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# Cervical Cancer Screening Programme in Primorsko-Goranska County, Croatia – The Results of the Pilot Study

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## ABSTRACT

*The opportunistic cervical cancer screening has been conducted in Croatia since its introduction in the 1960s, in the context of a high quality gynaecological cytology with a long tradition and a wide network of primary care gynaecologists. In 2006, a pilot screening programme under the title »Early detection of cervical cancer was conducted in Primorsko-Goranska County (PGC)«, as the first organised cervical cancer screening ever conducted in the Republic of Croatia. The pilot screening programme targeted women aged 20–64 years. The pilot group consisted of 6,000 randomly sampled primary care patients of six gynaecologists. The women were invited via a personal letter and were given a questionnaire. The results of the first and the second year of screening, as well as of both years together were analysed. The response rate to the anamnestic questionnaire was 49.1%. The participation rates to the screening were 35.2% in 2007, and 46.5% in 2008, total of 42.7%. The increase in participation between years 2007 and 2008 was statistically significant ( $p=0.01$ ). According to the age, the lowest participation rate of 33.3% was observed in the youngest group of women (20–29) and the highest of 60.7% in the oldest group (60–64). The detection rate of cytological abnormalities was 4.6% with 2.6% of borderline (ASCUS) cytology and referral rate of 1.2%. The highest abnormal Pap test frequencies of 6.8% and 7.1% were observed in the youngest age groups (20–29 and 30–39), and the lowest (2%) in the age group of 60–64. Specimen adequacy was generally of high quality with unsatisfactory rate of 0.8%, with statistically significant improvement in 2008, compared to the previous year ( $p=0.001$ ). Although to a limited extension, during two-year pilot cervical cancer screening programme in PGC the participation rates and Pap smear adequacy have improved. We expect that the continuation of the programme will result in further increase of participation and higher overall quality of the programme.*

**Key words:** cervical cancer, screening, Croatia, Primorsko-Goranska County

## Introduction

Cervical cancer is the second most common cancer in women worldwide and an important public health issue<sup>1</sup>. Persistent infection with oncogenic types of human papillomavirus (HPV) is considered to be the necessary cause for the development of cervical cancer<sup>2,3</sup>. It mostly affects younger active women between the ages of 35 and 50<sup>4</sup>. Cervical cancer has very different and variable rates

of incidence and mortality in Europe, with a contrast between 15 old and 10 new EU members, with the lowest mortality of cervical cancer in Finland and the eight-fold higher rate in Lithuania<sup>5</sup>. The main reason is considered to be the lack of adequate screening in Eastern and South-East Europe, as well as increased transmission of HPV in generations born after 1940<sup>6</sup>. It is proven and well documented that the cervical cancer screening based

on cytology can reduce incidence and mortality of cervical cancer up to 80%<sup>4,7</sup> only if conducted as organised screening programmes with high population coverage and extensive quality control at all levels<sup>8,9</sup>. The implementation of population-based, organised, preferably nationwide screening programmes was strongly recommended by the World Health Organisation in 2006<sup>10</sup> and by the European Council in 2003<sup>11</sup> who edited comprehensive European guidelines for quality assurance in cervical cancer screening<sup>12</sup>. The test recommended is the cytological Pap smear. The cervical screening should preferably be conducted starting at the age 25–30, not earlier than 20, in three to five year intervals until the age of 65<sup>7,13,14</sup>. Notwithstanding, in many countries the opportunistic screening is the only method of cervical cancer prevention, which, undoubtedly, reduces cervical cancer rates to a point, although it is not as efficient as organised screening<sup>15,16,17</sup>, and certainly not as cost-effective<sup>18,19</sup>.

### *Cervical cancer and screening in Croatia*

In Croatia, with population of 4.4 million<sup>20</sup>, cervical cancer is the 8th most common female cancer with 350 new cases on average and about 100 deaths every year. The observed age-standardized incidence and mortality rates *per* 100,000 were 14.9 and 5.0, respectively<sup>21</sup>. It encompasses 4% of all female malignancies and 24% of female genital site malignancies. In Croatia, an opportunistic cervical screening has been conducted since its introduction in the 1960s. The cervical cancer rates decreased until 1991, after which stagnation was noted<sup>22</sup>. Croatia has a long tradition of high quality gynaecological cytology (since 1953)<sup>23</sup>, residence in clinical cytology, education of cytotechnologists, over 30 gynaecological cytology laboratories with about 450,000 Pap tests analysed *per* year<sup>24</sup>. Women health care is organised through a wide network of primary care gynaecologists who have a contract with the Croatian Institute for Health Insurance which covers the majority of our population. As a result, a gynaecological exam along with Pap smear is easily accessible to the majority of women in Croatia. In order to exercise her right to a free Pap smear, every woman is obliged to choose her primary care gynaecologist. The current recommendation is one year screening interval and every smear is paid by the national health insurance. In 2006, under the patronage of the Ministry of Health and Social Care of the Republic of Croatia, the Official National Working Group created a »Proposition of early detection of cervical cancer in Croatia«<sup>25</sup>. In 2007, the »Consensus recommendations for cervical cancer prevention in Croatia« were developed<sup>26</sup>. In the last few years, a state-wide cervical cancer media campaign has been launched to increase general awareness about the danger of human papillomavirus infections and the forthcoming vaccination against HPV. However, all these resources and activities have not resulted in a beginning of an organised national screening program in Croatia as a basic tool for cervical cancer fighting.

### *Cervical cancer and screening in Primorsko-Goranska County – the background of the programme*

In Primorsko-Goranska County (PGC), according to the population census in 2001, there were 158,290 women listed<sup>18</sup>. The incidence and mortality rates of cervical cancer in PGC in 2007 were 25 new cases (15.8 *per* 100,000) and 6 deaths (data obtained by direct official contact with Croatian Cancer Register). The peak incidence was between 40–49 years, and the peak mortality was in the age group of 70 and more<sup>27</sup>. There were 18 primary care gynaecology units in PGC with 108,457 registered women. Besides, there were 28,916 women not registered. In the period of 2001–2004, 44.46% of women registered in primary care gynaecology units actually used a medical service at their chosen primary care gynaecologist. For the other group of more than 50% of women, there are no records of an eventual gynaecological exam in either private practice or a hospital<sup>28</sup>. In 2005, in PGC, 55,000 Pap smears were analysed in two cytology laboratories, with approximately 35,000 of Pap tests taken for opportunistic screening<sup>23</sup>. In Primorsko-Goranska County, following the proposition of the programme created by the public health specialists from the Teaching Institute of Public Health of Primorsko-Goranska County, we have started a pilot of the screening programme under the title »Early detection of cervical cancer for women in PGC«. The pilot and the programme were supported and funded by the PGC government. The pilot programme in PGC is the first organised cervical cancer screening conducted in the Republic of Croatia since its independency in 1991. An organised, but limited action called »Action Medveščak« was conducted in Zagreb, in the sixties, when Croatia was part of the ex-Yugoslavia<sup>29</sup>. Our pilot programme started in 2006 and included a limited number of women. Due to limited resources, it is not a population-based programme. The screening is based on conventional Pap smear and the proposed screening interval is three years.

The aim of this study is to present the results of the pilot of cervical cancer screening programme in PGC with the purpose of identifying problems in the organisation and quality control which could be helpful for the future development of the programme, as well as for the nationwide cervical cancer screening programme planning.

### **Patients and Methods**

The pilot study of screening programme »Early detection of cervical cancer for women in PGC« included women aged 20–64. The overall number of 100,000 women in PGC is at the target age. The screening program was jointly conducted by primary care gynaecologists, the Department of Gynaecological Cytology of the University Department of Gynaecology and Obstetrics (University Hospital Centre Rijeka) and the Teaching Institute of Public Health of PGC. As preparatory activities in 2006, before the beginning of the programme, we got a permission to use the database of patients registered at the Croatian Institute for Health Insurance, prepared all

written materials for inviting women (invitation letters, questionnaires, envelopes), created a computer program for the input and analysis of all data and cytology results, and provided samplers for taking a Pap smears. In 2007, in the first phase of screening we included two (from Rijeka and Opatija), and in the second phase, in 2008, four (two from Opatija, one from Rab and Mali Lošinj) primary care gynaecologists and their patients. Our starting database was the Croatian Institute for Health Insurance register of patients for each primary care gynaecologist included into the programme. Out of the total number of 6–8 thousand women, we randomly selected 1,000 women from each gynaecologist, and sent them a personal anamnestic questionnaire and a written invitation to visit their gynaecologists for taking a Pap smear with a proposed date and hour of appointment, with the possibility of rescheduling. The Pap smear was taken from the women who responded and visited their chosen gynaecologists. According to the usual practice in Croatia, three smears were taken: vaginal, cervical and endocervical. Conventional Pap smear was taken on one slide using the wooden spatula for the vaginal, Ayre spatula for cervical and brush for endocervical smear. The slides were transported to the Department of Gynaecological Cytology to be processed and stained by standard Papanicolaou staining method, and examined by cytotechnologists under the supervision of specialists of clinical cytology. Rescreening was done on 10–30% of the negative slides. Cytological findings were classified according

to »Zagreb 2002« classification<sup>30</sup> which is modification of Bethesda 2001 system<sup>31</sup>. Specimen adequacy was assessed according to the 2001 Bethesda system<sup>31,32</sup>. Every other recommendation for the repeat Pap tests, triage HPV testing and referral to colposcopy and biopsy were done according to the accepted algorithms<sup>33,34</sup>. Each gynaecologist included in the programme was contacted and educated individually about taking an adequate Pap smear. Colposcopy and biopsy were not performed by primary care gynaecologists. The data were collected and analysed according to the year of screening, and for both years together. Statistical analyses were done using the  $\chi^2$ -test.

## Results

The response to the anamnestic questionnaire was higher than the actual participation in screening, since some women returned the questionnaire by mail and did not attend the gynaecologist. We received answers from 2,947 women out of 6,000 (49.1%). The answers to two questions about the attendance to gynaecologists in previous years were analysed. The results of questions: »Where did you attend your last gynaecological exam?« and »What was the year of your last gynaecological exam?« are shown in Table 1 and 2. Out of 2,947 women who contacted their chosen primary care gynaecologist and who responded to a questionnaire, the majority

**TABLE 1**  
CERVICAL CANCER SCREENING PROGRAMME OF PGC BY YEAR OF THE PROGRAMME – LOCATION OF THE LAST GYNECOLOGICAL EXAM OF THE WOMEN WHO RESPONDED THE QUESTIONAIRE

Year of the programme	2007		2008		2007+2008	
	N	%	N	%	N	%
Total number of received questionnaires	879	100.0	2.068	100.0	2.947	100.0
Location of gynaecological last exam						
Primary care gynaecologist	763	86.9	1.978	95.6	2.741	93.1
Hospital gynaecologist	30	3.5	57	2.8	87	2.9
Private gynaecologist	76	8.5	24	1.2	100	3.4
Not attending	10	1.1	9	0.4	19	0.6

**TABLE 2**  
CERVICAL CANCER SCREENING PROGRAMME OF PGC BY YEAR OF THE PROGRAMME – TIME OF THE LAST GYNEACOLOGICAL EXAM OF THE WOMEN WHO RESPONDED THE QUESTIONAIRE

Year of the programme	2007		2008		2007+2008	
	N	%	N	%	N	%
Total number of received questionnaires	879	100.0	2.068	100.0	2.947	100.0
Time of the last gynaecological exam						
This year	18	2.1	0	0	18	0.6
Last year	439	49.9	1.010	48.8	1.449	49.2
Before 2–3 years	195	22.2	441	21.3	636	21.5
Before 4–15 years	170	19.3	361	17.5	531	18.1
Before 16 years and more	6	0.7	19	0.9	25	0.8
No answer	51	5.8	237	11.5	288	9.8

(93%) already uses their services and did the exam in the last 2 years (71%).

The participation rates to screening of all invited women were 35.2% (N=704) in 2007, and 46.5% (N=1861) in 2008, total of 42.7% (N=2565) in two years. We observed an increase of participation in screening between years 2007 and 2008, and the difference was statistically significant (p=0.01). The participation according to the age groups is shown in Figure 1. The youngest group of women aged 20–29 showed the lowest participation rate (33.3%), while the highest (60.7%) was observed in the oldest group aged 60–64. In other age groups the participation was about 40%. Cytology findings classified according to Bethesda nomenclature are shown in Table 3. The detection rate of cytological abnormalities was 4.6% with 2.6% of ASCUS cytology. Referral to colposcopy was 1.2% for cytology of LSIL in women above age of 30, ASC-H, HSIL and cancer. In the first and second year of screening program the detection rate of cytological abnormalities was similar (p>0.05). The highest frequency of abnormal Pap tests was observed in younger age groups: 6.8% and 7.1% in the age groups of 20–29 and 30–39. In the age group of 40–49 and 50–59 we detected

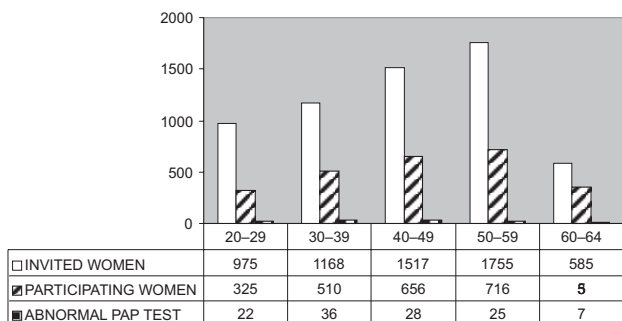


Fig. 1. Participation and Abnormal Pap test findings according to the age groups.

4.3% and 3.5% of abnormal Pap tests, respectively. In the oldest age group (above 60) the lowest rate (2%) of abnormal Pap tests was observed (Figure 1). ASCUS cytology was the highest in middle-age women, AGC cytology was not seen in young women, LSIL was the highest in younger age groups, ASC-H and HSIL cytology are together the highest in 30–39 age group, but are seen in all other groups. Two squamous cell cancers were detected, one in a 39-year-old and the other in a 65-year-old woman. Both women didn't have a Pap smear for over 15 years (Figure 2). In the analysis of specimen adequacy we had 0.8% of unsatisfactory smears (Table 4). Compared to the previous year, in 2008 we noticed a statistically significant im-

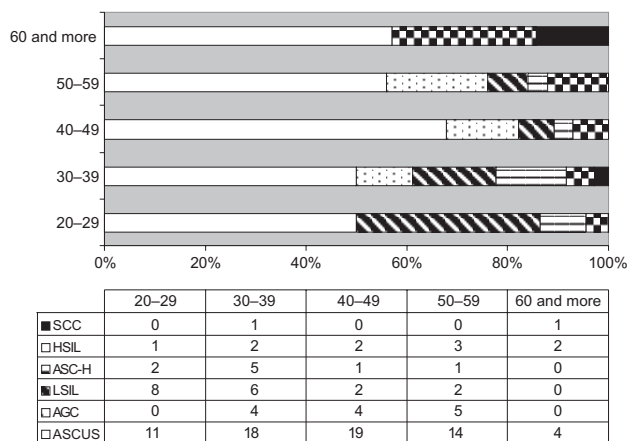


Fig. 2. Distribution of abnormal Pap tests according to age group. ASCUS – atypical squamous cell of undetermined significance, AGC – atypical glandular cells, LSIL – low grade squamous intraepithelial lesion, ASC-H – atypical squamous cells-cannot exclude high grade squamous intraepithelial lesion, HSIL – high grade squamous intraepithelial lesion, SCC – squamous cell carcinoma.

TABLE 3  
PAP TEST FINDINGS IN CERVICAL CANCER SCREENING PROGRAMME OF PGC BY YEAR OF THE PROGRAMME

Year	2007		2008		2007+2008	
	N	%	N	%	N	%
Total	704	100.0	1.861	100.0	2.565	100.0
Pap test finding						
Unsatisfactory	14	2	7	0.4	21	0.8
Negative	660	93.7	1.766	94.9	2.426	94.6
Abnormal	30*	4.3	88*	4.7	118	4.6
ASCUS	21	3.3	47	2.5	68	2.6
AGC	2	0.3	11	0.6	13	0.5
LSIL	3	0.5	15	0.8	18	0.7
ASC-H	1	1	8	0.4	9	0.3
HSIL	2	0.3	8	0.4	10	0.4
SCC	1	0.1	1	0.05	2	0.08

\*p>0.05, ASCUS – atypical squamous cell of undetermined significance, AGC – atypical glandular cells, LSIL – low grade squamous intraepithelial lesion, ASC-H – atypical squamous cells-cannot exclude high grade squamous intraepithelial lesion, HSIL – high grade squamous intraepithelial lesion, SCC – squamous cell carcinoma

**TABLE 4**  
SPECIMEN ADEQUACY OF PAP TESTS IN CERVICAL CANCER SCREENING PROGRAMME OF PGC BY YEAR OF THE PROGRAMME

Year	2007		2008		2007+2008	
	N	%	N	%	N	%
Total	704	100.0	1.861	100.0	2.565	100.0
Specimen adequacy						
Satisfactory for evaluation	498	70.8	1.473	79.1	1.971	76.8
Satisfactory for evaluation + comment about quality indicators	192	27.3	382	20.5	574	22.4
Unsatisfactory	14	1.9*	7	0.4*	21	0.8

\* p=0.001

provement, considering the rate of unsatisfactory specimens ( $p=0.001$ ), and also in better obtaining of endocervical glandular cell ( $p=0.01$ ). The reasons for unsatisfactory and comments on satisfactory specimens are shown in Table 5. Comparing the cytology results and specimen adequacy between six primary gynaecological

care units we observed similar distribution of abnormal findings. Considering specimen adequacy, unit 2 performed worse compared to the others. In obtaining endocervical cells and other adequacy problems the worst result were obtained in unit 4 (Table 6).

**TABLE 5**  
DISTRIBUTION OF SPECIMENS BY REASONS FOR UNSATISFACTORY OR SATISFACTORY WITH COMMENT OF COMPROMISED ADEQUACY BY YEAR OF THE PROGRAMME

Year	Specimens with comments of adequacy of satisfactory specimens				Unsatisfactory specimens			
	2007		2008		2007		2008	
	N	%	N	%	N	%	N	%
All smears examined	704	100.0	1.861	100.0	704	100.0	1.861	100.0
All unsatisfactory smears or smears with comments	192	27.3	382	20.5	14	1.9	7	0.4
Reasons								
Poor fixation	13	1.8	3	0.2	0	0	0	0
Low cellularity	12	1.8	22	1.3	1	0.1	2	0.1
No endocervical glandular cells	109	15.3*	142	7.6*	0	0	0	0
Covered with leucocytes	46	6.7	114	6.3	1	0.1	3	0.2
Covered with blood	3	0.4	7	0.4	0	0	1	0.05
Thick layers	4	0.6	74	3.9	0	0	0	0
Cytolysis	5	0.7	20	1.1	0	0	0	0
Slide not received	0	0	0	0	12	1.7	1	0.05

\*p=0.01

**TABLE 6**  
RESULTS OF PAP TESTS AND SPECIMEN ADEQUACY IN SIX PRIMARY CARE GYNAECOLOGICAL UNITS INCLUDED IN CERVICAL CANCER SCREENING PROGRAMME OF PGC

Number of Pap tests	Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
	237		467		460		447		483		471	
Pap test result	N	%	N	%	N	%	N	%	N	%	N	%
Negative	223	94.1	437	96.1	434	94.4	423	94.7	460	95.2	449	95.3
Abnormal	12	5.1	18	3.9	25	5.4	22	4.9	21	4.4	20	4.3
Pap test specimen adequacy												
Satisfactory	178	75.1	320	68.5	381	82.9	295	66	401	83	396	84
Satisfactory + comment	57	24.1	135	28.9	78	16.9	150	33.6	80	16.6	74	15.7
Unsatisfactory	2	0.8	12	2.6	1	0.2	2	0.4	2	0.4	2	0.4

## Discussion

The attendance rate of our cervical screening pilot programme was considerably low (42.7%), but we noticed an increase between the two years observed, with participation of 46.5% in 2008, giving us indication that it may improve in the next period. A similar result of 48.7% participation rate was observed in a screening project in Branicevo District in Serbia, country where the opportunistic cervical cancer screening is normally used<sup>35,36</sup>. Nevertheless, we cannot be satisfied if compared to countries with well developed, organised national screening programmes with long tradition. The highest participation and coverage rates in cervical screening was reported from national organised programmes ongoing in Finland, England and Iceland (over 80%), in Netherlands, Norway, Sweden and Denmark (70–80%)<sup>7,37,38</sup>. Although in Belgium, Austria, France, Italy, Spain and Germany organised programmes exist in some regions, the screening is mainly opportunistic and the participation rates are lower (50–60%)<sup>7,39,40</sup>. Our desirable result would be reaching at least 70% of participating women. The women who participated in our program, either via a questionnaire or a gynaecologist visit for a Pap smear, were mostly those that already visit their gynaecologist regularly, are conscious about their health and who, irrespectively of public health actions, take regular exams. However, 20% of our recruited responders were women who visited their gynaecologist irregularly or no attendants. Unfortunately, two detected cancers were among these women. The reasons of relatively modest participation rate may be the existence of extensive opportunistic screening which in our county, as well as in Croatia, has a long tradition. Furthermore, gynaecology care is sometime less easily accessible, so that women didn't bother to reply to our activities as they might have already taken an exam and a Pap smear elsewhere. The age distribution of participants in our programme showed the lowest participation of young women aged 20–29 (33.3%), and the highest among the oldest age group of 60–64 (60.7%), which is similar to the observation in screening programmes in Finland<sup>37</sup> and opposite to the results in Spain, Italy, Belgium and France<sup>7</sup>. In the UK, a fall in the coverage of young women (aged 25–29) has recently been recorded<sup>41</sup>. Therefore, we could in the future consider different approach to young women and consider perhaps motivating them more via media and internet. Furthermore, there is a possibility that these women already had their smear examined as a part of a gynaecologist's exam for family planning and pregnancy monitoring and didn't therefore respond. In the future, if we succeed to create a centralised register of all Pap test reports from opportunistic and organised screening, a better insight to this problem will be possible. We had abnormal Pap test rate of 4.6%, borderline (ASCUS) cytology rate of 2.6% and 1.2% referral rate. Our recommendation for LSIL in women below 30 years of age was a follow-up with repeat cytology in four months. In Finland, abnormal cytology was found in 6.4% of screening Pap test (referral rate 1%)<sup>37</sup>, in Norway 4.9%<sup>38</sup> and 2.4 in Italy. In

many countries borderline cytology accounts to 3–5% of all reported findings<sup>7</sup>. We observed that by the distribution of abnormal Pap test categories according to age, the ASCUS rate was higher in the middle age groups (30–49) and LSIL was more frequent in the younger age groups. Cytology suggesting high grade lesions were mostly found in 30–39 age group, but were encountered in all age groups, too. Specimen adequacy and percentage of inadequate smears vary considerably between less than 1% to over 6% in different screening programmes<sup>37,38,40</sup>. This may be due to different cytology approach to declare the unsatisfactory smear. In our study we applied criteria from Bethesda classification<sup>31</sup> and the rate of unsatisfactory smears was rather low. The category of adequacy of »satisfactory with comment« was analysed separately and those smears were considered to be of suboptimal quality. The data about specimen adequacy were of great importance because they presented a valuable feedback to each gynaecologist. The improvement of Pap test adequacy between two years of programme was probably the result of putting more effort into education and better communication between cytologists and gynaecologists in the second year of screening. The specimen adequacy could be improved by better smear taking technique, especially in better obtaining endocervical glandular cells. We insisted on using endocervical brush samplers combined with the Ayre spatula in obtaining a Pap smears. The combination of Ayre spatula and endocervical brush is one out of three methods recommended in the »European guidelines of quality assurance in cervical cancer screening«<sup>12</sup> based on the studies of sampling devices<sup>42,43</sup>. The reason for including vaginal smears together with cervical and endocervical smear lies in the standard, long-time gynaecological practice in Croatia that we found very hard to change. However, in the future we plan to omit vaginal smear from cervical cancer screening. The main disadvantage of our program is that we did not sufficiently succeed in reaching the group of women who never or highly irregularly attend to gynaecologists. The improvement would be made by establishing a relevant screening register based on population and target group data. The central information system of the register should include all Pap test results taken in opportunistic and organised screening in our county and histology results and should be operated by health care professionals including a call-recall system. Invitations should be directed firstly to women not attending gynaecologist for many years or not attending at all. Similar systems which connect voluntary and organised screening exist in Slovenia, Sweden, Denmark and France, countries which, like Croatia, have a history of highly established opportunistic screening<sup>44–47</sup>. Also, the problem was and will continue to be the participation of primary care gynaecologists, whose number is far insufficient to cover the needs of women health care in our county. They are overloaded with patients and not stimulated to carry out prevention programmes. The solution to this problem should be solved by increasing the number of primary care gynaecology units, by employing and training more gynaecologists and providing well equipped outpatient

clinics. Similar problem exists even in our cytology unit, although to a lesser degree. Every option to improve current state in primary gynaecological care and cytology laboratories by investing in education of more professionals, as well as in space and equipment needed, should therefore be considered. With an approximate of 35,000 screening Pap tests taken in our county every year we could cover the target population in three years screening interval. The proposed three year screening interval may not be well accepted by women and by gynaecologists, because over the years they got used to one-year smear taking practice. Improvement could be made if we implement organised approach and stronger rules in cervical cancer screening field, e.g. health insurance coverage of one smear in three years. In that case we could be more efficient with equal engagement of our gynaecological and cytological resources. Up to the present, we have contributed to many professional, scientific, public and media activities which promoted cervical cancer prevention, carried out together with the Croatian National Board of Cervical Cancer Prevention. In collaboration with ECCA we participated in »European cervical cancer prevention week« in 2007, 2008, and 2009<sup>48</sup>. However, besides informative and educative activities for women

via media, as well as the raising of public awareness of cervical cancer prevention and human papillomavirus infection, we must put more effort into the improvement and widening of our county screening programme by gradually including all primary gynaecology units and forming a centralised screening register with a call-recall system, hoping that in the future it will become a part of a state-wide organised cervical screening programme.

## Conclusion

In two years of conducting a pilot study of cervical cancer screening programme in PGC we have improved participation rate and obtained the results of evaluation of abnormal Pap tests, their distribution, and the quality of Pap test specimens. By continuing this programme we expect to further increase the participation and the overall quality of the programme, as well as to increase the number of primary care gynaecologists included. Other activities will include our engagement in education of women, training of gynaecologists and cytologists, the creation of a centralised screening register and the evaluation of the quality and efficiency of the programme.

## REFERENCES

1. PARKIN DM, BRAY F, FERLAY J, PISANI P, CA Cancer J Clin, 55 (2005) 74. — 2. WALBOOMERS JM, JACOBS MV, MANOS M, BOSCH FX, KUMMER JA, SHAH KV, SNIJDERS PJ, PETO J, MEIJER CJLM, MUNOZ N, J Pathol, 189 (1999) 12. — 3. MUÑOZ N, BOSCH FX, DE SANJOSE S, HERRERO R, CASTELSAGUE X, SHAH KV, SNIJDERS PJ, MEIJER CJ, N Engl J Med, 348 (2003) 518. — 4. GUSTAFSSON L, PONTÉN J, ZACK M, ADAMI H-O, Cancer Causes Control, 8 (1997) 755. — 5. ARBYN M, RAIFU AO, AUTIER P, FERLAY J, Ann Oncol, 18 (2007) 1708. — 6. ARBYN M, PRIMIC-ŽAKELJ M, RAIFU AO, GRCE M, PARASKEVAIDIS E, DIAKOMANOLIS E, KESIĆ V, NICULA FA, SUTEU O, VON KARSA L, Coll Antropol, 31 Suppl. 2 (2007) 11. — 7. INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, Cervix Cancer Screening, IARC Handbooks of Cancer Prevention Volume 10 (IARC Press, Lyon, 2005). — 8. ANTTILA A, RONCO G, CLIFFORD G, BRAY F, HAKAMA M, ARBYN M, WEIDERPASS E, Brit J Cancer, 91 (2004) 935. — 9. BRAY F, LOOS AH, MCCARRON P, WEIDERPASS E, ARBYN M, MÖLLER H, HAKAMA M, PARKIN DM, Cancer Epidemiol Biomarkers Prev, 14 (2005) 677. — 10. WHO Comprehensive Cervical Cancer Control: A guide to essential practice, (WHO, 2006). — 11. THE COUNCIL OF THE EUROPEAN UNION. Council Recommendation of 2 December on Cancer Screening, Off J Eur Union, 876 (2003) 34. — 12. EUROPEAN COMMISSION. In: ARBYN M, ANTTILA A, JORDAN J, RONCO G, SCHENCK U, SEGNA N, WEINER H (Eds) European Guidelines for Quality Assurance in Cervical Cancer Screening (Office for Official Publications of the European Communities, Luxembourg, 2007). — 13. ADVISORY COMMITTEE ON CANCER PREVENTION, LYNGE E, Eur J Cancer, 36 (2000) 1473. — 14. SASIENI P, ADAMS J, CUZICK J, Brit J Cancer, 89 (2003) 88. — 15. NIEMINEN P, KALLIO M, ANTTILA A, HAKAMA M, Int J Cancer, 83 (1999) 55. — 16. LYNGE E, Cohort studies in evaluation of cervical cancer screening. In: SANKILA R, DMARET E, HAKAMA M, LYNGE E, SCHOUTEN LJ, PARKIN DM (Eds) Evaluation and Monitoring of Screening Programmes (Europe Against Cancer Programme, Brussels, Luxembourg, 2000). — 17. RONCO G, PILUTTI S, PATRIARCA S, MONTANARI G, GHIRINGHELLO B, VOLANTE R, GIORDANO L, ZANETTI R, MANCINI E, SEGNA N, Brit J Cancer, 93 (2005) 376. — 18. VAN BALLEGOOIJEN M, VAN DEN AKKER VAN MARLE ME, PATNICK J, LYNGE E, ARBYN M, ANTTILA A, RONCO G, HABBEMA DF, Eur J Cancer, 36 (2000) 2177. — 19. VAN DEN AKKER VAN MARLE ME, VAN BALLEGOOIJEN M, VAN OORTMARSEN GJ, BOER R, HABBEMA JDF, J Natl Cancer Inst, 94 (2002) 193. — 20. REPUBLIC OF CROATIA – CENTRAL BUREAU OF STATISTICS: Census of population, households and dwellings 31st March 2001. (Central Bureau of Statistics, Zagreb, 2001). — 21. CROATIAN NATIONAL INSTITUTE OF PUBLIC HEALTH: Cancer incidence in Croatia. Bulletin No. 31 (Croatian National Institute of Public Health, Zagreb, 2008). — 22. ZNAOR A, STRNAD M, Coll Antropol, 31 Suppl. 2 (2007) 37. — 23. AUDY-JURKOVIĆ S, SINGER Z, ŠIPS Đ, STANKOVIĆ T, PAJTLE M, KRIVAK BOLANČA I, MOZETIĆ-VRDOLJAK D, Gynaecol Perinatol, 16 (2007) 169. — 24. PAJTLE M, AUDY-JURKOVIĆ S, KARDUM-SKELIN I, MAHOVLIĆ V, MOZETIĆ-VRDOLJAK D, OVANIN-RAKIĆ A, Coll Antropol, 31 Suppl. 2 (2007) 47. — 25. ZNAOR A, BABIĆ D, ČORUŠIĆ A, GRCE M, MAHOVLIĆ V, PAJTLE M, ŠERMAN A, Lijec Vjesn, 129 (2007) 158. — 26. GRCE M, GRUBIŠIĆ G, KARDUM-SKELIN I, MAHOVLIĆ V, PAJTLE M, BABIĆ D, ČORUŠIĆ A, ZNAOR A, Consensus recommendations for cervical cancer prevention in Croatia. Available from: URL: <http://www.irb.hr/hpvccp/>. — 27. GRGUREVIĆ-DUJMIĆ E, MALATESTINIĆ Đ, JANKOVIĆ S, Pilot projekt ranog otkrivanja raka vrata maternice u žena Primorsko-goranske županije. Available from: URL: <http://www.hcjz.hr/clanak.php?id=13136> (In Croat). — 28. GLIBOTIĆ KRESINA H, JANKOVIĆ S, DABO J, MALATESTINIĆ Đ, KRESINA S, BENČEVIĆ STRIEHL H, Prevencija raka vrata maternice kod žena Primorsko-goranske županije, In: Proceedings (Primary health care symposium, Mali Lošinj, 2009). — 29. AUDY S, BAČIĆ M, BAGOVIĆ P, BOLANČA M, URBANKE A, VODOPIJA I, Minerva Ginecologica, 23 (1971) 20. — 30. OVANIN-RAKIĆ A, PAJTLE M, STANKOVIĆ T, AUDY-JURKOVIĆ S, LJUBOJEVIĆ N, GRUBIŠIĆ G, KUVAČIĆ I, Gynaecol Perinatol, 12 (2003) 148. — 31. SOLOMON D, DAVEY D, KURMAN R, MORIARTY A, O'CONNOR D, PREY M, RAAB S, SHERMAN M, WILBUR D, WRIGHT T, YOUNG N, JAMA, 287 (2002) 2114. — 32. DAVEY DD, AUSTIN RM, BIRDSONG G, BUCK HW, COX JT, DARRAGH TM, ELGERT PA, HANSON V, HENRY MR, WALDMAN J, J Low Genit Tract Dis, 6 (2002) 195. — 33. WRIGHT TC, MASSAD LS, DUNTON CJ, SPITZER M, WILKINSON EJ, SOLOMON D, Am J Obstet Gynecol, 197 (2007) 346. — 34. LJUBOJEVIĆ N, BABIĆ S, AUDY-JURKOVIĆ S, OVANIN-RAKIĆ A, BABIĆ D, GRUBIŠIĆ G, RADAKOVIĆ B, LJUBOJEVIĆ-GRGEC D, Coll Antropol, 25 (2001) 467. — 35. PEROVIĆ S, J BUON, 14 (2009) 93. — 36. KESIĆ V, JOVIČEVIĆ-BEKIĆ A, VUJNOVIĆ M, Coll Antropol, 31 Suppl 2 (2007) 31. — 37. ANTTILA A, NIEMINEN P, Eur J Cancer, 36 (2000) 2209. — 38. NYGÅRD JF, SKARE GB, THORESEN SØ, J Med Screen, 9 (2002) 86. — 39. ARBYN M, SIMOENS C, VAN OYEN H, FOIDART JM, GOFFIN F, SIMON P, FABRI V, Prev Med, 48 (2009) 438. — 40. GIORGI ROSSI P, RICCIARDI A, COHET C, PALAZZO



F, FURNARI G, VALLE S, LARGERON N, FEDERICI A, BMC Public Health, 25 (2009) 71. — 41. HERBERT A, Coll Antropol, 31 Suppl. 2 (2007) 41. — 42. BUNTINX F, BROUWERS M, BMJ, 313 (1996) 1285. — 43. MARTIN-HIRSCH P, LILFORD R, JARVIS G, KITCHENER HC, Lancet, 354 (1999) 1763. 44. PRIMIC-ZAKELJ M, REPŠE-FOKTER A, Coll Antropol, 31 Suppl. 2 (2007) 223. — 45. DILLNER J, Eur J Cancer, 36 (2000) 2255. — 46. JENSEN H, SVANHOLM H, STØVRING H, BRO

F, J Epidemiol Community Health, 63 (2009) 510. — 47. SCHAFFER P, SANCHO-GARNIER H, FENDER M, DELLENBACH P, CARBILLET JP, MONNET E, GAUTHIER GP, GARNIER A, Eur J Cancer, 36 (2000) 2215. — 48. EUROPEAN CERVICAL CANCER ASSOCIATION, The Cervical Cancer Prevention Week. Available from: URL: <http://www.ecca.info/en/campaigns.html>.

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### PROGRAM PROBIRA ZA RAK VRATA MATERNICE U PRIMORSKO-GORANSKOJ ŽUPANIJI – REZULTATI PILOT PROJEKTA

#### SAŽETAK

U Hrvatskoj se provodi oportunistički probir raka vrata maternice još od njegova uvađanja 1960-ih, uz postojanje visoko kvalitetne ginekološke citologije s dugom tradicijom i široke mreže primarnih ginekoloških ambulanti. U Primorsko-goranskoj županiji (PGŽ) pilot program probira »Rano otkrivanje raka vrata maternice« započeo je 2006. godine kao prvi organizirani probir za rak vrata maternice u Republici Hrvatskoj. Ciljna populacija su žene od 20 do 64 godine. U sklopu pilot programa uključeno je 6000 žena iz šest ambulanti ginekologa primarne zdravstvene zaštite izabranih slučajnim odabirom te pozvano putem osobnog pisma uz upitnik. Analizirali smo i usporedili rezultate prve i druge godine provođenja probira kao i ukupne rezultate. Na anamnestički upitnik odgovorilo je 49,1% žena. U probiru je sudjelovalo 35,2% žena u 2007, i 46,5% žena u 2008, s ukupnim odazivom od 42,7%. Povećanje sudjelovanja između prve i druge godine probira statistički je značajno ( $p=0,01$ ). Prema dobi, najslabiji (33,3%) odaziv zabilježen je u najmlađoj dobnoj skupini (20–29), a najviši (60,75%) u najstarijoj (60–64). Stopa detekcije abnormalnih citoloških nalaza je 4,6%, s 2,6% nalaza granične citologije (ASCUS) i 1,2% citoloških nalaza s preporukom kolposkopije. Najviše abnormalnih citoloških nalaza bilo je u mlađim dobnim skupinama, 6,8% i 7,1% u dobnim skupinama 20–29 i 30–39, a najmanj (2%) u dobnoj skupini 60–64. Prema ocjeni primjerenosti, uzorci Papa testova visoke su kvalitete, sa samo 0,8% nezadovoljavajućih. Statistički značajno smanjenje nezadovoljavajućih uzoraka zabilježeno je 2008. u usporedbi s prethodnom godinom ( $p=0,001$ ), kao i smanjenje uzoraka bez endocervikalnih cilindričnih stanica ( $p=0,01$ ). Premda ograničenog opsega, u dvije godine provođenja programa probira za rak vrata maternice u PGŽ zamijećeno je povećanje stope sudjelovanja žena u programu kao i poboljšanje kvalitete citoloških uzoraka.