.1</td>
<td>0.56</td>
<td>1</td>
</tr>
<tr>
<td>30-34</td>
<td>63</td>
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<td>1.32</td>
<td>15</td>
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</tr>
<tr>
<td>40-44</td>
<td>164</td>
<td>65.2</td>
<td>3.91</td>
<td>25</td>
</tr>
<tr>
<td>45-49</td>
<td>145</td>
<td>54.5</td>
<td>3.27</td>
<td>35</td>
</tr>
<tr>
<td>50-54</td>
<td>159</td>
<td>57.4</td>
<td>2.87</td>
<td>42</td>
</tr>
<tr>
<td>55-59</td>
<td>141</td>
<td>49.0</td>
<td>1.96</td>
<td>45</td>
</tr>
<tr>
<td>60-64</td>
<td>106</td>
<td>40.3</td>
<td>1.61</td>
<td>39</td>
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<tr>
<td>65-69</td>
<td>69</td>
<td>31.6</td>
<td>0.95</td>
<td>33</td>
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<tr>
<td>70-74</td>
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<td>39</td>
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<tr>
<td>75-79</td>
<td>47</td>
<td>26.6</td>
<td>0.27</td>
<td>21</td>
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<tr>
<td>80-84</td>
<td>34</td>
<td>29.1</td>
<td>0.15</td>
<td>19</td>
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<tr>
<td>85+</td>
<td>10</td>
<td>16.8</td>
<td>0.08</td>
<td>11</td>
</tr>
<tr>
<td>All ages</td>
<td>1165</td>
<td>29.6</td>
<td>20.6</td>
<td>346</td>
</tr>
</tbody>
</table>

### Table 2.2.1.2. Distribution of the newly diagnosed CC cases by stages in Bulgaria, 2008

<table>
<thead>
<tr>
<th>Stage</th>
<th>Number of Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>508</td>
<td>43.6</td>
</tr>
<tr>
<td>II</td>
<td>285</td>
<td>24.5</td>
</tr>
<tr>
<td>III</td>
<td>277</td>
<td>23.8</td>
</tr>
<tr>
<td>IV</td>
<td>48</td>
<td>4.1</td>
</tr>
<tr>
<td>Unknown</td>
<td>47</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1165</strong></td>
<td></td>
</tr>
</tbody>
</table>


### Table 2.2.1.3. Age-adjusted (world standard) cervical cancer incidence and mortality rates per 100 000 by year of diagnosis in Bulgaria 1981-2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Incidence</td>
<td>10.3</td>
<td>10.1</td>
<td>12.3</td>
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<td>14.3</td>
<td>14.0</td>
<td>14.8</td>
<td>14.8</td>
<td>16.7</td>
<td>15.6</td>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>2.8</td>
<td>3.8</td>
<td>4.0</td>
<td>4.0</td>
<td>4.1</td>
<td>4.8</td>
<td>4.9</td>
<td>5.0</td>
<td>4.9</td>
<td>4.8</td>
<td>4.9</td>
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</tbody>
</table>

<table>
<thead>
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<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
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<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>17.3</td>
<td>17.1</td>
<td>18.8</td>
<td>19.4</td>
<td>19.3</td>
<td>19.5</td>
<td>18.9</td>
<td>21.2</td>
<td>20.1</td>
<td>20.6</td>
<td>n.a.</td>
</tr>
<tr>
<td>Mortality</td>
<td>6.0</td>
<td>5.2</td>
<td>5.6</td>
<td>5.6</td>
<td>5.5</td>
<td>5.7</td>
<td>5.2</td>
<td>5.2</td>
<td>6.2</td>
<td>5.3</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

**Fig. 2.2.1.1. Distribution of the most common new cancer cases and deaths in females in Bulgaria, 2008**

**Percentage Distribution of the Most Common New Cancer Cases in Females, Bulgaria 2008**

- Breast: 22.8%
- Other skin: 10.9%
- Colon: 7.6%
- Corpus uteri: 7.3%
- Cervix uteri: 7%
- Ovary etc.: 5.2%
- Rectum and anus: 4.7%
- Stomach: 4.3%
- Lung and trachea: 4%
- Pancreas: 3.1%
- Other: 23.1%

**Percentage Distribution of the Most Common Cancer Deaths in Females, Bulgaria 2008**

- Breast: 17.5%
- Colon: 10.3%
- Stomach: 8.1%
- Lung and trachea: 8%
- Pancreas: 6%
- Ovary etc.: 5.7%
- Rectum and anus: 5.6%
- Cervix uteri: 4.6%
- Liver: 3.9%
- Brain and nervous system: 3.8%
- Other: 26.5%


**Fig. 2.2.1.2. Incidence rates of the most common cancers in females in Bulgaria 1981-2098**

**2.2.2. Cyprus**

The general Cypriot female population is estimated around 358 200. In Cyprus there are no specific epidemiological data for cervical cancer (available data are for cervical cancer and corpus of uterus). The data presented in this report come from the Cancer Registry and although comprehensive, it is not possible to adjust to extrapolate data specific for cervical cancer. The epidemiological data are collected at national level and the latest data are based on the year of 2008.

The number of newly diagnosed women with cervical cancer in 2008 was 27. The incidence of cervical cancer was 11.8/100 000 population or 0.0118%, (Source: Cancer Registry, Cyprus, 2008). CR and ASR-WS for 2007 were respectively 7.5 and 5.3 per 100 000. The relevant population group for the new cases of cervical cancer was 20558 (Female population in 2007). The women’s mean age at diagnosis was 54.31 (95% Confidence interval, Lower bound 48.27 Upper bound 60.35). Distribution of the newly diagnosed cervical cancer cases by stages is shown in Table 2.2.2.1. The number of women who died from cervical cancer was 10 in 2007, 11 in 2008 and 6 in 2009 (Tables 2.2.2.2. and 2.2.2.3.). The age specific mortality rate was 1.7/100 000 population (Source: Cancer Registry, Cyprus, 2008). The relevant population group for the deaths for cervical cancer was 83 518 in 2007 and 25 016 in 2009. The relevant population group (denominator) for cervical cancer mortality is the sum of the population of females who belong to the age groups which had deaths of cervical cancer.

**Table 2.2.2.1. Cervical cancer cases by stage, 2007**

<table>
<thead>
<tr>
<th>Number of cervical cancer cases by stage, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Table 2.2.2.2. Women’s Population by age groups for years 2007 and 2009

<table>
<thead>
<tr>
<th>Age group</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-04</td>
<td>20.558</td>
<td>21.658</td>
</tr>
<tr>
<td>05-09</td>
<td>21.072</td>
<td>20.580</td>
</tr>
<tr>
<td>10-14</td>
<td>25.456</td>
<td>23.609</td>
</tr>
<tr>
<td>15-19</td>
<td>27.856</td>
<td>28.048</td>
</tr>
<tr>
<td>20-24</td>
<td>33.048</td>
<td>31.891</td>
</tr>
<tr>
<td>25-29</td>
<td>33.832</td>
<td>35.757</td>
</tr>
<tr>
<td>30-34</td>
<td>29.517</td>
<td>30.644</td>
</tr>
<tr>
<td>35-39</td>
<td>28.172</td>
<td>28.074</td>
</tr>
<tr>
<td>40-44</td>
<td>28.583</td>
<td>26.774</td>
</tr>
<tr>
<td>45-49</td>
<td>28.316</td>
<td>27.357</td>
</tr>
<tr>
<td>50-54</td>
<td>25.698</td>
<td>27.094</td>
</tr>
<tr>
<td>55-59</td>
<td>23.830</td>
<td>24.354</td>
</tr>
<tr>
<td>60-64</td>
<td>20.047</td>
<td>21.986</td>
</tr>
<tr>
<td>65-69</td>
<td>16.667</td>
<td>17.825</td>
</tr>
<tr>
<td>70-74</td>
<td>13.461</td>
<td>14.428</td>
</tr>
<tr>
<td>75-79</td>
<td>10.496</td>
<td>11.018</td>
</tr>
<tr>
<td>80-84</td>
<td>7.148</td>
<td>7.613</td>
</tr>
<tr>
<td>85+</td>
<td>5.950</td>
<td>6.385</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>399.707</strong></td>
<td><strong>405.095</strong></td>
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</table>


Table 2.2.2.3. Number of deaths due to cervical cancer (ICD10 C53) for years 2007 and 2009 by age groups.

<table>
<thead>
<tr>
<th>Age group</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
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</tr>
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<td>20-24</td>
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</tr>
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<tr>
<td>30-34</td>
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<td></td>
</tr>
<tr>
<td>35-39</td>
<td></td>
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</tr>
<tr>
<td>40-44</td>
<td>1</td>
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<tr>
<td>45-49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-54</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-74</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>75-79</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>80-84</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>85+</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

2.2.3. Czech Republic

The Czech Republic keeps on a long-term basis (since 1977) its National Oncological Register (NOR) which is counted amongst the largest and highest quality databases in Europe. Above that, it is a representative and complete database as it contains data on all patients for the entire period under consideration. The collection of data for this register and keeping the database is prescribed by law and is therefore obligatory and at the same time an essential element in the planning of demand for oncological care and assessment of its results. Epidemiological data presented below are specific for cervical cancer and are collected at a national level.

In 2007 newly diagnosed with cervical cancer were 990 women and the incidence of cervical cancer was 18.8/100 000 women. The relevant population group (denominator) for the new cases of CC included all women more than 20 years old (4 239 873 for 2007). The new cervical cancer cases represented 2.6% of malignant neoplasms in 2007. Data on the women mean age at diagnosis are not available, however there are data on the incidence of CC by age groups for the year 2007 (Table 2.2.3.1. and 2.2.3.2.). In cartogram below (Fig.2.2.3.1) geographical distribution of cervical cancer in Czech Republic (incidence for the period 2004-2007) is shown. Distribution of the newly diagnosed CC cases by stages in Czech Republic for the period 2004-2007 is shown in Table 2.2.3.3. and Fig.2.2.3.2. Annual numbers of cervical cancer deaths in Czech Republic were 415, 409 and 314 for 2005, 2006 and 2007, respectively.

Fig.2.2.3.1. Geographical distribution of cervical cancer in Czech Republic.

![C53 - Malignant neoplasm of cervix uteri - Incidence, women](image)

Table 2.2.3.1. Malignant neoplasm of cervix uteri – Incidence of patient population for a year 2007 and % cases in age category

<table>
<thead>
<tr>
<th>Age category</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>0%</td>
<td>0%</td>
<td>0.1%</td>
<td>0%</td>
<td>0.4%</td>
<td>3.9%</td>
<td><strong>10.6%</strong></td>
<td>8.3%</td>
<td>9.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age category</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60-64</th>
<th>65-69</th>
<th>70-74</th>
<th>75-79</th>
<th>80-84</th>
<th>85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>8.8%</td>
<td>10.3%</td>
<td><strong>10.9%</strong></td>
<td>10.5%</td>
<td>9.9%</td>
<td>6.2%</td>
<td>4.4%</td>
<td>3.9%</td>
<td>2.02%</td>
</tr>
</tbody>
</table>
Table 2.2.3.2. Malignant neoplasm of cervix uteri - Incidence: age structure of patient population for a year 2007, number of cases per 100 000 persons in age category.

<table>
<thead>
<tr>
<th>Age category</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>0</td>
<td>0</td>
<td>0.41</td>
<td>0</td>
<td>1.18</td>
<td>9.93</td>
<td>23.07</td>
<td>22.67</td>
<td>27.57</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Age category</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60-64</th>
<th>65-69</th>
<th>70-74</th>
<th>75-79</th>
<th>80-84</th>
<th>85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>27.45</td>
<td>26.97</td>
<td>27.28</td>
<td>28.71</td>
<td>37.63</td>
<td>28.95</td>
<td>21.75</td>
<td>25.98</td>
<td>22.02</td>
</tr>
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</table>

Source of data: ÚZIS ČR (IHIS CR)

Table 2.2.3.3. The stage distribution at diagnosis

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Mean</th>
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</thead>
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<tr>
<td>Stage I (%)</td>
<td>45.4</td>
<td>42.1</td>
<td>48.6</td>
<td>46.9</td>
<td>45.8</td>
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<tr>
<td>Stage II (%)</td>
<td>13.9</td>
<td>15.6</td>
<td>14.9</td>
<td>13</td>
<td>14.4</td>
</tr>
<tr>
<td>Stage III (%)</td>
<td>19.8</td>
<td>18.6</td>
<td>19.6</td>
<td>20.2</td>
<td>19.5</td>
</tr>
<tr>
<td>Stage IV (%)</td>
<td>7.4</td>
<td>9.6</td>
<td>8.6</td>
<td>9.9</td>
<td>8.9</td>
</tr>
<tr>
<td>Stage unknown (%)</td>
<td>13.5</td>
<td>14.1</td>
<td>8.4</td>
<td>10</td>
<td>11.5</td>
</tr>
</tbody>
</table>

Fig. 2.2.3.2. Proportion of the stage distribution (%), 2004-2007

2.2.4. Greece

Since 2008 the National Cancer Registry (according to law N.3370/2005) is under the jurisdiction of the Hellenic Center for Disease Prevention and Control (KEELPNO). The operation of a Cancer Registry is the first action specified in the National Action Plan against Cancer which was enacted in Greece in September 2008. According to the official website of KEELPNO underreporting of cancer morbidity data reaches 60% (as is evident from comparison between data recorded by the Cancer registry and those
reported by the Hellenic Statistical Authority). Thus, according to KEELPNO at this stage it is not possible to draw reliable conclusions about the incidence and prevalence of cancer in Greece (including cervical cancer). The situation is expected to improve in the coming years (URL: http://www.keelpno.gr, in Greek).

Consequently, although the National Statistical Authority releases some epidemiological data specific for cervical cancer in Greece, this data need to be handled with caution. According to earlier studies problems have been notified in terms of mortality data observed due to differences in death certification. For example, a clear distinction on the cause of death between the cervix and endometrium was noted to be absent in studies prior to 2000 (Riza et al., 2000).

The Hellenic Statistical Authority also releases data on the number of patients hospitalised for cervical cancer by age, occupational status and area of residence (based on hospital discharge records). However, the Hellenic Statistical Authority provides data on the number of patients hospitalized for cervical cancer without indicating if these patients were newly diagnosed cases or not. Published data are available only up to 2006. According to this information 1728 women were hospitalized with cervical cancer in 2006. No data are provided from the Hellenic Statistical Authority for newly diagnosed cases of cervical cancer.

A publication of WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre) indicated that the number of cervical cancer cases in Greece in 2008 was 307, while the projected number of new cervical cancer cases in 2025 is 336. According to the same source the number of new cases of cervical cancer by age groups in Greece in 2008 was as follows: 94 (15-44 age group), 74 (45-54 age group), 47 (55-64 age group) and 92 (65 + age group).

The Hellenic Statistical Authority of Greece does not publish incidence rates for cervical cancer. The only available data are hospital discharge records on patients hospitalized with cervical cancer. According to the WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre) 2010 in 2008 the crude incidence rate of cervical cancer in Greece was 5.5 per 100 000, while the age-standardized incidence rate was 3.8 per 100 000. The following is reported in terms of the methodology used for calculating incidence of cervical cancer in Greece as mentioned in the report by the WHO/ICO Information Centre on HPV and Cervical Cancer: “Specific methodology for Greece: National incidence was estimated from estimated national mortality for 2008 by modelling, using a set of age-, sex- and site-specific incidence mortality ratios obtained by the aggregation of recorded cancer registry data from Bulgaria and Central Serbia cancer registries” (Data sources: IARC, Globocan 2008). For further details refer to URL: http://globocan.iarc.fr/DataSource_and_methods.asp and URL: http://globocan.iarc.fr/method/method.asp?country=300.

Available data indicate a general downward trend in cervical cancer mortality rates in Greece as in all old EU Member States compared to the new MS (Arbyn et al., 2009; Simou et al., 2010). According to the WHO/ICO HPV information
center, cervical cancer in Greece ranks as the 13th most frequent cancer among women and the 3rd most frequent cancer among women between 15 and 44 years of age.

According to the Hellenic Statistical Authority in 2009, 134 women died from cervical cancer. According to WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre) 2010, in 2008 the crude mortality rate was 2.8 while the age-standardized mortality rate was 1.5 per 100 000 women. The number of deaths according to the same report in 2008 was 159. The numbers of deaths from cervical cancer by age group were as follows: 19 (15-44 age group), 29 (45-54 age group), 25 (55-64 age group) and 86 (65 + age group). According to the WHO mortality database in 2008 from cervical cancer in Greece died 104 women, the crude and ASR-WS mortality rates were 2.1 and 1.5, respectively.

2.2.5. Hungary

In Hungary the general female population is 5 257 424 (2010) of which 4 367 346 (2010) are aged >=18 years. Epidemiological data are specific for cervical cancer and are collected at national level. Newly diagnosed with cervical cancer were 1000 women (2010). The women’s mean age at diagnosis was 53.7 (average for the period 2001-2008). 396 women have died in 2009 of cervical cancer.

2.2.6. Italy

In Italy currently there are 34 cancer registers covering approximately one third of the whole Italian population. Cancer registers collect data on tumors of all residents in a given territory. Unfortunately, the distribution of cancer registers is not homogeneous. In fact the coverage of the population is high in the North of Italy (50.2%), but it is 25.5% in the Center and 17.9% for the South and Islands. The dimensions of the different registers are variable: from small registers of a single city to regional registers. Epidemiological data reported here are specific for cervical cancer and are collected at national level. General female population in Italy on Jan 01 2010 is 31 052 925. Of them 21 044 528 are women aged >=18 years that are at risk of developing cervical cancer. Annually the newly diagnosed cervical cancer cases are 3 418 (years 1998-2002). The incidence of cervical cancer in Italy is 9.8 x 100.000 (years 1998-2002). The peak incidence of cervical cancer is from 40 to 44 years of age. There are no data available on the stage distribution at diagnosis. In Italy approximately 1 000 women die annually from cervical cancer (years 1998-2002).

2.2.7. Latvia

Epidemiological data presented here are specific for cervical cancer and
are collected at national level. The newly diagnosed with cervical cancer in Latvia were 230 women in year 2009 (18.9 cases per 100 000 women) and 252 women in 2010 (20.9 cases per 100 000 women). The incidence of cervical cancer was 2.3% (2009) - 2, 4 % (2010) from all malignant tumors’ cases per year (2009- 10020 cases, 2010- 10600 cases). (Health Economic Center, Statistics, et.al.2011). In 2010 the newly diagnosed CC cases were distributed by age groups as shown in Table 2.2.7.1. The women mean age at diagnosis was 35-59 years.

The use of cytological testing has been widespread in Latvia since 1960s playing possibly a role in the decrease in the cervical cancer incidence. The cervical cancer incidence crude rate decreased from 21.5 cases per 100,000 women in 1980 up to 11.8 cases per 100,000 women in 1990. From the mid-1990s, when the number of women’s preventive examinations and, therefore, of cytological testing was rapidly decreasing, the incidence crude rates rose again, amounting to 19.8 cases per 100,000 women in 2007 (Viberga I, et al. 2010). According to a recent report the age-standardized incidence rate, expressed per 100,000 women-years in Latvia for 2004 was 12.3 (Arbyn M., et al. 2010). Further, women aged 50 or older and born before 1940 displayed a decreasing or horizontal incidence trend, whereas incidence rates among younger women, born after 1940, were rising. An important problem in Latvia is the late stage of newly diagnosed cervical cancer cases (Table 2.2.7.2.).

The number of women who died from cervical cancer in Latvia was 95 in 2009 and 138 in 2010. According to Arbyn et al. mortality rates in women older than 50 were stable or slightly declining. The cohorts born 1940-1965, exhibited rising mortality rates, in particular in the age groups 30-49 in Latvia. The slopes of the mortality rates among younger age groups were stable or decreasing (Arbyn M. et al., 2010). Table 2.2.7.3. shows the distribution by age groups of cervical cancer deaths in 2009 and 2010.

Table 2.2.7.1. Distribution of the newly diagnosed CC cases by age in Latvia, 2010

<table>
<thead>
<tr>
<th>Age group</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC cases</td>
<td>3</td>
<td>9</td>
<td>10</td>
<td>35</td>
<td>26</td>
<td>36</td>
<td>26</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 2.2.7.2. Stage distribution (FIGO classification) at diagnosis

<table>
<thead>
<tr>
<th>Year</th>
<th>0+I+II stage</th>
<th>III stage</th>
<th>IV stage</th>
<th>without specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>101</td>
<td>58</td>
<td>22</td>
<td>40</td>
</tr>
<tr>
<td>2010</td>
<td>124</td>
<td>60</td>
<td>43</td>
<td>25</td>
</tr>
</tbody>
</table>

Source: Health Economic Center, Statistics, et.al.2011
Table 2.2.7.3. Distribution of CC deaths by age, 2009 and 2010

<table>
<thead>
<tr>
<th>Age</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
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<td>4</td>
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</tr>
<tr>
<td>2010</td>
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<td>0</td>
<td>2</td>
<td>0</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Source: Health Economic Center, Statistics, et.al.2011

2.2.8. Poland

National Cancer Registry of Poland provides data on all newly diagnosed cases and all deaths related to cancer for both genders and all regions in the country (National Cancer Registry of Poland). Epidemiological data in this report are specific for cervical cancer and are collected at national and regional level.

In 2008 (the last year with available data) 3270 newly diagnosed cervical cancer cases were recorded in Poland and 1745 women died due to cervical cancer. The distribution by age groups are shown in Tables 2.2.8.1. and 2.2.8.2. The age group with the highest incidence rate were 40-64 years old women (2152 new cases). The highest death rate was characteristic for the same age group (978 cases in 2008). The other peak for new cervical cancer cases and death was above the age of 70 years. Cervical cancer incidence, crude rates for women for year 2008 was 16.6 - distribution by age groups is shown in Table 2.2.8.3. Age-standardized cervical cancer incidence rate (per 100,000) for 2008 was 11.2 (denominator general female population). Mortality crude rate for cervical cancer in year 2008 was 8.9 - Table 2.2.8.4. indicates distribution by age groups. Age-standardized mortality rates (per 100,000) were 5.3 (denominator general female population).

Table 2.2.8.1. Number of new cervical cancer cases in Poland by age groups for year 2008

<table>
<thead>
<tr>
<th></th>
<th>00-04</th>
<th>05-09</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
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<td>0</td>
<td>0</td>
<td>7</td>
<td>45</td>
<td>116</td>
<td>169</td>
<td>252</td>
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<tr>
<td>2010</td>
<td>554</td>
<td>565</td>
<td>369</td>
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<td>181</td>
<td>125</td>
<td>56</td>
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<td>0</td>
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</table>

Source: National Cancer Registry of Poland
Table 2.2.8.2. Number of cervical cancer deaths in Poland by age groups, 2008

<table>
<thead>
<tr>
<th>Age Group</th>
<th>00-04</th>
<th>05-09</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
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<th>35-39</th>
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<tbody>
<tr>
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<td>0</td>
<td>0</td>
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<td>8</td>
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<td>43</td>
<td>73</td>
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<td>247</td>
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<td>205</td>
<td>160</td>
<td>150</td>
<td>171</td>
<td>139</td>
<td>80</td>
<td>1745</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: National Cancer Registry of Poland

Table 2.2.8.3. Cervical cancer incidence, crude rates by age groups for 2008

<table>
<thead>
<tr>
<th>Age Group</th>
<th>00-04</th>
<th>05-09</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
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</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
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<td>0</td>
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<td>8</td>
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<td>21,4</td>
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<tr>
<td>5-10</td>
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<td>36,9</td>
<td>27</td>
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<td>24,7</td>
<td>24,6</td>
<td>17,8</td>
<td>16,6</td>
<td></td>
</tr>
</tbody>
</table>

Source: National Cancer Registry of Poland

Table 2.2.8.4. Cervical cancer mortality crude rates by age groups, 2008

<table>
<thead>
<tr>
<th>Age Group</th>
<th>00-04</th>
<th>05-09</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
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<td>1,1</td>
<td>3,5</td>
<td>6,2</td>
<td>12,8</td>
</tr>
<tr>
<td>5-10</td>
<td>15,9</td>
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<td>20,5</td>
<td>19,6</td>
<td>18,2</td>
<td>23,4</td>
<td>27,3</td>
<td>25,4</td>
<td>8,9</td>
<td></td>
</tr>
</tbody>
</table>

Source: National Cancer Registry of Poland

2.2.9. Romania

Romania has a population of 9.44 million women ages 15 years and older who are at risk of developing cervical cancer. In Romania epidemiological data specific for cervical cancer are collected at national and regional level. Current estimates indicate that every year 3448 women are diagnosed with cervical cancer and 2094 die from the disease. Cervical cancer ranks as the 2nd most frequent cancer among women in Romania, and the 1st most frequent cancer among women between 15 and 44 years of age. Data are not yet available on the HPV burden in the general population of Romania. However, in Eastern Europe, the region Romania belongs to, about 22.3% of women in the general population are estimated to harbour cervical HPV infection at a given time. Published studies on the prevalence of HPV infections with high-risk genotype in Romania refer to a small number of patients from obstetrics and gynecology clinics, without control groups for general population.

In a recent paper Apostol I at al. (2010) evaluated the trend of cervical cancer over 2000-2006 in Romania. Starting with the 80s, the mortality
increased constantly. Over 2000-2006, there was a total number of 22,830 new cases and 12,763 deaths from cervical cancer in Romania. The world age-standardized incidence rates varied between 18.97-24.58 per 100,000, with the highest value in 2001 and the smallest one in 2000. The world age-standardized mortality rate varied between 10.64-11.51 per 100,000, with the highest value in 2002 and the smallest one in 2005. Mortality/incidence ratio had the highest value in 2000 (62%), followed by 2006 (60%).

In 2008 the newly diagnosed cervical cancer cases in Romania were 3,402 (Figure 2.2.9.1.). The cervical cancer incidence rate (per 100 000) for 2008 was 31 (denominator general female population N=10 894 000) or 36.04 (denominator female population >15 years, N=9 437 136). Women who died for cervical cancer in 2008 were 2,060.

Figure 2.2.9.1. Incidence and mortality of cervical cancer in Romania, 2008

Romania (2008): Estimated incidence and mortality by sex: women; Age Standardised Rate (European) per 100,000
In Slovakia epidemiological data specific for cervical cancer are collected at national level. Last available data are from 2008. These are data on total incidence and mortality for cervical cancer. More detailed data are not freely available since 2009 because of non-functioning portal of the Slovak National Cancer Registry. Data on incidence and mortality according age groups are not freely available. Summary data for the Slovak Republic is to be found in different specialized international databases.

General female population on December 31st, 2009 in Slovak Republic was 2,787,987 (Source: Statistical Office of the Slovak Republic, 2010). Slovakia has a population of 2,279,356 women ages 18-70 years that are at risk of developing cervical cancer. In Slovak Republic in 2008 newly diagnosed with cervical cancer were 579 women. Incidence of cervical cancer (%) was 0.03 and the ASR-WS cervical cancer incidence rate for 2008 was 15.8/100,000 women (denominator female population >15 years, 2008). The women mean age at diagnosis was 40 – 59 years. The distribution of cervical cancer by stage at diagnosis was as follows: 45% of women were diagnosed at Stage 1 disease, 20-29% - at Stage 2, 17 to 21% - at Stage 3 and 5% at Stage 4. The number of women who died from cervical cancer in Slovakia in 2008 was 203 and the mortality ASR-WS was 4.8/100,000 women (denominator female population >15 years).
2.2.11. Slovenia

Cancer registration in Slovenia has a long tradition. Cancer Registry of Republic of Slovenia was founded at Institute of Oncology Ljubljana in 1950, making it one of the oldest population based cancer registries in Europe. Cancer incidence, prevalence and survival data are collected and published for more than 60 years, on SLORA web page (URL: http://www.slora.si) are presented from 1961 onwards. Slovenian data on cancer mortality are gathered by the Institute of Public Health.

In Slovenia the general female population in 2010 was 1 032 869 women (URL: http://www.stat.si). Women at risk for cervical cancer (female population aged 15-70 years) were 741 477. Epidemiological data specific for cervical cancer are collected at national level. In 2008 newly diagnosed with cervical cancer were 130 women (210 in 2003 and 153 in 2007). The incidence of cervical cancer in 2008 was 12.6/100 000 (being 20.6/100 000 in 2003 – 38% of decrease in CC incidence; 14.9/100 000 in 2007). The women mean age at diagnosis in 2007 was 55.3 years. Table 2.2.11.1. shows the stage distribution (FIGO classification) at cervical cancer diagnosis. Approximately 50-60 women die each year in Slovenia from cervical cancer. In 2008 in Slovenia from cervical cancer died 57 women. The mortality ASR-WS was 2.8/100,000 women (GLOBOCAN 2008).

Table 2.2.11.1. Stage distribution at diagnosis, Slovenia, 2007

<table>
<thead>
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<th>FIGO classification</th>
<th>Number</th>
<th>%</th>
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</tr>
<tr>
<td>IA2</td>
<td>1</td>
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<td>19</td>
</tr>
<tr>
<td>IIA</td>
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<td></td>
</tr>
<tr>
<td>IIB</td>
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<tr>
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</tr>
<tr>
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<tr>
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<td>100</td>
</tr>
</tbody>
</table>

Note: Data are for diagnosed women without any CCS in last 3.5 years
3. OVERVIEW ON THE NATIONAL HEALTH SYSTEMS IN THE AURORA’S PARTICIPATING COUNTRIES

3.1. Bulgaria

Currently the National Health system in Bulgaria is organized at central, regional and local level and health care is provided by both private and public health facilities. The National Health System is in the process of computerization.

The system of health care in Bulgaria is based on a Bismarck-type health insurance system, with only one health insurance agency, the National Health Insurance Fund (NHIF), and mandatory health insurance payments. Contributions are shared between employers and employees. The payments for children, students, pensioners, disabled, public officials and part of unemployed are made by the state. The NHIF is the main source of health care financing. Parliament decides the size of health insurance payments and each year determines the budget of the NHIF. The medical centers of non-hospital and hospital care have individual contracts with the NHIF and become the providers of medical care in the system of the compulsory medical insurance. The NHIF guarantees the financing of a basic package of health care services whose scope and volume is subject to annual agreements signed with the organizations of the medical profession. Users pay for services not included in the packages. These can be paid for by voluntary (private) health insurance provided by private shareholding companies for additional health insurance. Private out-of-pocket payments are also substantial.

In Bulgaria the Ministry of Health develops and implements national health policy, defines goals and priorities of the health system, works out national health programmes for improvement of the health status of the population, and develops draft legislation concerning the health sector. It retains responsibility for overall supervision of the health care system, also administered by regional structures. In 1995 the Ministry of Health decentralized much administration to the 28 regional health centres, which carry out the ministry’s health policy in the administrative regions of the country. Municipalities are given the ownership of most health care facilities, including diagnostic and consultative centres, municipal hospitals for acute care, specialized hospitals and outpatient clinics, all of them serving the needs of the respective municipality. In addition, municipalities are responsible for the specialized regional dispensaries (for pulmonary diseases, oncology, dermato-venereology and psychiatry). The organized cancer network in the country includes 13 regional cancer centres with cancer registries (named dispensaries) and a National Oncological Hospital, part of which is the Bulgarian National Cancer Registry. Currently Bulgaria has no national cancer control programme.
3.2. Cyprus

In Cyprus there is no National Insurance Health System. There are two completely separate sectors: the Public and the Private sector. The Public sector health system is calculated on the annual budget of the state. Private sector health system is out-of-pocket spending or coverage by a private insurance. These two sectors are working completely separately.

The National Health System is fully organized and managed by the Ministry of Health and is in the process of computerization. The National Cancer Strategy has been approved during November 2009 by the Ministerial Council. Moreover, there is a national cancer control programme. There is a Central Cancer Registry at the Ministry of Health that collects systematically all cancer data from all sectors (public and private), and a National Cancer Committee that acts as an advisory body to the Minister of Health on Cancer Policy. Under this Committee the Oncology Centre, the Anti-Cancer Society, the Cyprus Association of Cancer Patients and Friends, Europa Donna (Cyprus) and other relevant agencies are represented. A number of cancer prevention and control campaigns are conducted each year.

3.3. Czech Republic

The National Health system in Czech Republic is organized at central, regional and local level and is publicly funded. There are hospitals and healthcare facilities managed directly by the Ministry of Health. There are also joint-stock companies, healthcare facilities established by regional authorities and by municipalities, also private surgery rooms of GPs and medical specialists (eg gynecologists), clinics.

Health care in Czech Republic is provided by both private and public health facilities. Almost all of them provide the health care for patients without direct payment on the basis of agreement with health insurance companies. Act on the Public Health Insurance specifies which care is covered by public health insurance. Basic principles of the health care system in Czech Republic are: Solidarity; High degree of autonomy; Multiple-source financing with a high share of public health insurance; Freedom to choose a health care specialist or health care facility; Freedom to choose a health insurance company; Equality in availability of health care for all policy holders. Individuals with permanent residence or working in Czech Republic are entitled of health insurance claims. Payment of health insurance is provided in the form of obligatory tax from the salary of employees or from the profit of self-employers. Payment of health insurance is provided by the state for unemployed, retired, students younger than 26 years and immigrants (URL: http://www.cizinci.cz/files/clanky/98/Prirucka_zdravotni_pece_2004.
National Health system in Czech Republic has an organized electronic reporting system. Czech Republic has a national cancer control programme since 2003.

3.4. Greece

The Greek National Health System (NHS) can be characterized as a mixed system. As Economou (2010) points out it is “a mixture of public integrated, public contract and public reimbursement models, comprising elements from both the public and private sectors and incorporating principles of different organizational patterns”.

Over the past 10 years a number of attempts have been made to decentralize the NHS (reform acts of 2001 and 2003 Law 2889/2001, Law 3329/2005) all of which were flawed with structural and administrative problems. Presently and within the general austerity and budget cut measures there are 7 Health Regions (Y.Pes) which are largely dependent on the central government – Ministry of Health.

The system is financed by the state budget, social insurance contributions and private payments. Private sources of funding represent more than half of total expenditure for health care.

The Greek NHS provides universal medical coverage to all legal citizens of the country on the basis of citizenship and on the basis of occupational status and insurance contributions. Assistance is provided to specific population groups namely the unemployed (financed by the central government budget and covered by the main insurance fund IKA for 12 months) and the uninsured/poor (on the basis of official documentation received from prefecture authorities).

The National Action Plan for Cancer which has been in effect since 2008 includes a number of measures for the prevention of cancer including cervical cancer.

3.5. Hungary

The National Health System in Hungary is under governmental supervision, regulated and supervised by the Ministry of National Resources. The National Healthcare Fund (OEP) is the public organization controlling the management of health care. Majority of the financing for health care comes from taxes and other public revenues. The Hungarian health insurance operates as an independent branch of the social security system and provides access to all ambulatory and secondary hospital health care. Private health care is also available.

The National Health Insurance Fund (NHIF) is a separated monetary fund within the State Budget, directing administrative bodies, operating the
health insurance branch system, developing and operating health database, collecting, processing and analysing the statistical data of the health insurance system. The NHIF is the main source of health care financing. In Hungary, most health care facilities are owned by local governments. The State Budget provides financial resources, public health and emergency services, defrays the deficit of the NHIF, funds medical research and development projects. People without insurance are entitled for: expectant care, mandatory vaccinations, epidemiological screening tests, separation and transport, mandatory medical examinations, and urgent care. Children, full-time students, pensioners, and women on maternity leave are insured as well. Operation expenses of population-based screening programmes are covered by the OEP and the NHIF. The National Oncology Institute (methodological, organizational, cancer prevention, training, treatment, and scientific co-ordinating centre for Hungarian oncology) coordinates the national cancer control programs. The National Cancer Registry (cancer morbidity and mortality data) also operates within the Institute.

3.6. Italy

The National Health System has been created in 1978, inspired by the 32nd article of the Italian Constitution. The SSN (Servizio Sanitario Nazionale) is comprehensive of all function and healthcare activities, managed by regional health organization, by the nation central institution and by the Italian State. The National Health system in Italy is organized at regional level. Healthcare is provided to all citizens. The SSN is funded mostly by the taxation, and only for some services by a copayment. Italy's healthcare system is regarded as the 2nd best in the world, after France according to the CIA World factbook. According to the modification of the Italian Constitution, Title V, starting from 2001, Italian Regions got the power to make choices in management of Health and assistance, on the basis of a general indication provided by the National Health Government. The consequences of this devolution are huge differences in services provided to citizens, in quality of assistance and in balance between public and private participation to the health expenses. The National Health system in Italy has not a complete organized electronic reporting system. Italy has a National cancer control programme. Since 2005, the Italian Ministry of Health, Department of Prevention, together with the Commission of Regions has formally charged the National Centre for Screening (ONS) with monitoring and promoting nationwide screening cancer programmes. The screening programmes are managed by the Italian Group for Breast Cancer Screening (Gruppo Italiano Screening Mammografico - GISMa), the Italian Group for Cervical Cancer Screening (Gruppo Italiano per lo Screening
3.7. Latvia

Healthcare in Latvia is centralized and organized by national Government and the Ministry of Health sharing responsibility for the provision of healthcare services. The Ministry takes care of legislation, policy, supervising healthcare at a national level and the provision of specialist treatment, which makes up part of the State Programme of Medical Care and includes oncology etc.

Organization:
- Primary care (GPs, specialist);
- Secondary care (hospitals- multifunctional);
- Tertiary care (specialized hospitals).

Health care financing system: tax-funded social insurance system. Also there is a possibility to get private insurance.

Healthcare is available to all citizens and registered long-term residents. To some groups (for example, poor people category (implemented in 2009), disabled people, repressed people by Soviet regime etc.) healthcare is available for free or reduced costs.

In Latvia National Cancer Strategy has been developed but it is still not implemented because of lack of money. Screening is being implemented in the framework of Cancer Early Detection Program from year 2009.

3.8. Poland

The system of health care in Poland is based on obligatory health insurance paid by all employees. It is organized as the National Health Funds (Narodowy Fundusz Zdrowia NFZ). NFZ contracts the provision of health services from public and private providers. If the service is contracted by NFZ then it is free for all who are entitled to such care (e.g. employees and their families, the elderly who receive pensions from the public funds). Private sector is also present in the system of health care, thus services based on commercial rules are also available. In such services patients pay full costs of medical treatment. Recently the idea of co-payment, such as additional health insurances, is also considered. Such insurance is offered by some employers to their staff (additionally to NFZ services they entitled to).

Certain medical procedures (e.g. transplant surgery, population screening programmes) are funded by the budget of the Ministry of Health (i.e. outside the NFZ funds), but such medical services as IVF are fully covered by recipients. NFZ is centralized, but it has 16 regional offices (NFZ branch in each voivodeship / province) responsible for contracting health services in the region. Vaccination against certain diseases is offered free to children.
Local governments in few regions introduced the pilot programme of HPV vaccination. In relation to cancer prevention and treatment the relevant legislation was introduced. The National Programme for Cancer Treatment (Narodowy Program Zwalczania Chorób Nowotworowych) was accepted by the Polish Parliament in 2005. The Government accepted the National Programme for Health for 2007-2015. One of the main targets (Strategic target No 2) of this programme relates to cancer prevention and treatment. It includes two goals: 1) the diminishing of number of deaths because of all cancers, 2) the diminishing of number of deaths because of breast cancer and cervical cancer. The later effect (2) is expected to be achieved by introducing population based screening with the application of mammography and cytological examination. Both national based screening programmes use invitation letters as a way to bring women to health centers for free screening. Few public awareness campaigns were introduced, not only related to CC, but also to breast cancer, prostate and lung cancer.

3.9. Romania

In Romania, the National Health system is organized at central level and funded by co-payment. Ministry of Health is responsible for health strategies, definition of policies, planning, coordinating and evaluating of the national health programmes. The system is organized at two main levels: national/central and district. The national level is responsible for attaining general objectives and ensuring the fundamental principles of the government health policy. The district level is responsible for ensuring service provision according to the rules set by the central units. At national level, cross-sector approaches in health policy are ensured through collaboration between the Ministry of Health, the Ministry of Labor, Family and Social Protection, the Ministry of Education and Research, Ministry of Finance, the College of Physicians and Pharmacists. At district level, cross-sector interventions are ensured through the district public health authorities (DPHAs), district councils, district school inspectorates, and district local government prefects. National Insurance House is an autonomous public institution that administrates and regulates the social health insurance system. In August 2009, the government of Romania had announced the implementation of the national cervical cancer screening programme for early detection and prevention of cervical cancer (Ministry of Health Order no. 881). In practice, however, cytological screening program is not yet functional and has been run with interruptions due to budgetary constraints. Also, this screening program hasn’t provided data on the prevalence of precancerous lesions. According to Ministry of Health Order no. 1591 from December 30, 2010 the national cancer programme will include:
• Prevention of cervical cancer through HPV vaccination;
• Screening programme for early detection of cervical cancer;
• Screening programme for early detection of breast cancer;
• Screening programme for early detection of colorectal cancer;
• Treatment programme for patients with oncological diseases
• Monitoring programme of disease progression in patients with cancer by PET-CT

3.10. Slovak Republic

The Constitution of the Slovak Republic lays down a basis for the organization, management and financing of the country’s health care system. It ensures universal coverage and access to free of charge health care services based on mandatory health insurance, built on principles of solidarity and plurality. The Slovak health system is based upon a mandatory Bismarck-style social health insurance system. It is a centralized health system.

In the Slovak Republic there is realised nationwide non-population-based cervical cancer screening (CCS) program. The CCS program is part of the national cancer control program. Since January 1st, 2008, the screening is performed in interval of 3 years, after 2 normal consecutive annual tests of classic PAP smear. Starting age in women is 23, ending age 64. The pap-smear is performed only by gynaecologists. Screening is part of a preventive check-up at gynaecologist, which is reimbursed from health insurance. Health insurance companies and the Ministry of health use preventive check-ups as one of the indicators of quality of provided healthcare.

All women have a right for preventive check-up free of charge once a year from their 18th year of age. The preventive check-up is at own interest of each woman, they are not actively invited. That is why the biggest problem is a low participation of women in preventive check-ups (only 18-20%).

3.11. Slovenia

Slovenia has a modern health care system, which is comparable to those of the economically developed countries of Europe. This statement can be supported by the status of the overall structure of the health system; the level of assured patient rights, and health safety and security; the health status of the population; and the organization of health care services, as well as the method and sources of financing the system and its management.

These achievements are the result of a long tradition of implementing public health care, the appropriateness of the health insurance system and the dedication of the people of Slovenia to the concept of solidarity in case of illness or injury.

Health care services in Slovenia are financed mainly by contributions to
Compulsory health insurance, premiums for voluntary health insurance (VHI) and through taxes. Comprehensive universal health care system assures free access to health care services at the primary level for every citizen, to the amount defined by the Health Care and Health Insurance Act and other regulations. However, a very small group of people (approximately 30,000) who do not have citizenship or residence in Slovenia are not covered by compulsory health insurance. At the same time, access is limited at the secondary and tertiary levels, whereby patients are only guaranteed care on the basis of a referral issued by their personal physician. Limitations in terms of coverage by compulsory health insurance for expenditure on medicines are regulated by means of a positive list. The same applies for services that exceed certain regulated standards. These limitations apply to all insured individuals, without exception or other distinctions. Access to GPs and other doctors (paediatricians, gynaecologists) at the primary care level is almost universal, except in some remote rural areas, where there is occasionally a lack of doctors.

The steward of the health system in Slovenia is the Ministry of Health. The organizational structure within the health system is advanced and comprises numerous actors, including various agencies under the Ministry of Health, public independent bodies, publicly owned hospitals and primary care centres, private providers of health services, and various nongovernmental organizations (NGOs) and professional associations. The National Health system in Slovenia has an organized electronic reporting system Slovenia has a national cancer control programme. Currently existing national screening programmes are: ZORA - National cervical cancer screening programme, DORA - National breast cancer screening programme and SVIT-National colorectal cancer screening programme.
4. OVERVIEW ON CERVICAL CANCER SCREENING IN THE AURORA’S PARTICIPATING COUNTRIES

4.1. Bulgaria

Currently, Bulgaria has no national organized cervical cancer screening (CCS) program. Many women performed CCS opportunistically, but data on the percentage of women in Bulgaria covered by opportunistic screening is not available.

4.2. Cyprus

In Cyprus there is no yet a CCS programme. Despite that approximately 40% of women perform CCS opportunistically.

4.3. Czech Republic

Czech Republic has an organised CCS programme. In January 2008, the Czech Ministry of Health (MZCR) launched the nationwide screening programme focused on the early detection of cervical cancer, thus adding another programme of cancer prevention to the nationwide breast cancer screening, which started in 2002. As the regular gynaecological examinations are widely accessible to all women, the objective of this screening programme is to ensure that cytological samples collected by gynaecologists will be examined in accredited laboratories, which meet the criteria of modern diagnostic methods. The CCS programme currently runs in several dozen accredited laboratories whose functioning is monitored and checked according to transparent rules. The programme course, the adherence to the stipulated rules, as well as research activities linked to the project are, overseen by the Cervical Cancer Screening Committee at the Ministry of Health.

From the legislative point of view, the project is enshrined in the Decree no. 3/2010 Coll. of MZCR, stipulating the content and intervals of preventive examinations. Specifically, the criteria and conditions for cervical cancer screening in the Czech Republic are defined by the Czech Ministry of Health Gazette No. 07/2007.

The CCS programme in Czech Republic follows the recommendation of
the European Council from 2nd November 2003 (2003/878/EC), stating that all EU members should adopt organised screening programmes for breast cancer, cervical cancer and colorectal cancer. The European Council recommends the collection of data on preventive examination, subsequent diagnostic procedures and final diagnoses. These data should be used to monitor the screening process and the results should be made available to the public and to health professionals.

According to the law, since 1966 in Czech Republic one gynecological preventive examination, including Pap smear, for every woman free of charge has been guaranteed each year. The woman is examined by her registered gynecologist during her regular preventive checkup. The gynecological examination as part of health prevention programmes is covered by the public health insurance for all women once a year (as stipulated by the Decree no. 56/1997 Coll. of MZCR). CCS programme is implemented at national, regional and local level and is provided by gynecologists, where each woman should be registered. CCS starts at the beginning of sexual activity and there is no ending age. The checkup involves the examination of external genitalia, and vaginal examination including the colposcopy. Uterus and ovaries are then examined by bimanual palpation. Transvaginal ultrasound examination is optional. Cervical smear test is part of this examination. The gynecologist sends the cervical smear together with the accompanying form to an accredited cytology laboratory that performs a standard examination of the sample, according to defined methods. The result of the examination (according to the standard classification Bethesda 2001) is sent back to the registered gynecologist - this must be done not later than 3 weeks after the day of cervical smear test. Based on the results of cytological examination, the gynecologist decides on the further management. A dedicated counseling about the risk of cervical cancer should be provided during each visit, but according to one study (Pidrmanová Pohanková R., 2006), 20% of participating women wasn’t counseled about the risks of gynecological cancer and 19 % of women wasn’t counseled at all during the first visit of the gynecologists. Educational materials aren’t distributed actively by the gynecologists. The physicians involved in the CSS programme do not receive an economic incentive for reaching a target number of women screened.

Statistical processing of the organised CCS is done by ÚZIS CR. Data about the preventive examinations are collected. This information, however, is not included in periodic publications of ÚZIS CR. The data about abnormal results are analyzed annually. A personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data is available. A quality assurance system is applied for laboratory investigations (PAP, viral DNA) – authorization and accreditation system is obligatory according to the legislation. The personnel is adequately trained at all levels to ensure that is able to deliver high quality screening.

In 2005 in Czech Republic (women population 5.2 millions) 2.4 millions Pap smears were done. But this data are not related to the individual identification. According to the Public Health Insurance Company (PHIC) about 35% coverage of Czech women by CCS is estimated (Tachezy R and
Rob L. 2007). In 2009, 1 323 000 women aged 25-59 years were screened for cervical cancer, which is approx. 50% of eligible women (2 647 000 women) of this population group. Population based CCS is not implemented in Czech Republic yet. There is not call recall mechanism in the system of annual preventive gynecological examinations. Woman is recalled in case of abnormal laboratory result.

4.4. Greece

Greece is among the few European countries that have yet to establish national organized screening for cervical cancer (Arbyn et al., 2009). There is no call-recall mechanism to approach and monitor women at risk at least currently. Pap tests are offered though by all major public hospitals (including university hospitals), social insurance funds, Primary Health care centers and hospitals free of charge. No invitation system is available. Pap tests are covered by insurance funds or are refundable in full or as a percentage of the cost. Nevertheless, long waiting lists discourage many women from having Pap tests (Riza et al., 2000; Dimitrakaki et al., 2009; Panagopoulou et al., 2010). Uninsured persons and immigrants can access free of change outpatient departments of hospitals and rural and semi rural Primary Health Centers and can request pap tests where relevant facilities are available. Private physicians – gynecologists offer Pap tests to their patients but no data are available concerning the percentage of the population obtaining Pap tests via private practice.

Data on the percentage of women in Greece covered by opportunistic screening is not available. It is worth noting though that many public hospitals both in the capital city Athens and in major regional cities each year perform a significant number of Pap tests. Opportunistic screening for example is well organized in inner city public maternity hospitals such as the General Alexandra Hospital in Athens which perform Pap tests to Roma and migrant populations.

There are two regional organized cancer screening programs which were set up within the framework of the Europe Against Cancer programme in Ormylia, Halkidiki in Northern Greece and in the prefectures of Messinia and Ilia in Southern Greece which however cover only a small margin of the overall national population (Riza et al., 2000; Dimitrakaki et al., 2009; Panagopoulou et al., 2010). Both programmes were initiated in 1991 and are partly funded by the European Union. Both programmes are targeted at women aged 25-70 years of age and a Papanicolaou (Pap) smear test is recommended every 2 years. (Riza E. et al., 2000). Electoral and municipal registries are used to identify the target population and personal invitations are sent to the eligible women in the screening programme. A call recall method was implemented with the support of the local community (Riza et al., 2000). Communication of results is by means of a personal letter upon a negative result and in person upon a suspicious result. Both programmes were implemented according to
A dedicated counseling and educational materials are provided at the time of the visit. The physicians involved in the CSS programme do not receive an economic incentive for reaching a target number of women screened. Both programmes employ well-trained personnel, they use modern equipment and have strict quality assurance procedures. The regional organised population programme of Ormylia in Northern Greece – operates in a local primary health care centre – with a target population of 17 000 women. By 2000 an estimated 80% of this population had received a Pap test. Pap tests were conducted only by gynecologists (Riza et al., 2000; Dimitrakaki et al., 2009; Panagopoulou et al., 2010). In the Ileia and Messinia prefectures a mobile unit was used to conduct Pap tests. Tests were conducted by gynecologists, nurses and trainee rural doctors. These two programmes are the sole organised cervical cancer screening activities in Greece in the absence of a national programme.

The National Action Plan for Cancer which has been in effect since 2008 includes a number of measures for the prevention of cancer including cervical cancer. There are plans to implement organized population based cervical cancer screening on a national basis and according to the European Guidelines for Quality Assurance for Cervical Cancer screening. Plans also include training of health professionals according to the quality guidelines, educational activities, and national awareness raising activities. There is no timeline for the completion of published measures. In the context of the current financial crisis the extent and the time frame of these activities remain unknown. According to the National Cancer Plan all units offering cervical cancer screening services will be evaluated and incorporated into an accreditation scheme. There is no information on the timeline for this activity.

In the framework of the National action plan for cancer and the 5th European week for the prevention of cervical cancer free Pap tests were offered to all Greek women over 15 years of age in the country’s major public hospitals between the 24th and 31st January 2011. This measure was accompanied by a number of educational and awareness raising activities in major cities including Athens.

4.5. Hungary

Hungary has a population-based organized CCS programme, part of the national cancer control programme in the country. In Hungary there are three organized public screening programs developed - for breast cancer, cervical cancer and colorectal cancer. The CCS programme started in 2003 and was implemented at National level. The National Public Health and Medical Officer Service (NPHMOS) is responsible for the organisation and implementation of public screening programs and prevention campaigns.
Personal invitations (letters) that also contain information about the screening method, the examination and the importance of the participation are sent to each woman. The list of invited women originates from the National Health Insurance Fund (NHIF). In case of not presentation there is not a recall system. The screening is organized by the local screening coordinator and the local screening workgroup, responsible for the invitations. The National Screening Coordinator supervises the regional screening Coordinating Units, creates the official screening register of the invited people paying attention to the protection of the personal rights and organises the follow-up system. Officially the screening is performed in the clinics where accredited gynecologists work. Pap-smears are analyzed by accredited cytodiagnostic laboratory. They are contracted by the National Health Insurance Fund and are obliged to report for the screening. In some cases CCS is performed in moving campers.

The age range of the CSS programme is 25-65 and the screening interval is 3 years. Pap-smears are collected by gynecologists and trained district nurses. In Hungary the colposcopic examination is part of the gynecological screening. According to the professional protocol, the gynecological screening consists of inspection of the visible parts of the vagina, colposcopic examination and categorizing the cervical portio epithelium, bimanual pelvic examination and collection of pap-smear for cytological analysis. A dedicated counseling is provided and educational materials are distributed at the time of the visit. The physicians involved in the CSS programme do not receive an economic incentive for reaching a target number of women screened. The personnel is adequately trained at all levels to ensure that is able to deliver high quality screening. A quality assurance system is applied.

Centralised data systems are available to run the organised CCS programme. However, this system can measure only the invitation-based screening. If a woman visits her private gynecologist for prophylactic examination and Pap-test it will not be reported. Because of this situation, there are some women, who are double-screened.

Although the CCS target population (women 25-65 years age) is more than 2.5 million women and they should get invitation cards every 3 years (it means that about 700 000 women should get per year as a minimum), only 62 588 invitation cards were posted in 2010. One of the reasons is that the National Screening Registry doesn’t contain the whole female population of the target group as it receives the population list from the database of National Health Insurance Fund were about 1.7–1.8 million women are included. The second reason is that the financial limits allowed only this little number of examinations to be performed and invitations to be sent. From invited 62 588 women in 2010 only 19 478 women complied with and attended the CSS. The low rate of attendance is general problem of CCS in Hungary.

Another problem is the information the National Public Health and Medical Officer Service gets and analyses - it is not relevant. It is well-known, that many women in Hungary prefer to visit gynecologists for prophylactic examination and Pap-test in private surgeries. However, these private
surgeries and cytology labs are not part of the national accredited screening system, they are not contracted by the National Health Insurance Fund and are not obliged to report for the screening. As a result most of the data are produced outside the organised programme and the gap between the reported and the actually executed cervical cancer screening could not be estimated.

4.6. Italy

In Italy population based organized CCS programme is implemented at regional level. It is part of the national cancer control programme in the country. The CCS programme was initiated in 1996. The age range of the CSS programme is 25-64 years and the screening interval is 3 years. The CCS is performed in ambulatories and family planning clinics. The samples for classic or liquid-based Pap tests are collected by gynecologists and midwives and are processed for the cytological exam. A dedicated counseling and educational materials are provided at the time of the visit. The physicians involved in the CSS programme do not receive an economic incentive for reaching a target number of women screened.

Centralised data systems are available to run the organised CCS programme. A personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data is available. A quality assurance system is applied. The personnel is adequately trained at all levels to ensure that they are able to deliver high quality screening.

The sources for the individual identification of eligible women are the residents lists. The tool for personal invitation is letter. There is no a recall system in case of not presentation.

In year 2008 in Italy 3 300 289 women (59.8%) of the population groups which are targeted for CCS (5 564 351) were personally invited to attend the CCS programme. Of them 1 332 376 (39.7%) complied with and attended the CSS.

In Italy there is a huge difference among regions in the development of organized cervical cancer screening program. While in the North of Italy there is a total coverage of the population, except two regions where the program is not started at all, in the South instead all Regions have activated the screening program only recently, and the results in term of coverage can’t fill the gap with the other area of the country.

The most important indicator within a screening program should be the compliance to invitation. The gap among regions described above, is still present for this indicator, with a clear decreasing trend in compliance with invitation from Northern (47.7%) to Central (40.2%) and to Southern (27.7%) Italy.

Since 1997 the Italian Group for Cervical Screening (GISCi) collects process indicators as recommended by European guidelines. In the next few years the HPV vaccination and the development of new technologies in HPV testing
will make the organized programmes even more important.

4.7. Latvia

In Latvia a population-based organized CCS programme is implemented at national level in 2009. The CCS programme is part of the national cancer control programme in the country. The age range of the CSS programme is 25-70 years and the screening interval is 3 years. The CCS is performed in ambulatories and Gp-rooms by gynecologists and General practitioners. Classic Pap smear samples are collected. A dedicated counseling is provided at the time of the visit, but educational materials are not distributed. The physicians involved in the CSS programme receive an economic incentive for reaching a target number of women screened. Centralised data systems are available to run the organised CCS programme. A personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data, is available. A quality assurance system is applied. The personnel is adequately trained at all levels to ensure that is able to deliver high quality screening.

The sources for the individual identification of eligible women in Latvia are the residents lists. The tool for personal invitation is letter. There is no a recall system in case of not presentation.

For the period 2009-2011, 473 029 women of the CCS target population in Latvia were personally invited to attend the CCS programme. Of them 76 667 (16.2%) women complied with and attended the CCS.

Cervical cancer screening program in Latvia does not give the expected results.

4.8. Poland

Currently in Poland cervical cancer screening is organised in two ways: 1) Population based organised CCS programme; 2) Opportunistic screening. The population based CCS was implemented in 2006 at national level. It is based on the principles of the National Programme for Treatment of Cancer (Narodowy Program Zwalczania Chorób Nowotworowych) and the National Programme for Health (Narodowy Program Zdrowia na lata 2007-2015). Women 25-59 years of age are the target population of the national population based CCS program and the screening interval is 3 years. The screening is performed in hospitals, ambulatories, private practices contracted by the National Health Funds (NFZ). The Pap smears are collected by gynecologists and midwives. HPV DNA testing and colposcopy are provided when abnormal results of Pap smear are detected. A dedicated counseling and educational materials are provided at the time of the visit.

Centralised data systems are available to run the organised CCS programme.
The data from population based CCS are stored in System of Information Monitoring and Prophylaxis (SIMP). A personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data, are available. A quality assurance system is applied. The personnel is adequately trained at all levels to ensure that is able to deliver high quality screening. The sources for the individual identification of eligible women are the National Health Funds registers. The tool for personal invitation is letter. In case of not presentation there is not a recall system. The target population for population based organized CCS programme in Poland in the years 2007-2009 includes 9 727 842 women. In 2009 invitation letters were sent to every woman from the target population (3 274 036 women). Of them only 876 358 women (26.77 %) participated in the screening.

Opportunistic screening is provided to women during their gynecological consultations. As the frequency of such consultations varies and their numbers are not registered precisely, it is difficult to calculate how many women undergo CCS under such circumstances. It is very likely that at least a proportion of those who do not respond to invitations to participate in population based CCS is screened during such visits. Unfortunately their data are not recorded in SIMP.

4.9. Romania

In Romania, 2 regionally organised population-based pilot programmes for cervical cancer were started in 2002 and 2008, conducted by I. Chiricuţă Oncology Institute from Cluj- Napoca and Renasterea Foundation. In response to the success of these projects and the resulting increase in the priority given to screening, in August 2009, the government of Romania had announced the implementation of the national cervical cancer screening programme for early detection and prevention of cervical cancer (Ministry of Health Order no. 881). The age range of this CCS programme is from 25 to 64 (in case the last 3 Pap-tests are negative) years and the screening interval is 3 years. The CCS is performed in hospitals and ambulatories. A dedicated counseling is provided at the time of the visit. The classic Pap-smears are collected by gynecologists and nurses. In practice, however, in Romania the cytological screening program is runnig with interruptions due to budgetary constraints. It was proposed but never achived the physicians involved in the CSS programme to receive an economic incentive for reaching a target number of women screened. Primary care practitioners identify and invite by a letter the eligible women from their own list. There is a recall system in case of not presentation. However, currently there are no data available at national level about the number of women of the CCS target population group in Romania that were personally invited to attend the screening programme. It is not known as well the number of invited women that attended the CCS. Also, this screening
program hasn’t provided data on the prevalence of precancerous lesions. In fact, in Romania the CCS programme is not yet functional. The CCS legislation and programme are published but are not implemented. Centralised data systems are available to run the organised CCS programme. There are quality assurance system and personal data security procedure provided by the CCS programme, but not yet implemented. The personnel is adequately trained at all levels to ensure that they deliver high quality screening. The current CCS system is characterized by a lack of coordination and monitoring that leads to the over-screening of a minority of women while the majority of the target population are under-screened or not screened at all. It is recommended that a comprehensive, organized programme to be implemented, coordinated by an independent administrative body with legal and budgetary responsibility. As the laboratory infrastructure and professional technical skills required for a quality-assured organized screening programme are already in place, implementation of this programme would not require much in the way of additional resources to produce substantial cost-effective reductions in cervical cancer rates.

4.10. Slovak Republic

In Slovakia an organised cervical cancer screening program is implemented at national level. The CCS program is part of the national cancer control program. CCS starts for women at the age of 23 years and finishes at the age of 64 years if the three previously performed tests have been negative. The screening test is via conventional cytology. The screening interval is 3 years after 2 normal consecutive annual tests. The CCS is performed in ambulatories and the classic pap smears are collected by gynecologists. Dedicated counseling and educational materials are provided at the time of the visit. The Program is in such form since January 1st, 2008. Before 2008 CCS started at the age of 18 years with 1 year screening interval. Screening is part of a preventive check-up at gynaecologist, which is paid by the health insurance. Health insurance companies and the Ministry of health use preventive check-ups as one of the indicators of quality of provided healthcare. The preventive check-up is at own interest of each woman, they are not actively invited by a gynaecologist. That is why the biggest problem is a low participation of women in preventive check-ups - in 2009 only 18-20% of eligible women in Slovakia attended the CCS program. There are worse results in participation of urban women in comparison with rural ones. Centralised data systems are available to run the organised CCS program. A personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data, is available. A quality assurance system is applied. The personnel is adequately trained at
all levels to ensure that is able to deliver high quality screening. Since 2006 there have been campaigns focused on primary prevention and screening of the cervical cancer. NGOs do participate, as well as professional medical organizations (e.g. gynaecological, paediatric). The campaigns are organized under auspices of the Ministry of Health and the WHO bureau in Slovakia.

4.11 Slovenia

In Slovenia a population based organized CCS programme (ZORA - after Slovenian initials for organised cervical cancer screening programme) is implemented at national level in 2003. It is part of the national cancer control programme in the country. Each woman between ages 20 and 64 is to be invited to perform a preventive gynecological examination together with Pap smear once in every three years (after two negative smears). The CCS is performed in family planning clinics and ambulatories where classic Pap smear is collected by gynecologist. A dedicated counseling and educational materials are provided at the time of the visit.

The sources for the individual identification of eligible women are demographic lists. The personal invitation and the recall system in case of not presentation are by letters. As a part of national population based organized CCS programme (ZORA) a coordination center with central information system named ZORA Registry is operating at the Institute of Oncology since 2003. It registers all diagnoses of cervical smears and all cervical biopsy diagnoses. Further tasks of the ZORA Registry are: inviting women without cervical smear in last three years to take one, monitoring the quality and evaluating the efficiency of all procedures in ZORA, organizing regular education for all programme co-workers and providing them a periodic feedback on their efficiency. A personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data is available. The ZORA Registry takes care for the promotion of ZORA as well. In 2007, 86 590 women of the CCS target population in Slovenia (630 000 women) were personally invited to attend the CCS programme. Of them 39 170 women complied with and attended the CCS. Some of the public health effects of the ZORA implementation in Slovenia can already be observed. The smear coverage in the target population (20-64 year) reached the desired value of 70 % and more then 80 % of women have been registered with their personal gynecologist. In national programme ZORA register in year 2009 were registered 250 939 citological and 7 066 histological exams of 229 772 women in total. The biggest part of smears (76 %) were taken as part of national program of CCS ZORA. The data provided by the Cancer Registry of Slovenia show the decreasing trend of the cervical cancer incidence but on the same time the incidence of the in situ cervical carcinoma is increasing. Despite some incentive initial results there are still many possibilities for
improving the ZORA Registry performance. Our first plan is to introduce an online communication among all the ZORA co-workers as well as between ZORA Registry and other national registries. Reestablishing of the data exchange with the Health Insurance Institute of Slovenia will help ZORA Registry by inviting the target group more precisely.
5. OVERVIEW ON THE HPV VACCINATION IN THE AURORA’S PARTICIPATING COUNTRIES

5.1. Bulgaria

Both bivalent (Cervarix) and quadrivalent (Gardasil) HPV vaccines are available in Bulgaria. Currently opportunistic vaccination for CC prevention is carried out in the country. In 2008 the vaccine advisory body of Bulgaria recommended the introduction of HPV vaccination into the national immunisation schedule (King et al 2008). Since 2010 according to an Ordinance of Ministry of Health (Ordinance of Ministry of Health № 15 from 24.07.2009) there is National recommendation for HPV vaccination for females in the age group 12-18 years before the initiation of sexual activity. Vaccine cost and administration of the vaccine is not supported by the national health system or social security scheme and it is fully at the vaccinee’s expenses.

5.2. Cyprus

In Cyprus opportunistic vaccination is carried out randomly on a national scale by individuals, while an organized vaccination campaign for cervical cancer prevention is carried out also on a small national scale by the Cyprus Association of Cancer Patients and Friends. The starting year of the organized vaccination campaign was at the beginning of 2011 and the target population was young girls and women between 12 and 25 years old.
5.3. Czech Republic

In Czech Republic since 2007 opportunistic vaccination for CC prevention has been provided by pediatricians, gynecologists, GPs and in vaccination centres (also in ZU UL).

In the country no campaign has been carried out by the state or Ministry of Health yet. But in year 2010 the health insurance companies (HIC) provided the 3rd dose of HPV vaccination free of charge for girls and women aged 10-25 years and this action had a great public acceptance. Total results of this one-off campaign are not known. According to data obtained by vaccination campaign of the biggest HIC, 20 513 girls and women profited and were vaccinated (the whole women population 10-25 years is 954 398 persons). The data of the other HIC were not available. Data about total vaccination coverage are only estimated according to sold out doses HPV vaccines. It is assumed that 30 thousand girls and women are vaccinated each year.

5.4. Greece

HPV vaccination has been introduced to the Greek National Immunization schedule since 2007. The age of the target population is 12 to 15 years old. The recommended catch-up age is 16 to 26 years. Vaccination is offered free of charge for females aged 12-26 according to the set criteria and it is not compulsory (it is given on demand). The cost of the vaccine is fully reimbursed by the social insurance funds. The vaccines provided in Greece are Cervarix and Gardasil.

There are no school based programs for HPV vaccination of adolescent girls in Greece and no information on the adherence rate of the target population.

5.5. Hungary

Currently opportunistic HPV vaccination for primary CC prevention is carried out in Hungary. HPV vaccination is not included in National Immunization Schedule of Hungary, thus it is not compulsory and those, who wish to be vaccinated need to bear the costs in general. Though several local government programmes exist and finance all vaccination costs for girls 13 years of age in limited numbers. The so-called “School Vaccination Programme”, also promoted by the “Talk to your mother about it”- Cervical Cancer Prevention and HPV Vaccination Programme, take over part of the costs for girls, who wish to be vaccinated. So, these organized programmes promote HPV vaccination by reducing the financial burden of vaccination.
5.6. Italy

The process of introducing HPV vaccine into the national immunization schedule in Italy started in two regions in 2007 and was completed in all regions in 2008. The target population of the organized vaccination campaign is girls aged 11 years. Seven regions among 21 extended the vaccination to a second cohort (between 15 and 18 years), and one region offers the vaccination to 4 cohorts. HPV vaccination is performed by public health services in all Regions. In 2010 Italy had HPV vaccination coverage of 59.1% (full vaccination course), 64.9% (2 doses) and 67.7% (only 1 dose).

5.7. Latvia

Since September 2010 HPV vaccination has been introduced to the Latvian National Immunization schedule. The target group is the 12 years old girls. The adherence of the organized vaccination campaign is 47.4%.

5.8. Poland

Opportunistic HPV vaccination for CC prevention is carried out in the country.

5.9. Romania

In Romania, a national school-based HPV vaccination programme targeting females aged 11 was started in 2008, but was stopped due to very poor uptake (≈3%). The lack of a proper health education campaign to prepare the public in advance with accurate information of the implementation of the programme is considered to be the main reason for this uptake. The immunization campaign in 2008 was financed from the Ministry of Health budget, the National Programme for Cancer Prevention. The National Committee of Vaccination made recommendation of introduction of vaccination in National Immunization Programme, but until now HPV vaccination (even is given for
free) is not part of National Immunization Schedule.
In 2009, a national information campaign for cervical cancer prevention was coordinated by the Ministry of Education, supported by the UNFPA, the WHO, UNICEF, the Renasterea Foundation and other NGOs, and funded by GSK and MSD. The objective of the information campaign was to provide parents with the necessary data so that they can make an informed decision regarding the vaccination of their girls.
In 2010, the free vaccination program was extended to older age groups (12-24 years).

5.10. Slovak Republic

In Slovak Republic both bivalent and quadrivalent HPV vaccines are registered. They are not reimbursed by the health insurance. Opportunistic HPV vaccination for CC prevention is carried out in the country. Since 2006 there have been campaigns focused on primary prevention and screening of cervical cancer. NGOs do participate, as well as professional medical organizations (e.g. gynaecological, paediatric). The campaigns are organized under auspices of the Ministry of Health and the WHO bureau in Slovakia. During vaccination campaigns two health insurance companies partially paid for the cost of HPV vaccines for 11 years old girls and for 13-16 year old girls, respectively.

5.11. Slovenia

In 2009 HPV vaccination has been introduced to the Slovenian National Immunization schedule. The target population is the 12 years old girls. All HPV vaccinations are performed in school health services. On national level in school year 2009/2010 the HPV vaccination coverage was 48.7%, however there were big differences between health regions.
6. AURORA’S TARGET GROUP

6.1. Bulgaria

Currently, Bulgaria has no national organized cervical cancer screening (CCS) program. Therefore, as target group for the AURORA project we selected **women in the general population** aged 30-69 years, including women from vulnerable groups such as Romani women. The slow transformation of the healthcare system has led to decreased availability and affordability of CCS in Bulgaria (Kostova & Zlatkov, 2000; Kostova et al., 1998). The previously (1970-1985) existing population based cervical cancer screening was replaced in the early 1990s with an opportunistic model (Valerianova 2010). Currently, Bulgaria has no national program for cervical cancer prevention (Valerianova Z. et al. 2010). There is no screening registry, no call-recall system, no clear instructions for health providers. Additionally, the number of tests performed in the private and in the public sector is unknown. There is no available data on the number of women, tested per year. Many women performed CCS opportunistically, but data on the percentage of women in Bulgaria covered by opportunistic screening is not available.

A nationally representative survey in 2007 found that almost one third of Roma women in Bulgaria did not have health insurance (Krumova & Ilieva, 2008). A recent survey indicated that, one out of two women of Bulgarian ethnicity reported being screened (50.9 %) for cervical cancer, compared with about one out of ten women of Roma ethnicity (8.8 %), pointing to a greater risk of cervical cancer among Romani women (Todorova et al., 2009). In Bulgaria action is taken to ensure equal access to CCS of the AURORA target group. For the health insured women to certain extend the equal access is assured as the preventive activities in the field of cancer diseases, including cervical cancer, is performed by the National Health Insurance Fund through the annual prophylactic examinations of insured persons performed by the GPs. Health promotion, prevention and prophylactic activities in Bulgaria are part of the basic package for outpatient care, including the specialized outpatient healthcare (Ordinance 40/2004 of the Ministry of Health;
Panayotova Y. et al 2007; The National Framework Contract 2011, annex 15; The National Framework Contract 2011, annex 17). The prophylactic examinations contribute to the formation of groups of patients at risk of certain socially significant and of priority for the country diseases (such as cardiovascular diseases, cancer, including cervical cancer, and diabetes). The risk group of cervical cancer that GPs form includes: 1/women with family history of cervical cancer; 2/women with visible changes of the cervix - erozio, ectropion, dysplasia and other non-inflammatory diseases of the cervix; 3/women with Pap tests results different from Pap I and Pap II; 4/ immunosuppressed women; 5/drug users; 6/HIV-positive women. Women of these subgroups are referred to gynecologist. However, it is not quite clear how GPs determine women of subgroups 2 and 3 as they are unable to forward all women to gynecologist for Pap test due to the insufficient number of referrals (the system requires the GPs to issue referrals to the gynecologist). The second barrier appears when the gynecologist has to issue referral for Pap test as this is not obligatory procedure for everybody but depends on the assessment during the checkup.

The Ministry of Health developed specific activities directed to vulnerable groups such as Romani women, uninsured women, women living in rural areas, mainly within several PHARE projects. NGOs actively participated in all these projects. A number of projects, mainly the EU- pre-accession PHARE projects (for example “Health promotion and optimization of preventive programs in maternal and child health” – EuropeAid/122909/D/SER/BG) have been directed towards providing modern equipment, including mobile cabinets for screening (including CCS) of these women. Over the years with this technique were carried out on site 5509 gynecologic examinations and 3139 cervical smears were taken (Костадинова, 2010; Отчет за дейностите, осъществени в периода 01.01.2008-31.12.2008 по многогодишен проект “Подобряване на състоянието и интеграция на малцинствените групи в неравностойно положение със специален фокус върху ромите”). Currently these mobile medical units continue to work in 22 of 28 regions in the country. In addition, during the period of 2003-2007 within the boundaries of three projects up to 111 health mediators have been trained and sertificated, 106 of them work. Most of health mediators are women (Костадинова, 2010; Tarnev & Stamenkova, 2011). Health mediators participated very actively in organization of prophylactic gynecological examinations by the mobile medical units.

There are also some local initiatives for free of charge preventive check-ups that are undertaken unsystematically.

Bulgaria is among the European countries that have not yet established national organized cervical cancer screening program (Arbyn et al., 2011), but Bulgarian health authorities intend to create such a program. In 2000, a National Strategy and Program for Oncological Screening in Bulgaria (2001-2006) was voted by the Parliament. It was a program for three localizations – breast, cervix and prostate. For cervical cancer the Strategy foresaw to cover all women aged 20 to 60 years in three year interval. It focused on cytological screening methods and proposed that cervical smears are taken
at the primary care units (GPs or OBGYN practitioners – both midwives and doctors) and analyzed at specialized laboratories throughout the country. This program was not implemented in practice in the way it was planned, and it expired at the end of 2006.

In May 2009 a project, named National Campaign for Early Diagnostics of Cancer (NCEDC) (also named „STOP and GO for a Check-Up“ program) has been accepted and signed by the Minister of Health and the Minister of Labour and Social Policy, under the operative program Development of Human Resources of the EC (BG051001-5.3.0) (www.mh.government.bg). This program is a nationwide effort with the objective of improving the infrastructure, increasing the capacity and preparing the society for the establishment of population-based screening programmes for cervical, breast and colorectal cancers. The National Campaign will serve as a pilot program and will provide all the medical experts and decision makers with enough data to prepare and implement a real national wide population based cervical cancer screening program. Within this project “Guide to good medical practice for cervical cancer screening” was developed and published. It determines the main parameters and documents for the implementation of population-based CCS in Bulgaria according to the European guidelines. According to this guide the eligible age for CCS in Bulgaria will be 30-59 years and the screening interval - 3 years after 3 normal consecutive annual Pap tests. The guide determines also: who will conduct the screening examinations; who and how will oversee the quality of screening examinations, as well as the processing and assessment of screening tests; who will collect and process the data from mass screening results and post-screening activities – confirming diagnosis, treatment, follow-up; who and how will create a call-and-recall system for the population about the need of screen examination; what will be the rules for conducting mass screening for cervical cancer in Bulgaria; who will organize, manage and oversee the mass screening process; who will finance the mass screening program et cet. The National Campaign for Early Diagnostics of Cancer foresees a Screening Registry and Notification System for cancer screening to be established on the basis of the organized cancer network in the country. Screening units to ensure coverage throughout the country and range of target groups will be also established. According to this project, one million women in Bulgaria should be reached by an information campaign for cancer prevention and about 50 000 women should be tested for cervical cancer.

Many information campaigns on CCS were performed in Bulgaria within the PHARE projects, but multilanguage educational materials were not provided. During the European Cervical Cancer Prevention Week women were encouraged to take advantage of cervical cancer prevention services where they are in place and politicians and public health officials -to implement these services where they do not already exist. Bulgaria received the Pearl of Wisdom Award for the „STOP and GO for a Check-Up“ program.

National campaign against cervical cancer named “For you and those you love” is directed to the motivation of women for prophylaxis of cervical cancer, including HPV vaccination.
At least 12 information campaigns for early diagnosis of cancer, including in isolated areas and areas predominantly inhabited by socially excluded groups and communities will be performed during „STOP and GO for a Check-Up“ program.

In Bulgaria, however, an active recruitment system for the CCS of AURORA target group is not available. No data are available on specific adherence of this group in CCS. Currently, there are no specific implementation solutions for CCS in the country - therefore an organized population-based CCS should be set up by Bulgarian authorities without delay as recommended in European guidelines.

6.2. Cyprus

The HTRP that RUBSI have selected for AURORA project are the migrant women in Cyprus. This population has resistance to public participation generally. Therefore epidemiological data are not available for them. They were selected as an example of population that receives no printed matter in their native language and therefore the low profile of these people is not addressed in respect of any of the health issues. RUBSI’s researchers believe that this population would make use of CCS information if this information would be made available to them or be used in their lives.

Information from the Migration Civil Registration regarding income, place of residence, age, language spoken, ethnic background of documented migrants and their unwillingness to access services could be provided only after authorization from the Department’s General Director. The information about undocumented migrants is not available.

According to our information no action is taken in Cyprus to ensure equal access to CCS of the migrant women. The only contributions to this issue are information campaigns ran by the Cyprus Association of Cancer Patients and Friends on CCS specially dedicated to HTRP, including migrants in the country. At the same time an active recruitment system for the CCS of this group is not available in the country and multilanguage educational materials are not provided. The intervention of specialized personnel (i.e. cultural mediator) in CCS in this group is not foreseen. There are no specific implementation solutions for CCS in this population. No data are available on specific adherence of the migrant women in CCS in Cyprus.

6.3. Czech Republic

The target group of the AURORA project are women living in Ustecky region, especially in district Teplice and Usti nad Labem. According to the National Reference Centre and the Institute of Biostatistics and Analyses at the Faculty of Medicine and the Faculty of Science of the Masaryk University, Brno (IBA MU) the overall coverage (female 29-59 year old) in cervical cancer (CC) screening cytology in the Czech Republic was
50.1% in 2009. The lowest coverage (around 46%) was in the age group of 50 – 59 years. The total screening coverage in the district of Most was 44.8%; in the district of Teplice it was even 38.1% which is the second lowest in the whole Czech Republic (after the district of Jesenik in the region of Moravia-Silesia) (Figure 6.3.1.). These data correlate with the incidence of cervical cancer (C53): age group 45 – 54 years, Usti nad Labem region 2008 – CC incidence 39.3/100 thousands women, mortality 13.1/100 thousands women! Information and education in CC prevention is important for the whole women population in Ustecký region and therefore we will focus on the whole population.

In Czech Republic action is taken by law (Regulation - decree on the content and time range of preventive examinations 3/2010 Coll. of law) to ensure equal access to CCS of all women, including women living in Ustecky region. However, an active recruitment system for the CCS of this population is not available. There are no information campaigns on CCS specially dedicated to these women. There are no specific implementation solutions for CCS in this group. The intervention of specialized personnel is not foreseen in CCS programme for this group because it is common Czech population. Multilanguage educational materials are not provided for CCS as they are Czech-speaking. There are data of National Reference Centre (Preventive examination 2001-2009) on specific adherence of these women in CCS.

Figure 6.3.1. Coverage in CC screening cytology in the Czech Republic in 2009
Migrant women

Epidemiological data on migrants are available for country level only. Some characteristics are shown in Tables 6.4.1., 6.4.2., 6.4.3. and 6.4.4.

Table 6.4.1. Number of migrants /Percentage of your country population represented by migrants

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>N. 11,213,785</td>
<td>623,704</td>
<td>112,364</td>
<td>304,167</td>
<td>598,376</td>
<td>215</td>
<td>25,113</td>
</tr>
<tr>
<td>%</td>
<td>100%</td>
<td>5,61%</td>
<td>1,01%</td>
<td>2,74%</td>
<td>5,39%</td>
<td>0,002%</td>
</tr>
</tbody>
</table>

Table 6.4.2. Migrant workers (nationality and number) - top 10 prevalent nationalities

<table>
<thead>
<tr>
<th>No</th>
<th>Nationality</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Albania</td>
<td>352,780</td>
<td>56,44%</td>
</tr>
<tr>
<td>2</td>
<td>Bulgaria</td>
<td>26,593</td>
<td>4,25%</td>
</tr>
<tr>
<td>3</td>
<td>Romania</td>
<td>22,982</td>
<td>3,68%</td>
</tr>
<tr>
<td>4</td>
<td>Poland</td>
<td>19,181</td>
<td>3,07%</td>
</tr>
<tr>
<td>5</td>
<td>Georgia</td>
<td>18,728</td>
<td>3,00%</td>
</tr>
<tr>
<td>6</td>
<td>Russian Federation</td>
<td>17,239</td>
<td>2,76%</td>
</tr>
<tr>
<td>7</td>
<td>Ukraine</td>
<td>13,521</td>
<td>2,30%</td>
</tr>
<tr>
<td>8</td>
<td>Pakistan</td>
<td>9,154</td>
<td>1,46%</td>
</tr>
<tr>
<td>9</td>
<td>Cyprus</td>
<td>9,137</td>
<td>1,46%</td>
</tr>
<tr>
<td>10</td>
<td>Armenia</td>
<td>6,669</td>
<td>1,07%</td>
</tr>
</tbody>
</table>

Table 6.4.3. Age Distribution of working migrants

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 – 29</td>
<td>27,644</td>
<td>4,42%</td>
</tr>
<tr>
<td>20 – 24</td>
<td>48,976</td>
<td>7,84%</td>
</tr>
<tr>
<td>25 – 29</td>
<td>92,579</td>
<td>14,81%</td>
</tr>
<tr>
<td>30 – 64</td>
<td>380,246</td>
<td>60,84%</td>
</tr>
<tr>
<td>65+</td>
<td>4,828</td>
<td>0,77%</td>
</tr>
</tbody>
</table>
Legal migrants in Greece are entitled to free access of the National Health System. Illegal migrants can access the emergency services of the National Health system. However, migrant access to health care services is characterized as difficult, the reasons being mainly bureaucracy and delays which characterize immigration procedures. Furthermore, since many migrants are not covered by national insurance – due to illegal employment – they miss out on primary and secondary health provisions of social insurance health services and especially specialized services such as preventive medicine including cancer screening (Labrianidis and Lyberaki 2001; Hatziprokopiou 2006). High out-of-pocket payments for hospital care are often also reported as obstacles to accessing health care as is financial destitution (European Commission 2008).

Health care delivery to migrant and minority groups is further compromised by the absence of NHS cultural mediators, interpreters, health and social care professionals trained on multicultural issues. Communication problems between migrants and the health care and administrative personnel are frequently observed (IAPAD 2002) with the bureaucratic nature of the Greek system augmenting the problem even more. Communication barriers seem to be important, not only concerning access to health as such, but mostly in respect to information, negotiation and communication with health care administrators and providers (IAPAD 2002). Currently measures are being implemented to train migrant cultural mediators a measure which is expected to facilitate migrant access to health care services.

The health status of migrant women in Greece is largely unknown. There are no data to show the burden of cervical cancer or the coverage rate for cervical cancer screening among female migrants. Inner city Public hospitals (such as the Alexandra Hospital) perform a large number of Pap tests including migrant women. Published data on these activities are not available.

**Roma women**

Official sources on the Roma population of Greece vary. According to the comprehensive Action Plan 2001 for the Social Integration of the Greek Gypsies the Roma population is 250 000 – 300 000 people. Other sources estimate the population to be approximately 3% of the total Greek population, around 300 000 to 350 000 (Greek Helsinki Monitor 2003). Many barriers primarily related to cultural, linguistic and religious beliefs cause
this population to continue to live to a great extent on the margins of society. Many measures have been implemented over the years to improve social inclusion of the Roma population in Greece but a lot remains still to be achieved especially in the area of health and preventive medicine. Many problems have been reported in terms of accessing health and social care of Greek Roma. A report produced by the European Gypsies-Roma Rights Centre and the Greek Helsinki Monitor indicates that many Roma lack basic identity documents (police identity, health book, birth certificates, tax reports, etc), which makes it impossible for them to claim basic health and social benefits. Many Roma children are not vaccinated as they do not attend school and their families are unaware of vaccination procedures (European Gypsies-Roma Rights Centre and the Greek Helsinki Monitor 2003; Altanis et al., 2008). According to a report by the Doctors of the World (1999), many Roma lack basic health knowledge including first aid and vaccination information. Only 15% receive health and social benefits. Out of 40% of Roma who have social security, only 30% are fully covered. The traditional way of Roma life (continuous moving in search of seasonal work or trade type of work - collection, and selling of disposed objects etc.) makes periodical follow-up care almost impossible.

For both groups, migrant and Roma women selected as HTRP, no action is taken in Greece to ensure equal access to CCS. An active recruitment system for the CCS of these groups is not available. There is no information campaigns on CCS specially dedicated to migrant and Roma women and multilanguage educational materials for CCS are not provided. Plans exist for the production of such materials. Specialized personel (cultural mediators, women leaders) exists but is not assigned to interventions in CCS of these population groups. There are no specific implementation solutions for CCS in these populations in Greece. Data on specific adherence of migrants and Roma women in CCS are not available.

6.5. Hungary

The selected target group under the AURORA project is the rural women. Implementation of CCS programme in Hungary shows that in the rural areas the role of the local medical professionals in the process of informing women about CCS programmes is more important as women in these areas live far from the screening centers or hospitals, localized in big cities. Therefore, it is important to get closer to the rural women by the outplacement of the screening centers and gynecologic professionals or other trained specialists. That is why we selected rural women as hard-to-reach. During the selection procedure we first intended to select the Hungarian Gipsies (officially called 'Roma’) as HTRP because of their ethnic background, unwillingness to take part in screening programmes, lower awareness of healthy lifestyle, living in isolation from the people nearby. However, due to the fact that many members of Roma population deny to belong to this
ethnic group (according to the law nobody should be forced to proclaim his or her ethnic identity) and therefore no relevant data could be provided about them, we excluded this population from the study and our report refers only to rural women.

There are actions taken in Hungary to ensure equal access to CCS of the rural women. An active recruitment system for the CCS of this population is available and information campaigns on CCS specially dedicated to rural women are performed. The intervention of specialized personnel (district nurses) is foreseen in CCS programme in this population. Data on specific adherence of the rural women in CCS are available.

There are specific implementation solutions for CCS in this population in Hungary: 1/ Involving district nurses into the CCS in rural areas. During a successful pilot action 110 district nurses were trained and later participated in CCS programme in 168 townships. The nurses visited those women in the rural areas, who have not attended the CCS programme at least 3 years according to the Hungarian National Insurance Fund report and for different reasons have not been able to visit their gynecologists regularly. Each of 30717 women received a personal invitation to participate in CCS programme, of them 13823 were personally invited by the nurses. As a result more women (4764 women or 15% of all invited) compared to previous years (5%) complied with and attended the CCS. These results indicate that the district nurses are able to convince the rural women to take part in CCS probably due to the individual approach when informing women about importance of cervical cancer prevention; 2/ Arrangements are taken by the government through the law to increase the GPs activity in CCS. As GPs meet the patients regularly their role in health promotion is important; 3/ To increase effectiveness of the regional screening coordinators in CCS, the Hungarian Gambling Inc. purchased 20 cars for coordinators to make them more mobile; 4/ The Hungarian National Postal Service provided a mobile unit for CCS that visited little towns and rural areas. This mobile screening unit travelled around the country in 2008; 5/ Increasing women’s awareness of cervical cancer and CCS programmes by different ways of informing them - through the internet by updated screening websites and by participation of regional screening coordinators in different health and healthcare events. Coordinators of one of the regions even organized lectures about the importance of CCS 1 month before its start. Other ways to inform are articles in the regional newspapers, radio programs, lectures and talks.

6.6. Italy

**Migrant women**

Italy suffers for strong immigration flows, particularly because of the geographic position as primary boundary from Africa. The factors that allow to consider migrant women as HTRP are the following: the population is continuously in motion; difficult access to health facilities; they are far from the concept of prevention; low
compatibility between cultural, religious values or behavior and screening procedures; too many problems in daily life to give priority to screening.

Women born in different countries but residing in Italy are 2 171 652 (ISTAT Jan 1st 2010). Not all of them can be considered as migrant women. The first six most representative countries for women population are: Romania (478 299), Albania (213 636), Morocco (186 331), Ukraine (138 318), China (90 848), Philippines (71 643).

Women in regions with low compliance to invitation

Historically screening programs in Italy showed huge differences among regions.

In 2008, active programmes included in their target population the entire female population aged 25 to 64 years in 13 Regions and over 90% in four other; two regions included a percentage between 30-60%, one region less than 30% and in one region organised cervical cancer screening is not activated. The 20% of the Italian population not included in organised programmes is partly the result of a still incomplete implementation in a few Regions but mostly of a very poor or completely absent implementation in 2 Regions.

Moreover there is a clear North-South gradient in completeness of invitation: the programmes active in Northern and Central Italy were able to increase invitation rates in the last years, and now frequently reach complete or almost complete invitational coverage. In Southern Italy, on the other hand, where programmes started more recently, the invitation rate is sometimes much lower than needed.

A clear decreasing trend in compliance with invitation from Northern (47.7%) to Central (40.2%) and to Southern (27.7%) Italy was present, as previously observed. Compliance was over 30% in 15 Regions, and over 50% in 4 regions. 5 regions show a compliance rate lower than 30%, all of them are in the South Area of Italy (Figure 6.6.1.):

- Puglia 17.2% (women 25-64yy resident in 2011: 1.146.671)
- Molise 19.3% (women 25-64yy resident in 2011: 87.772)
- Sicilia 19.7% (women 25-64yy resident in 2011: 1.397.219)
- Calabria 23.9% (women 25-64yy resident in 2011: 558.891)
- Campania 27.2% (women 25-64yy resident in 2011: 1.627.743)
In Italy action is taken to ensure equal access to CCS of the HTRP. Considering the large amount of immigrants in the country and the data showing that immigrants access the National Health System only in case of trauma, delivery or advanced stage disease, the Italian Government of Health is trying to involve this group in prevention activities. Currently the implementation of these activities is isolated on a local basis. There are information campaigns on CCS, specially dedicated to HTRP and multilanguage educational materials are provided. However, an active recruitment system for the CCS of HTRP groups is not available. There are specific implementation solutions for CCS in these groups - at local level some projects of implementation of screening in places different from usual (for example, faith communities for migrants). The intervention of cultural mediator is foreseen in CCS programme in HTRP - Local Health Unit usually have a service of cultural mediator that can be involved either at request of the immigrants or directly by the organizers of the screening. Data on specific adherence of the migrant women in CCS in Italy are available only for single projects and not at national level.

6.7. Latvia

In the framework of the project „AURORA” hard to reach target group in Latvia will be the women in the general population aged 25 – 70 years, which are the target group for cervical cancer screening program in Latvia. The main reasons of this choice are: 1/ Only 14-17% attendance in the CCS programme; 2/ Still high rate of detected cervical cancer in late stages - III, IV or unknown stage; 3/ CCS programme still ineffective. The “hard reach” population for the state CCS program is general public women
ages 25-70 who do not pay attention to CCS program and personal invitation letter for CCS. They are with different socio-economic and educational background and lifestyle, from different places of living etc. This group is multinational - Latvian and Russian speaking. The CCS program in Latvia was introduced in 2009. From January 2009 till December 2010 were sent 433016 invitation letters, but the examined persons were only 59020 (13.6%). At the same time, there is still extremely high number of cases with delayed cervical cancer diagnosis – almost 50% of women are diagnosed at stages III, IV or without specification of the stage! As well as the CC mortality rate is impressive. In 2010 there were detected 252 new cervical cancer cases and 138 women dead of cervical cancer.

6.8. Poland

Low educated women living in big cities can be considered in Poland as the hard to reach population. Such selection is based on data from the National CCS programme. The available data from this programme indicate that women from this population attend the screening much less often than women in rural areas. Published data from the CCS programme point to the region of Łódź as the region with one of the lowest rate of attending CCS - in 2007-2009 the CCS attendance rate in Łódź was 18-22% and up to 40% in other regions of the country. The analyses of published data as well as interviews with medical professionals involved in development of the population based CCS programme in Poland, indicate that no special actions were taken so far to improve the participation in CCS of low educated women living in big cities. An active recruitment system for the CCS of this population is not available. There are no information campaigns on CCS specially dedicated to them. No data are available concerning specific implementation solutions for CCS in this group and on specific adherence of these women in CCS. It is not known if the intervention of specialized personnel is foreseen in CCS programme in this group.

6.9. Romania

In Romania, the national cervical cancer screening programme for early detection and prevention of cervical cancer was published in August 2009, but not yet implemented. For this reason, it would be better to select for the Aurora project the general population, with an emphasis on women living in rural communities. Other vulnerable groups such as commercial sex workers, injecting drug users, Roma communities will be included if they are available.Women living in rural areas have a difficult access to information and health services. Information-education campaigns were organized to raise
women’s awareness about the importance of breast and cervical cancer prevention and to inform them about Pap testing and breast self-examination. JSI Romania and the Romanian Cancer Society, in partnership with I. Chiricuţă Oncology Institute from Cluj- Napoca, initiated and implemented an intervention model in order to increase disadvantaged women’s access to information, education, and Pap smears. The program began in 2003 and targeted women from rural areas between the ages of 25 and 65 although it did not exclude disadvantaged women from urban areas. Another project, The Breast and Cervical Cancer Mobile Unit was started by the Renasterea Foundation in 2008 and it was focused on women in low-income communities in rural or peri-urban areas throughout the country where access to screening for breast and cervical cancer is difficult or impossible. However, in Romania an active recruitment system for CCS of the AURORA target group is not available. The intervention of specialized personnel is not foreseen in CCS programme. There are no specific implementation solutions for CCS in this group and data on specific adherence of these women in CCS are not available. Pilot information campaigns on CCS specially dedicated to this group are developed by NGOs, but multilanguage educational materials for CCS are not provided. Additional groups are relevant in the framework of CC in Romania: The sex work is illegal in Romania and this is an important barrier for HPV prevention targeting this population. There are no official estimations of the number of commercial sex workers and consequently the data regarding HPV infection in this particular group are limited. Roma people have a low social economic and educational level and they are divided in little ethinical groups with self laws. They have a difficult access to information and health services.

6.10. Slovak Republic

The biggest problem for CCS programme in Slovakia is the low participation of women in preventive check-ups - only 18-20% of the target group. There are worse results in participation of urban women in comparison with rural ones most likely due to barrier in accessing service (lost time for work, lost income), anxiety, distress caused by examination. According to the WHO/ICO Information centre on HPV and Cervical Cancer, 2010 the CCS screening coverage in Slovakia is 39.8% for urban women and 51.2% for rural women. Based on all these data we selected as the hard-to-reach group the urban women at age of 40-55 years. In Slovakia no actions are taken to ensure equal access to CCS of the urban women at age of 40-55 years. An active recruitment system for the CCS of these women is not available. There are no information campaigns on CCS specially dedicated to them. The intervention of specialized personnel (i.e.
cultural mediator) is not foreseen in CCS programme in this population. There are no specific implementation solutions for CCS in this group.

6.11. Slovenia

According to the official data women from two HTRP are already included in the national CCS programmes in Slovenia. They are classified as hard-to-reach based on the cultural factor - language spoken. These two groups are Hungarian and Italian minorities in border regions. They are included in population registers and special brochures in their languages are produced. Epidemiology of these populations is not separately monitored. Under the AURORA project we selected other groups as HTRP. These groups are: 1/ Older women and 2/ Women from health regions Koper, Maribor and Murska Sobota with large Roma community.

We identified the group of older women as hard-to-reach due to the data of national reports indicating that women from age group 50-64 are with the lowest rate of attendance in national CCS programme. Of all women in Slovenia that CCS was offered by personal invitation, women (with at least one Pap smear test) attended the screening more than 70% of invited women of age groups under 50 years, slightly more than 60% - of age group 50-54, 60% or less – of age group 55-59 and less than 50% – women of age group 60-64 years. Around 15% of women older than 65 years have participated in CCS.

Women from health regions Koper, Maribor and Murska Sobota are with the lowest response to invitations for CCS. Attendance in CCS in these regions is slightly more than 60% of all invited women while in the other regions of the country, the response is more than 70% (the target of 70% is reached).

In Slovenia action is taken to ensure equal access to CCS of older women and women from health regions Koper, Maribor and Murska Sobota - they are equally invited to CCS but have lower response comparing to other age groups or regions. There are no information campaigns on CCS specially dedicated to them. Multilanguage educational materials for CCS are not provided because they don’t have language barriers. The intervention of specialized personnel is not foreseen in CCS programme in these populations. There are no specific implementation solutions for CCS in these HTRP groups. Data on specific adherence of the selected HTRP groups in CCS are available.
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**Cyprus**

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**Hungary**


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Annex I – Questionnaire

INDICATIONS FOR THE STUDY OF LITERATURE

N.B.: Before starting to complete the questionnaire, please, read accuracy this recommendation.

This activity will aimed to study the fundamental texts in each participating country concerning Cervical Cancer Epidemiology in the participating contexts, Screening programmes in the EU and Presentation of the target group needs issues in order to identify the general framework of the topics taken into consideration.

In order to obtain homogeneous references and to understand what datum is referred to what reference, please, at the end of the document, once completed, add a reference list, with the sources you selected as most representative, to complete your history of the research (see page 6).

For the reference list please follow this order:
- for journal paper (as minimum): author(s), journal year of publication, pages;
- for book: Author (S.), title, publishing, publication place, year of publication;
- for report or document from Institutional site: Institution, title, publishing, journal (if applicable,) year of publication, and/or url (if applicable).

Once completed to fill in questionnaire for the analysis of the local context, with all the information collected by the study of literature etc, please add in a short report (1 or 2 pages, at the end of the questionnaire and before the reference list), all the peculiarities of your specific country, regarding (for e.g):
- National Health System organization /structure or
- Cervical Cancer Screening organization, or
- Cervical Cancer epidemiological data or
- on Hard to Reach population, that you find difficult to capture by the questionnaire.

Search strategy:
Study of the literature (scientific journals, grey literature, national reports, etc.) related to each participating Member State to identify the topics of Aurora (epidemiology and prevention of cervical cancer) and allow the understanding of the general framework of the project.
In addition to data obtained for general population, specific data for the “hard to reach” population in each participating Member State are requested. Publications from year 2000 are allowed.

Resources proposed:
- PubMed
- Google Scholar
- WHO Europe
- International Agency for Research on Cancer (IARC)
- European Center for Disease Prevention and Control (ECDC)
- European Cervical Cancer Association (ECCA)
- European Network for Indicators on Cancer (EUNICE),
- European Network of Cancer Registries (ENCR),
- International Federation of Gynecology and Obstetrics (FIGO)
The search plan possibly would develop as follows:
- Define the hard to reach populations in the specific context
- Define the term descriptive for “Cervical neoplasm uterine”
- Query the database about prevalence, incidence, mortality, primary prevention, secondary prevention in the specific Member State
- Query the database about the data described above in the hard to reach populations specific for each Member State

Quality of data collected:
In the collection of local data your experience about quality of data is conclusive. Therefore for each publication the question is:
According to my experience are these information relevant for my country?
- Yes
- No
  - Poor representative
  - Author credentials
  - Author prejudice

ABBREVIATIONS
CCS = Cervical cancer screening
HPV=Human Papillomavirus
HTRP = Hard to reach population

ASSUMPTIONS - For comparability between countries, please report data of the last year available.

HISTORY OF THE RESEARCH - Sources selected
- Xxx
- Xxx
- Xxx
Numbers of items recalled: N=
Numbers of items selected: N=
Numbers of items excluded: N=
Main reason for exclusion
- Xxx
- Xxx

DEMOGRAPHIC DATA - General female population
N=
Female population per year 18-70
- 18y N=
- 19y N=
- 20y N=
QUESTIONARY

SECTION 1: EPIDEMIOLOGICAL DATA

1. Epidemiological data are specific for cervical cancer?
   - Yes
   - No

1.1. If no, are data comprehensive for cervix and corpus of uterus?
   - Yes
   - No

2. If data are comprehensive for cervix and corpus of uterus, are any adjustment possible to extrapolate data specific for cervical cancer? Please specify

3. Epidemiological data are collected at:
   - National level
   - Regional level
   - Local level (please specify ____________)

4. How many women are newly diagnosed with cervical cancer?
   \[ N = \]

5. Please provide the relevant population group (denominator) for the new cases of cervical cancer?
   \[ N = \]

6. What’s the incidence of cervical cancer in your Member State?
   \[ % = \]

7. If available:
   7a. What’s the women mean age at diagnosis?
      \[ N = \pm \]
   7b. What is the stage distribution (FIGO classification) at diagnosis?

8. How many women die for cervical cancer?
   \[ N = \]

9. Please provide the relevant population group (denominator) for the deaths for cervical cancer.
   \[ N = \]
SECTION 2: NATIONAL HEALTH SYSTEM

1. Does your Member State have a National Health System?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

2. The National Health system in your Member State is funded by:
   □ Public
   □ Private
   □ Co-payment

3. The National Health system in your Member State is organized at:
   □ Central level
   □ Regional level
   □ Local level (please specify_________________)

4. The National Health system in your Member State has an organized electronic reporting system?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify_________________)

5. Please provide a brief description of the National Health System in your Member State
   _______________________________________________________________________
   _______________________________________________________________________

6. Does your Member State have a national cancer control programme?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify_________________)

7. Please provide further detail if necessary.
   _______________________________________________________________________
   _______________________________________________________________________


SECTION 3: CERVICAL CANCER SCREENING - DEFINITION OF PROGRAMME OF SCREENING.

In a programme of screening as a minimum are defined:
- the screening test,
- the examination intervals
- the group of persons eligible to be screened

1. Does your Member State have a cervical cancer screening (CCS) programme?
   - yes
   - no
   - unknown
   - not applicable (please specify________________)

1.1. If no,
   How many women performed CCS opportunistically, outside a cervical cancer screening programme?
   N=

1.2. If yes, please continue with this section
   Is the CCS programme part of the national cancer control programme in your Member State?
   - not included
   - included
   - unknown
   - not applicable (please specify________________)

2. Starting year of the CCS programme __________________

3. Is the CCS programme implemented at:
   - National level
   - Regional level
   - Local level (please specify________________)

4. Which is the age range of the CCS programme?
   Starting age ___________
   Ending age ___________

5. Which is the screening interval:
   - 1 year
   - 2 years
   - 3 years
   - 4 years
   - 5 years
   - Other ________

6. Where the CCS is performed?
   - Hospital
   - Ambulatory
   - Family planning clinic
   - Gp-room
12. In case of liquid based sample, how the sample is processed?
   - Cytological exam
   - HPV DNA test
   - Both

Please answer to the following question only if in your Member State there is NOT a population-based cervical cancer screening programme (screening programme with individual identification and personal invitation of the eligible population). If in your country is active a population-based cervical cancer screening programme, please skip the following question.

13. How many women of the respective population groups which are targeted for screening in your Member State attend the CCS programme? $N=$
SECTION 4: ORGANISED CERVICAL CANCER SCREENING PROGRAMME - DEFINITION OF ORGANISED PROGRAMME OF SCREENING.
In an organised programme of screening, in addition to the above, as a minimum are defined:
- the standard operating procedures,
- the quality assurance structure

1. Does your Member State have an ORGANISED CCS programme?
   □ yes
   □ no
   □ unknown
   □ not applicable please specify ________________

2. Are centralised data systems available to run the organised CCS programme?
   □ yes
   □ no
   □ unknown
   □ not applicable please specify ________________

3. Is a personal data security procedure, according to European data protection legislation, particularly as it applies to personal health data available?
   □ yes
   □ no
   □ unknown
   □ not applicable please specify ________________

4. Is a quality assurance system applied?
   □ yes
   □ no
   □ unknown
   □ not applicable please specify ________________

5. Is personnel adequately trained at all levels to ensure that they are able to deliver high quality screening?
   □ yes
   □ no
   □ unknown
   □ not applicable please specify ________________
SECTION 5: POPULATION BASED ORGANISED - CERVICAL CANCER SCREENING PROGRAMME. DEFINITION OF POPULATION BASED ORGANISED PROGRAMME OF SCREENING.
A screening programme with individual identification and personal invitation of the eligible population.

1. Does your Member State have a POPULATION-BASED organized CCS programme?
   □ yes
   □ no
   □ unknown
   □ not applicable please specify ____________

2. Which are the sources for the individual identification of eligible women?
   □ Demographic lists
   □ Residents list
   □ Other, please specify________

3. Which is the tool for personal invitation?
   □ Letter
   □ Telephone call
   □ E-mail
   □ Other ______

4. Is there a recall system in case of not presentation?
   □ Yes
   □ No
   □ If yes, please specify
     o Letter
     o Telephone call
     o E-mail
     o Other ______

5. How many women of the population groups which are targeted for CCS in your Member State were personally invited to attend the respective screening programmes?
   N=

6. How many women of the population groups to which the CCS was offered by personal invitation, complied with and attended the CSS?
   N=
SECTION 6: HARD TO REACH POPULATION

Definition of Hard to reach population (HTRP): those sections of the community that are difficult to involve in public participation. The term can be used to refer to minority group such as ethnic group, sometimes to hidden populations such as illegal immigrants, sometimes to unserved groups (no services available for these groups) or service “resistants” (people failing to access the services that are available). We can summarize different factors:
- Factors Examples;
- Demographic (The quantity and characteristics of the group);
- Income, place of residence, age;
- Cultural (The way of life of a group of people);
- Language spoken, ethnic background, social invisibility;
- Behavioural and attitudinal (The way the group’s attitude influences their behavior);
- Unwillingness to access services, lack of time;
- Structural (The way structures influence access);
- Complicated procedures.

There is not homogeneity in the term. Certain groups may be hard to reach in some contexts or locations and not in others. The term can bring some prejudices about the people “hard to reach”. Paradoxically top business women, can be “hard to reach” for CCS, because of lack of time. Therefore it’s better to consider that when hard to reach people are motivated to acquire information and that information is functional in their lives, they will make use of this.

1. Please describe the hard to reach populations you have selected for this project, the factors that allow to consider them “hard to reach” in your local context, and, if available, epidemiological data.

1.1. _______________________________________________________

1.2. _______________________________________________________

2. Is any action taken to ensure equal access to CCS of the HTRP?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

3. Is available an active recruitment system for the CCS of the HTRP?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

4. Are there information campaigns on CCS specially dedicated to HTRP?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

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5. Are there specific implementation solutions for CCS in HTRP?
   □ yes, specify _____________________________
   □ no
   □ unknown
   □ not applicable (please specify ________________)

6. Is the intervention of specialized personnel (i.e. cultural mediator) foreseen in CCS programme in HTRP?
   □ yes, specify_____________________________
   □ no
   □ unknown
   □ not applicable (please specify ________________)

7. Are multilanguage educational materials provided for CCS in HTRP?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

8. Are data on specific adherence of the HTRP in CCS available?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)
SECTION 7: VACCINATION

1. Is opportunistic vaccination for CC prevention carried out?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

2. Is an organized vaccination campaign for CC prevention carried out?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)
   If yes please continue

3. Starting year of the organized vaccination campaign
   ________________________________________________________________
   ________________________________________________________________

4. What’s the target population of the organized vaccination campaign?
   ________________________________________________________________
   ________________________________________________________________

5. Is a population based organized vaccination campaign?
   □ yes
   □ no
   □ unknown
   □ not applicable (please specify ________________)

6. What’s the adherence of the organized vaccination campaign?
   % =
### Cervical cancer screening programmes

<table>
<thead>
<tr>
<th>Country</th>
<th>Type/Country Status (starting year)</th>
<th>Part of National Cancer Control Programme</th>
<th>Eligible Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>no prog/ no prog</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cyprus</td>
<td>no prog/ no prog</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>org-non-pop-b/ natw (2008)</td>
<td>Yes</td>
<td>Starting age: +15 or at the beginning of sexual activity Ending age: non</td>
</tr>
<tr>
<td>Italy</td>
<td>pop-b/ reg (1996)</td>
<td>Yes</td>
<td>25-64</td>
</tr>
<tr>
<td>Latvia</td>
<td>pop-b/ natw (2009)</td>
<td>Yes</td>
<td>25-70</td>
</tr>
<tr>
<td>Poland</td>
<td>pop-b/ natw (2006)</td>
<td>Yes</td>
<td>25-59</td>
</tr>
<tr>
<td>Romania*</td>
<td>pop-b/ natw (2009)</td>
<td>Yes</td>
<td>25-64 (if the last 3 Pap-tests are negative)</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>org-non-pop-b/ natw (2008)</td>
<td>Yes</td>
<td>23-64</td>
</tr>
<tr>
<td>Slovenia</td>
<td>pop-b/ natw (2003)</td>
<td>Yes</td>
<td>20-64</td>
</tr>
<tr>
<td>Screening Interval (years)</td>
<td>Sample is Collected by Classic Pap-smear</td>
<td>Smear-taker</td>
<td>Physicians Receive Economic Incentive</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------</td>
<td>-------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td>Gynecologist</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>Gynecologist Midwife Rural doctors</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Gynecologist Nurses</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Yes + Liquid based for cytological exam</td>
<td>Gynecologist Midwife</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Gynecologist GP</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Gynecologist Midwife</td>
<td>Unknown</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Gynecologist Nurse</td>
<td>N/A (it was proposed but never achieved)</td>
</tr>
<tr>
<td>3 (after 2 normal consecutive annual Pap-tests)</td>
<td>Yes</td>
<td>Gynecologist</td>
<td>No</td>
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<td>Yes</td>
<td>Gynecologist</td>
<td>Unknown</td>
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<td>Country</td>
<td>Dedicated Counseling</td>
<td>Educational Materials</td>
<td>Centralised Data Systems</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes (written procedure)</td>
<td>Unknown</td>
<td>Yes</td>
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<td>Yes</td>
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</table>
## Cervical cancer screening programmes

<table>
<thead>
<tr>
<th>Quality Assurance System</th>
<th>Adequately Trained Personnel</th>
<th>Source for Individual Identification of Eligible Women</th>
<th>Tool for Personal Invitation</th>
<th>Recall System in Case of not Presentation (Tool)</th>
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<tbody>
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<td>N/A</td>
<td>Yes</td>
<td>Demographic list</td>
<td>Letter</td>
<td>Yes (letter, telephone)</td>
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<td>Yes</td>
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<td>Demographic list</td>
<td>Letter</td>
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<td>Residents list</td>
<td>Letter</td>
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<td>Residents list</td>
<td>Letter</td>
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<td>Yes</td>
<td>Yes</td>
<td>Register of the National Health Funds</td>
<td>Letter</td>
<td>No</td>
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<td>N/A</td>
<td>Yes</td>
<td>Lists of primary care practitioners</td>
<td>Letter</td>
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<td>Yes</td>
<td>Demographic lists</td>
<td>Letter</td>
<td>Yes (Letter)</td>
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<tr>
<td>Country</td>
<td>Eligible Female Population/yr X 1000 (year)</td>
<td>Personally Invited Women / yr X 1000 (year)</td>
<td>**Screened Women / yr X 1000 (year)</td>
<td>Tests / yr X 1000 (year)</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Unknown</td>
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<tr>
<td>Cyprus</td>
<td>N/A</td>
<td>N/A</td>
<td>No data for whole eligible female population 1 323/ Age 25-59 = 50.1% (2009)</td>
<td>Approx. 40% of women</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>4 617/Age 15+ (2009) 2 647/Age 25-59 (2009)</td>
<td>N/A</td>
<td></td>
<td>N/A</td>
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<tr>
<td>Greece</td>
<td>N/A</td>
<td>100%</td>
<td>Over 70%</td>
<td>Unknown</td>
</tr>
<tr>
<td>Italy</td>
<td>5 633 (derived data)</td>
<td>3 300,29 of 5 564,35 -59.8% (2008)</td>
<td>1332,38 of 3 356,93 -39.7% (2008)</td>
<td>N/A</td>
</tr>
<tr>
<td>Latvia</td>
<td>720 (2009-2011)</td>
<td>473,03</td>
<td>76,67 – 16,2% (2009-2011)</td>
<td>N/A</td>
</tr>
<tr>
<td>Poland</td>
<td>9 850,66/Age 25-59 (2009)</td>
<td>3 274,04 (2009)</td>
<td>876,36 – 26,77% (2009)</td>
<td>N/A</td>
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<tr>
<td>Romania</td>
<td>***N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Slovak Republic</td>
<td>1 666,36 (2009)</td>
<td>N/A</td>
<td>18-20% (2009)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Abbreviations: pop-b (population-based), org-non-pop-b (organised-non-population-based), no prog (no programme), natw (nationwide), reg (regional), EDPL (European data protection legislation), CCS (cervical cancer screening), PD(personal data)
Source: Analysis of the local contexts (AURORA Questionnaires)

* In Romania CCS legislation and programme are published but are not implemented yet
** Number of personally invited women that attend the CCS programme
*** CCS not yet functional. Eligible female population (25- 64 years) – 6. 052. 000 (from demographic data in 2009)
Table 2. HPV vaccination data (AURORA Partner Countries)

<table>
<thead>
<tr>
<th>Country</th>
<th>Opportunistic Vaccination</th>
<th>Organised vaccination campaign</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>NIP Integrated (Starting year)</td>
<td>Target Age Group (Years)</td>
<td>Adherence (Year)</td>
<td></td>
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<tr>
<td></td>
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<tr>
<td>Bulgaria</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Cyprus</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Czech Republic</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
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</tr>
<tr>
<td>Greece</td>
<td>N/A</td>
<td>Yes (2007)</td>
<td>12-15</td>
<td>N/A</td>
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<tr>
<td>Hungary</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Italy</td>
<td>Yes</td>
<td>Yes (2007)</td>
<td>11 (15-18, 24)*</td>
<td>59.1% - full vacc. course 64.9% - 2 doses 67.7% - 1 dose (2010)</td>
<td></td>
</tr>
<tr>
<td>Latvia</td>
<td>No</td>
<td>Yes (2010)</td>
<td>12</td>
<td>47.4%</td>
<td></td>
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<tr>
<td>Poland</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
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<tr>
<td>Romania</td>
<td>Yes</td>
<td>No**</td>
<td>12-24</td>
<td>Less than 15%</td>
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<td>Slovak Republic</td>
<td>Yes</td>
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<td>N/A</td>
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<tr>
<td>Slovenia</td>
<td>Yes</td>
<td>Yes (2009)</td>
<td>12</td>
<td>48.7% (school year 2009/2010)</td>
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</tr>
</tbody>
</table>

Abbreviations: NIP (National Immunization Programme)
Source: Analysis of the local contexts (AURORA Questionnaires)
* Depending on the region
** The immunization campaign in 2008 was financed from the Ministry of Health budget, National Programme for Cancer Prevention, but until now HPV vaccination (even is given for free) is not integrated in NIP
### Table 3. CCS in HTRP (AURORA Partner Countries)

<table>
<thead>
<tr>
<th>Country</th>
<th>Selected HTRP</th>
<th>Action to ensure equal access to CCS of HTRP</th>
<th>Active recruitment system for CCS of the HTRP</th>
<th>Information campaigns on CCS specially dedicated to HTRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>Women in the general population, including women from vulnerable groups such as Roma women</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Migrant women</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Women living in Usti-cky region, especially in district Teplice and Usti nad Labem</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Greece</td>
<td>Migrants Roma population</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Hungary</td>
<td>Rural population</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Italy</td>
<td>Migrant women Women in regions with low compliance to invitation</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Latvia</td>
<td>Women in the general population aged 25-70 years (target group for CCS Latvia), especially women that do not pay attention to CCS program and personal invitation letter for CCS</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Poland</td>
<td>Low educated women living in big cities</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Romania</td>
<td>Women in the general population with an emphasis on women living in rural areas</td>
<td>Yes - Pilot campaigns developed by NGOs</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Slovak Republic</td>
<td>Urban women at age of 40-55</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Slovenia</td>
<td>Older women Women from health region Koper, Maribor and Murska Sobota (Roma community)</td>
<td>Yes</td>
<td>N/A</td>
<td>No</td>
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</table>

**Abbreviations:** HTRP (hard to reach population), CCS (cervical cancer screening)

**Source:** Analysis of the local contexts (AURORA Questionnaires)
<table>
<thead>
<tr>
<th>Country</th>
<th>Selected HTRP</th>
<th>Action to ensure equal access to CCS of the HTRP</th>
<th>Intervention of specialized personnel</th>
<th>Multilanguage educational materials</th>
<th>Data on specific adherence of the HTRP in CCS</th>
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<tbody>
<tr>
<td>Bulgaria</td>
<td>Women in the general population, including women from vulnerable groups such as Roma women</td>
<td>Yes</td>
<td>No</td>
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