iPAAC
INNOVATIVE PARTNERSHIP
FOR ACTION AGAINST CANCER

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WP5 Cancer Screening webinar Summary Report

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Contents

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Abbreviations

CHAFEA	Consumers, Health, Agriculture and Food Executive Agency
EU	European Union
iPAAC	Innovative Partnership for Action Against Cancer
JA	Joint Action
PMT	Project Management Team

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1 Executive summary

The Innovative Partnership for Action Against Cancer (iPAAC) Joint Action can help in identifying some of the challenges related to cancer screening and its implementation. The WP 5 Cancer Screening webinar is a follow-up of the work within the framework of WP 5 (Task 5.2). The presentations and discussions are based on the co-creational WP 5 conference *New openings of cancer screening in Europe*, which was held in December 2019 and a Conference report, published on the official iPAAC website at the following link: https://www.ipaac.eu/news-detail/en/29-new-openings-of-cancer-screening-in-europe/

Screening is a public health measure that requires good governance. It is the key to good implementation(https://cancercontrol.eu/archived/guide-landing-page/guide-cancer-screening.html).

The current screening programmes are sub-optimally implemented when looking at the European level. There is a great variety among Member States. We anticipate that these same inadequacies will persist if potential new programmes are recommended without careful consideration of current situation: why sustainable implementation procedures are lacking in many parts of Europe.

Implementation requirements are: better effectiveness, evaluation and quality assurance to optimize the balance between benefits and harms. At the pan-European level better coverage, legal frameworks, governance structures and evaluation need development. Potential new programmes require careful consideration and more research, based on criteria set for European recommendations and guidelines.

Recommendations at EU level:

1. Looking solutions to disparities between Member States and regions, between various population groups within the Member States and have more focus on specific vulnerable groups.

2. Important priority area in this respect are HPV vaccination and improving governance of existing screening programmes.

3. In risk-adjusted modifications of screening programmes, these modifications should be well-controlled and gradual including testing effectiveness with indicators, such as the rate of advanced cancers, survival and quality of life after treatment.

2 Introduction

An online WP5 Cancer Screening webinar was held on 14 January 2021 under the umbrella of the iPAAC JA.

The purpose of the webinar was to discuss the results of the iPAAC WP5 conference, side event of Finland's Presidency of the Council of the European Union, which was held on 5 December 2019 in Helsinki. Read more information about the WP5 conference and New openings of cancer screening in Europe report.

The WP5 Cancer Screening webinar was well received and well attended by a wide range of stakeholders. More than 80 attendees participated in the WP5 Cancer Screening webinar.

3 Satu Lipponen: WP5 tasks and screening

Satu Lipponen (Cancer Society of Finland) started her presentation addressing the WP5 main tasks and objectives emphasising the aim to strengthen quality aspects of population-based screening policies by developing decision-making tools, including cost-effectiveness and analysis of harms and benefits and to investigate the possibilities and barriers of risk-based cancer screening programmes.

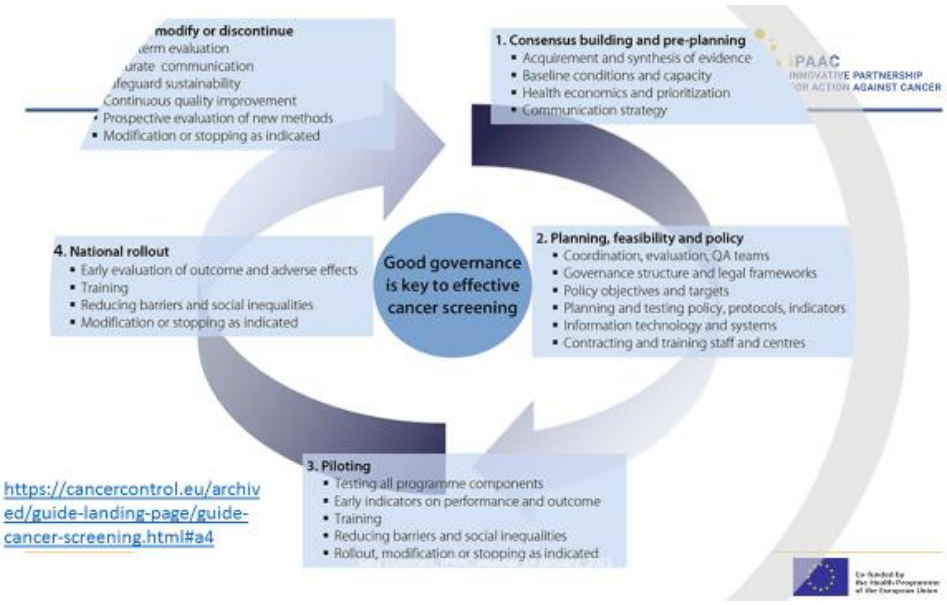
The WP 5 has 3 tasks addressing early diagnosis, cancer screening and health promotion and each task will end with a dedicated conference with **co-creation**. Co-creation aims at facilitating **discussion and dialogue**, increasing engagement across participants and fostering **problem solving and giving insights** to identify best policies. Specific events will be formulated into **comprehensive reports**, reflecting perspectives from all partners of the WP5:

- 2019 co-creational conference in Budapest: Early diagnosis of Cancer – 5 things you need to know
- 2019 co-creational conference in Helsinki; New openings of cancer screening in Europe
- I online meetings 28 & 29.4.2020 (ECAC)
- **II online meeting 22.2.2021 (cancer prevention, health promotion)**

Ms Lipponen continued with the presentation of WP5 Cancer Screening report.

The importance of evidence on an acceptable balance between benefit and harm was stressed. In addition, Ms Lipponen mentioned risk-stratified screening aiming to improve the screening programme by modifying screening policies within the population-based programme based on individual-level disease or mortality risk.

Presentation was concluded by pointing out the importance of Governance as being the key to effective cancer screening (CANCON).



4 Partha Basu: Cancer screening in Europe – shifting paradigms

Dr. Partha Basu (International Agency for Research on Cancer - IARC) started his presentation with highlighting three reasons for the evolvement of cancer screening programmes in Europe:

- Advent of new technologies in cancer screening is growing
- New approaches for which evidence is being generated
- Initiatives are being taken to improve access to quality assure screening

Dr. Basu continued with presenting the state of play for the implementation of recommended breast, cervical and colorectal cancer screening programmes in EU Member States (2016). He expressed the dynamism of science and therefore the consequence of recommendations changing. As for example, the EU Council recommendation from 2003 say that the mammography screening for breast cancer should be extended to women aged 50 to 69, however, the latest European breast cancer guidelines developed by ECIBC recommends much more categorical approach based on risk, age and breast density.

A study showed that combination of DBT and DM did not demonstrate higher accuracy over DBT alone. Therefore, for asymptomatic women with an average risk of breast cancer, the ECIBC's Guidelines Development Group (GDG) suggests using either digital breast tomosynthesis (DBT) or digital mammography (DM) in the context of an organised screening programme.

Dr. Basu continued with addressing the Artificial Intelligence in breast cancer screening. The large amount of research is being focused on AI reading the mammographs and a study in USA and UK showed an absolute reduction of 5.7% (USA) and 1.2% (UK) in false positives and 9.4% (USA) and 2.7% (UK) in false negatives. AI system outperformed all human readers, maintained non-inferior performance and reduced the workload of the second reader by 88%.

Dr. Basu also addressed the importance of risk stratified screening and presented figure of 10-year absolute risk of developing breast cancer by percentiles of the 313 Single Nucleotide Variant polygenic risk scores. He pointed out much bigger sensitivity of HPV test using CIN3+ to cytology in cervical cancer screening.

Regarding CRC Screening in Europe, Dr. Basu presented the prevalence of faecal test use within previous 2 years or colonoscopy use within previous 10 years among population aged 50–74 years and addressed the risk-stratification for CRC Screening.

Addressing quality assure screening Dr. Basu pointed out that despite of all the efforts there is still a gap. He exposed the coverage of Cancer Screening in the EU and heterogeneity in between the EU countries.

Lastly, he presented key issues that need to be considered while revising the current annex of the EU Council Recommendation on cancer screening.

Population-based programmes in the EU- Quality of data collected to evaluate performance

	Breast cancer screening	Cervical cancer screening	CRC screening
No. of MS with Pop-based programmes	25	22	23
No. (%) of MS having a screening registry linked to cancer registry	20 (80%)	17 (77%)	15 (65%)
No. (%) of MS having further assessment results >90% complete	15 (60%)	10 (45%)	13 (56%)

International Agency for Research on Cancer
World Health Organization

https://screening.iarc.fr/EUreport.php

5 Marco Zappa: Risk-stratified screening for cancer

Dr. Marco Zappa (ISPRO, Italy) presented risk-stratified approach in oncological screening. Dr. Zappa described the features of the present screening programmes as being aimed to find a sign/symptom potentially correlated with the presence of cancer/precursor. He exposed the same test and same protocol for all targeted population (age not being a discriminatory factor).

Dr. Zappa continued with presenting examples of risk stratified screening programmes such as low dose CT lung cancer screening and cervical screening based on HPV testing.

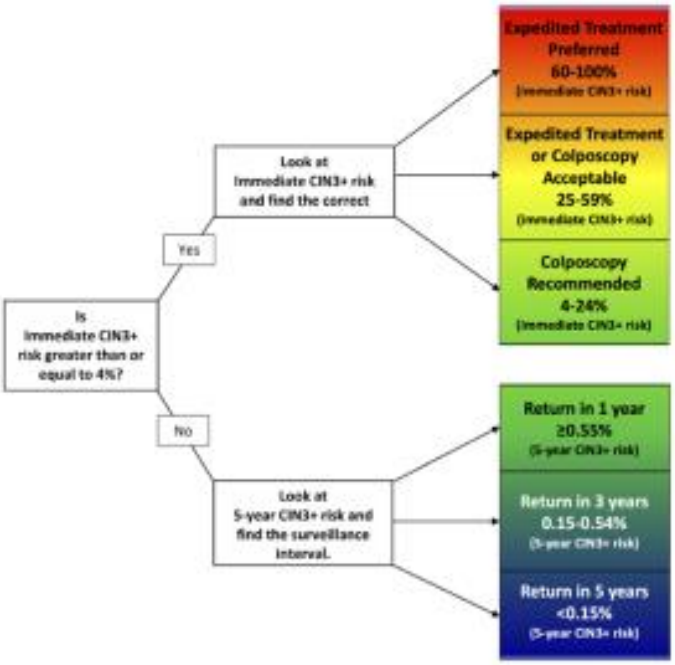


FIGURE 1. **This figure demonstrates how patient risk is evaluated.** For a given current results and history combination, the immediate CIN 3+ risk is examined. If this risk is 4% or greater, immediate management via colposcopy or treatment is indicated. If the immediate risk is less than 4%, the 5-year CIN 3+ risk is examined to determine whether patients should return in 1, 3, or 5 years.

Dr. Zappa explained that a shift from the generalized screening to risk-adjusted screening could be proposed, if there are factors influencing the accuracy of primary test (in particular sensitivity) and the risk of developing a cancer.

For example, at the moment, for breast cancer screening except for the very high risk conditions, age is currently the sole criterion to enter breast cancer screening programmes (starting between 40 and 50 to 69-74) ➔ one size fits almost all. Dr. Zappa discussed the ECIBC's Guidelines Development Group (GDG) suggestions for the women with very dense breast.

The aim of risk-stratified screening is to achieve a better balance between harms and benefit. In presence of a higher prevalence of disease, screening tends to be more efficient. The

Positive Predictive Value (PPV) depends largely on the prevalence of the disease: with higher prevalence we will have a lower proportion of false positive. On the other hand, risk stratified screening should be also aimed at reducing the intensity of screening in people with lower risk. The majority of people attending screening will never have the target cancer but some will suffer of the undesirable effects of screening.

The pros of risk-stratified screening were presented from the community and individual's point of view, emphasising the importance of cost evaluation and higher probability of delayed diagnosis of cancer.

Dr. Zappa addressed the question on who decides about the values of the pros and the cons of risk-stratified screening. In his presentation he discussed on what basis we should decide about its usage emphasising valid evidence of better risk/benefit ratio such as MyPebs Study scheme.

In his concluding words, Dr. Zappa stressed that risk adjusted screening can enhance the cost effectiveness of screening. It was also highlighted that the efficacy and the side effect of alternative protocols should be carefully evaluated by RCT. Moreover, the sustainability should be deeply evaluated and the communication and the psychological impact of such an approach should be monitored and evaluated.

DISCUSSION

In the discussion, **Dr. Jan-Willem van de Loo (DG RTD)** raised a question regarding the dashboard. More specifically, Dr. Jan-Willem van de Loo enquired whether IARC could provide its views on qualitative versus quantitative monitoring. Moreover, Jan-Willem van de Loo asked whether a dashboard can do both (qualitative and quantitative monitoring) and if there is a risk of naming and shaming. **Dr. Basu** commented that this is still very much in the conceptual stage. The whole idea of the dashboard is to measure the performance in terms of the indicators that have been identified and are going to be identified across the entire continuum of cancer care. The dashboard does not refer only to screening and prevention but also to early detection and cancer management. There is also a very strong focus on reducing the inequality. The dashboard will be evaluating the different activities using the common set of indicators or standards. The purpose of the monitoring is certainly not about shaming anybody or inducing any guilt, it is rather about the gradual improvement of the performance. Europe has been having cancer screening programmes for decades, but the optimal level has not been reached yet. This doesn't mean that lack of effort has been put on improving the situation, it essentially shows that screening programmes are very complex. To conclude, the dashboard can serve as a very useful tool, which can help us to understand where we are and where we want to be in the near future.

Further, **Dr. Mari Nygård (Cancer Registry of Norway)** posed a question about the ethical aspects of Breast Cancer screening based on polygenic risk scores. **Dr. Basu** agreed that ethical aspects of Breast Cancer screening should be properly addressed and examined in details. Firstly, it is important to understand risks. Traditionally, age was used as the only measurement of risk and based on age they stratified women for breast cancer screening. Following this, Dr. Basu stressed that it is very important to ensure that no unnecessary psychological pressure is put on women, if genetic markers are used in breast cancer screening. It is vital to thoroughly consider the protection against all these harms that may be caused by using genetic risks in breast cancer screening.

Dr. Jan-Willem van de Loo added that the BRCA 1 and BRCA 2 gene mutations are also a risk factor for prostate cancer and ovarian cancer.

Dr. Ahti Anttila (Finnish Cancer Registry/Cancer Society of Finland) posed a question regarding the new evidences available on new triaging methods after a positive hrHPV test, so that the HPV Supplements (2015) of the European guidelines could be possibly updated. **Dr. Basu** commented that at the moment WHO's guidelines, which focus on low and middle class countries, are being updated. In addition, IARC will produce a Handbook, which will be a repository of all the evidences being put together and may serve as a useful tool in defining the right approach to follow regarding the cancer screening. There is a pressing need that recommendations are put forward with regard to the cervical cancer screening in Europe.

Following this, **Dr. Wendy Yared (Association of European Cancer Leagues - ECL)** enquired about the ethical aspects of artificial intelligence for screening. Dr. Basu stressed that we are at the very early stage of using artificial intelligence for cancer screening. For example, when the machines are used to give the final answer in the second reading of mammography, the perspectives of patients are not known. It has to be explored whether patients depend more on the clinician to whom he or she can talk to or is it possible for the patients to get a satisfactory explanation from a machine, which simply provides the information about the disease. Technology can certainly replace many of the tasks of the clinicians, which in turn allows clinicians and health care providers to have more quality time for their patients. To conclude, artificial intelligence certainly has many positive aspects. However, the risk of artificial intelligence to interfere the relationship between the medical provider and a patient needs to be examined in greater details. Moreover, studies that examine the perceptions of patients who were given the information about the diagnosis from the artificial intelligence are ongoing.

Moreover, **Dr. van de Loo** draw the attention of the attendees to the H2020 MYPEBS project to test risk-based screening in Bca through a large randomised clinical trial (https://mypebs.eu), which is funded by the Commission (RTD).

Following this, **Dr. Anttila** enquired about the actions that would need to be taken at the European level to solve the issue of breast cancer screening validity in women with dense breasts. Dr. Zappa stressed that it is vital to wait for the results of clinical studies and initiatives, which are currently ongoing, such as aforementioned MyPeBS (My Personal Breast Screening), which is a major ambitious European initiative. Moreover, pilot studies using different approaches could provide useful information about the benefits of the new tools.

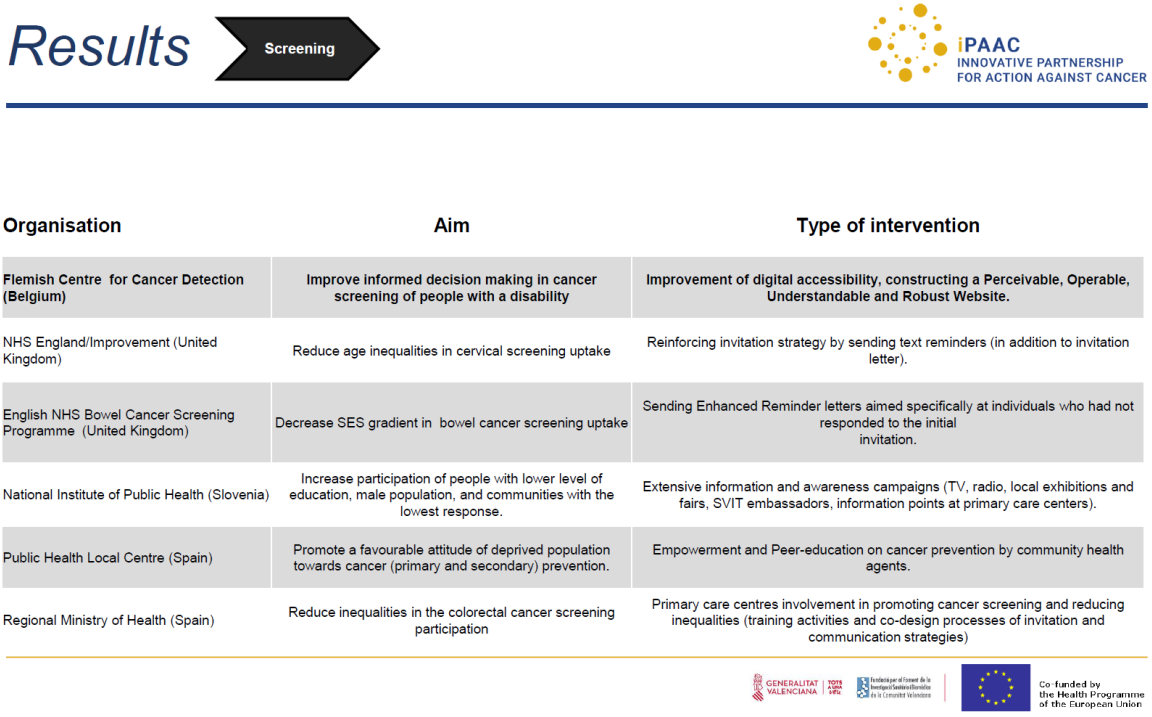
Further, **Dr. van de Loo** enquired about the ways to establish colorectal cancer risk below 3 %. Dr. Zappa said that there are several factors influencing the risk connected to colorectal cancer such as age, gender, BMI, smoking habits, family history of colorectal cancer. Taking all this information into account, the probability that a certain individual is at risk of developing colorectal cancer is defined. Dr. Basu added that individuals that are given the risk score of three or less have such low probability of developing colorectal cancer in the next 15 years, that they do not need to go for cancer screening.

Moreover, **Dr. Anttila** highlighted that cancer registries collect information about colorectal risks cancer incidences, however, currently much of the screening statistics is based on one year. Moreover, the information about the cumulative estimates of what happens to women or man in the screening programmes over the whole life spam is still largely missing. Finally, it is important to consider life-time benefits and harms in terms of the cancer screening programmes.

6 Ana Molina Barceló: Inequality and screening

Dr. Ana Molina Barceló (FISABIO) presented the results from Best practices competition tackling social inequalities in cancer screening that was launched in the context of iPAAC's Work Package 5. Dr. Molina Barceló made an introduction into social inequalities in health and related to cancer and continued with the aim of the Contest of Best Practices (BS) Tackling Social Inequalities in Cancer Prevention.

The methodology of the contest was presented emphasising the features of the Call for experts itself, contest of BP and the evaluation methods. The results of the contest and the report which was recently published was presented. More information can be found at the following link: https://www.ipaac.eu/en/contest-best-practices/.



Dr. Molina Barceló concluded her presentation stating that this contest has allowed the identification and dissemination of health and social interventions reducing inequalities in cancer prevention, which facilitates implementation and replication of good practices in different health systems and services.

7 Bob Steele: Potential New Cancer Screening Programmes

Prof. Bob Steele (University of Dundee and UK NSC) presented potential new cancer screening programmes from a point of view of the UK National Screening Committee, which makes the recommendations to the UK Government about population screening programmes. Dr. Steele expressed the popularity of screening programmes as a problem in many ways since most people have a negative test and a few people have screen-detected disease and are cured. Prof. Steele pointed out that the main job of the screening community in general is to balance the benefit and harm not only to people with disease but also to the healthy population.

Prof. Steele continued his presentation with listing three cancers that have actively been considered by the UK National Screening Committee and where the recommendations for population screening do not exist: prostate, ovary and lung cancer.

Prof- Steele exposed that 28 patients are needed to be treated to prevent 1 prostate cancer death and 1 cancer death is avoided for 1000 screened men over 10 years. There are also side effects of surgery such as incontinence (3/1000 screened) and impotence (25/1000 screened). After presenting the ProtecT Study[1] and CAP Trial[2], prof. Steele pointed out possible future steps such as more discriminatory biomarkers, risk stratification and multiparametric MRI.

In connection with ovarian cancer, the UKCTOCS RCT study was presented, where disease specific mortality reduction over 14 years for both MMS and TVU was not significant. This is a well-designed, long term project that is due to report further outcome data this year.

NELSON study showed that LDCT in engaged, high-risk people prevents lung cancer death. Therefore, those at risk should have the opportunity to request LDCT screening. However, this data does not tell us whether population screening for lung cancer is necessarily a good thing since only 2.6% of targeted population entered trial.

Prof. Steele pointed out the harm to the “Healthy” Population such as false positives leading to invasive investigation and early repeat LDCT (psychological morbidity), use of radiology resource and questionable effect on quit rates. Prof. Steele highlighted that we can recommend screening for those that wish to get involved, however, we cannot yet recommend population screening for lung cancer. The way forward for targeted Lung Cancer Screening is to make sure that the general population and the general practice has sufficient information so that current and past smokers should be considered for LDCT screening and smoking cessation. We also need a clear process for a targeted screening programme with managed and efficient recall (surveillance) and strict quality assurance.

For a population-based screening programme, we need a reliable method of identifying the whole at-risk population and evidence from randomisation at the point of invitation.

[1] Hamdy, F. C., Donovan, J. L., Lane, J., Mason, M., Metcalfe, C., Holding, P., . & Neal, D. E. (2016). 10-year outcomes after monitoring, surgery, or radiotherapy for localized prostate cancer. N Engl J Med, 375, 1415-1424.
[2] Martin, R. M., Donovan, J. L., Turner, E. L., Metcalfe, C., Young, G. J., Walsh, E. I., ... & CAP Trial Group. (2018). Effect of a low-intensity PSA-based screening intervention on prostate cancer mortality: the CAP randomized clinical trial. Jama, 319(9), 883-895.

8 Ahti Anttila: Conclusions from iPAAC screening reports

Dr. Ahti Anttila (Finnish Cancer Registry / Cancer Society of Finland) presented conclusions from iPAAC screening reports. The work of the task group has been largely built upon the EU Council recommendation on population-based cancer screening programmes (2003) and European quality assurance guidelines defining the concepts, elements and implementation criteria for cancer screening. Recommendations for policy-making and governance for cancer screening programmes and how to reduce health inequalities have been laid down in the previous Joint Action on cancer, CANCON (Lönnberg et al., 2017; Peiro et al. 2017). In addition there are needs to develop criteria for implementing risk-stratified screening, i.e., selective screening by individuals in a population-based approach; and assess the potential of new programmes from the policy-making perspectives.

At the present state out of the 28 Member States (2017) population-based screening in its implementation, roll-out, piloting or planning phase are on-going for Breast cancer in 25 Member States, cervical cancer in 22 Member States, and colorectal cancer in 20 Member States. There are still remarkable problems and barriers in many programmes such as sub-optimal attendance and coverage, and inequalities in attendance by and within MSs, lack of systematic monitoring and evaluation and lack of appropriate governance and legal frameworks to support evidence-based implementation and systematic quality assurance.

Dr. Anttila continued his presentation with the examples of modifications on risk-stratified screening, emphasising also how genetic susceptibility to breast cancer affects population-based breast cancer screening. Dr. Anttila pointed out three main criteria for potential new cancer screening programmes 1) Efficacy and effectiveness from RCTs; 2) balances of benefit outweigh harms and 3) cost-effectiveness (Lönnberg et al., 2017). Additional aspects relate to ethics, respect for autonomy, informed choice, resources available, affordability, feasibility, alternative or complementary strategies and tackling social inequalities.

Key conclusions from the iPAAC task on cancer screening:

- Even though considerable developments during the last 15 years in the implementation of **current population-based screening programmes for cancer** within the EU MSs, many of the Member States still lack systematic, comprehensive policy-making protocols and structures for well-functioning cancer screening programmes.
- The iPAAC WP5 calls for social innovations and tools for improved implementation in three EU council recommended screening programmes:
    - Improved organization models and quality assurance protocols adopted through appropriate governance of cancer screening;
    - Reducing inequality;
    - Risk-adjusted screening approaches to modify current programmes (have been started already).
- Focus on finding binding solutions for better coverage, legal frameworks, governance structures and standardized data at the pan-European level.
- Quality improvement through regular screening performance data using standardized data collection tools, protocols and outputs at the European level on a continuous basis. This includes developing acceptable standards for the core indicators.
- Autonomous networks of cancer screening coordinators and evaluators need to be re-activated to develop effective solutions in settings that do not have a well-functioning programme. This could develop training and capacity-building, novel data collection

structures, and assist in evidence-assessments required for the Europe-wide recommendations.

Effectiveness of risk-adjusted screening

- To adopt validated surrogate/early indicators of effectiveness of current programme modification, as rate of advanced cancers, survival and quality of life after treatment should be considered. This can enable gradual, well-controlled timely modifications to the screening policy with integrated profound evaluation of effectiveness of the programme in long term.
- Still, even if evidence-base will become available from such studies and from efficacy trials, there will be challenges on how to reliably assess the lifetime benefits and harms of the various options.
- Feasibility and challenges due to demanding logistics and organizational requirements has also to be taken into account.

Potential of new programmes

- Updating evidence on the potential of new cancer screening programmes is permanently needed.
- There are particular challenges also in developing reliable health economic assessments across Member States, respectively, taking into account the huge variation in resources, affordability, and alternative (competing) or complementary prevention strategies.
- Lung cancer screening trials have reported an average 17% decrease in LC mortality for LDCT screening. Analyses of benefits and harm, health economic aspects, and further implementation research are required. Challenges involve, e.g. integrating interventions on smoking cessation in the possible target age; and/or also younger age than that age; and dealing with protocols adopted in the trials on possible other 'incidental' findings.
- Prostate cancer screening challenges involve evidence criteria required for the modifications to the testing, further assessments and cancer management protocols; and building bridges and links with other areas of early detection of cancer where the evidence-base in not yet developed well enough (the iPAAC WP5 task 5.1. on early diagnosis).

Priority list for cancer screening in Europe:

1. Quality assurance
Solutions for better coverage of services, legal frameworks, governance and standardized data, minimizing consequences of Covid-19

2. Solving disparities
HPV vaccination and cancer screening coverage

3. Controlled modifications
Gradual, well-controlled risk- stratified modifications with evaluation of effectiveness

4. Updates
Social and health inequalities, and risk-stratified screening in the European screening recommendations and quality assurance guidelines

5. Implementation
Programme to training and capacity-building for cancer screening and early detection.
Professional networks

6. Comprehensiveness
Better integration between primary and secondary preventive strategies

7. New programmes
Updating evidence-base. In addition to harms and benefits balance, economic and resource assessments are needed, given the huge variation within EU regions.

DISCUSSION

In the discussion, **Prof. Hendrik Van Poppel (European Association of Urology - EAU)** stressed that we need to move forward the prostate cancer debate. It is a growing problem – all indicators are going in the wrong direction. Challenges of population screening are know, but it is necessary to move forward. EAU submitted to the WP Leaders an algorithm for risk stratified early detection of prostate cancer of well informed men using next PSA, risk calculators and MRI. This algorithm uses the tools we already have for early detection, discrimination between aggressive and non-aggressive cancer and the cheaper option of early, curative treatment compared with late, expensive, palliation of advanced prostate cancer. Prof. Van Poppel was interested to know whether the subgroup of iPAAC WP 5 would be interested to take this forward.

Prof. Van Poppel also mentioned that it is well known from ERSPC that PSA screening decreases mortality (>50% at 20yr follow up), (indeed only 20% at 11 years). Prostate cancer is the number one male cancer, second male cancer killer, and killing more today than before because of less testing. Mortality is + 17 % in 10 years in UK, + 5 % in US in 1 year. Prof. Van Poppel stressed that patients are more and more being diagnosed at a later stage in Germany, US and UK.

Additionally, **Prof. Van Poppel** highlighted that the existing situation will be responsible for higher mortality for many years to come. If we wait another 10 years to do validating studies of the proposed early detection, risk stratified in well informed men, we will need to agree with high cost, low quality of life and increased mortality. We need action now as the situation is getting worse. More research is always valuable, but we need to start to turn the tide against a growing problem. We have been stuck in the same debate for 30 years and need to move on.

Prof. Steele continued by stressing that with the evolution of the prostate cancer mortality in Europe and United States because of the antitesting propaganda, we are now facing more patients with prostate cancer diagnosis too late. It is predicted that this will continue in the next 15 years. Additionally, as a result of the COVID-19, there is less prostate cancer diagnosis and we approximately miss 15 % of the normal rate of cancer diagnosis, which will further increase the mortality rate. If we wait to do validating studies, it will take another 10 years. Therefore, there is a need to discuss it together with Work Package 5 on what we can do today in order to stop this.

Assist. Prof. Tit Albreht (iPAAC scientific coordinator, National Institute of Public Health Slovenia) highlighted that screening programmes should not cause harm to the screened population, it is important to avoid any unnecessary treatments. Moreover, there is a big difference between lung cancer and prostate cancer. In the case for prostate cancer, there was an inappropriately and inadequately applied prostate-specific antigen (PSA) test, which did not have a totally reliable cut-off point, which means that many patients were dealing with the uncertainty together with their therapists. There is a need to reduce the inappropriate use

of PSA testing. However, it is important to prepare new guidelines - a tentative pilot and then follow it through. Finally, it will be important to do pilots with new algorithms that EAU is proposing and try to evaluate the effects.

Prof. Steele highlighted that a huge amount of damage is being done at the moment by discriminating PSA testing across the world. It is highly likely that people who were without a symptom were subsequently diagnosed with prostate cancer with a PSA test. Prof. Steele said that developing algorithms for symptomatic man and for man who want to be screened for cancer is of great importance. Validation does not mean that we have to go back to step one and do population based randomized trials all over again, we just have to be clear that what we are offering is better than PSA testing. A further detailed international discussions would be extremely beneficial.

Ms Lipponen mentioned that some valuable insights were made in the Conference Report »*Insights and effectiveness of early diagnosis*«, which was produced within Work Package 5.

Prof. Steele posed a question on how one assesses the current situation in Europe regarding LCS with several countries starting programs while others don't. Prof. Steele further asked whether it is expected from the European Commission to recommend LCS in the upcoming Europe's Beating Cancer Plan.

Prof. Steele mentioned that based on the information derived from the NELSON Study cost-effectiveness estimates for the screening programmes in the UK have been developed. The prediction is that UK will most probably recommend some form of cancer screening. The real problem of cancer screening is identifying those that are at need for screening. It is much harder to reach those who have no intention of stopping smoking compared to those individuals who have given up smoking and are worried about their health. Therefore, the research agenda should focus on how to identify and invite the at risk population, which can be very different from one European country to another. The UK has general practice record in place, since general practitioners are required to record smoking history. Therefore, in the UK there are electronic databases for people who have a smoking history. It is a completely different issue when you try to track the whole population. The NELSON Study showed that if you send a questionnaire, very few people complete it. Additionally, from those who complete it, very few are smokers. Therefore, we are only able to capture a tiny proportion of the population at risk with a general questionnaire. There should be a focus on identifying and reaching the population at risk for lung cancer screening. Prof. Steele stressed that he is less concerned with false positives in cancer screening, since the new algorithms, which are being developed, are going to be very helpful. The development of artificial intelligence (reading CT scans) is going to be of great benefit in the future. Prof. Steele stressed that a major problem is to identify individuals who can benefit from lung cancer screening.

Dr. Jan-Willem van de Loo posed a question about the main challenges (bottlenecks) for MS to set up/maintain/expand screening services. Dr. van de Loo mentioned that perhaps cohesion funds could support regional investments, including R&I. Further, DG REFORM offers the technical support initiative (TSI) scheme. More information can be found at the following link: https://ec.europa.eu/info/departments/structural-reform-support_en

Dr. Anttila highlighted that even when several support mechanisms have existed at the Member States level and European level, the implementation is still suboptimal. The biggest barriers are shortcomings in governance with inadequate legal frameworks, lack of evaluation and the shortcomings in the quality assurance recommended by the European guidelines. Many countries have adopted demanding screening policies that may lead to costs above their financial resources if the coverage of screening would become very high. Sometimes these

decisions are politically motivated. Several Member States have utilized cancer screening without proper governance planning and systematic gradual well-controlled implementation. This is one reason why difficulties arise; when countries try to implement screening policies, the screening chain has not been organised throughout and there can be lack and shortcomings of resources, respectively. The Member States need to adapt first good governance of the programme according to their capabilities. The European the technical support initiative is of great importance. It is essential that such an initiative should adopt criteria that support the requirements set by the European recommendations on screening governance and quality assurance as developed in the Cancon Joint Action (https://cancercontrol.eu), and the European guidelines (see iPAAC New openings of cancer screening Report, page 10, chapter 1.1. for the references: https://www.ipaac.eu/res/file/20191205-wp5-helsinki/20191205-helsinki-conference-report.pdf). There should also be more collaboration and exchanges between settings for these new initiatives and more established programmes.

It also has to be highlighted that the European Commission has funded several EU projects on screening and early detection, such as EU-TOPIA (Towards improved screening for breast, cervical and colorectal cancer in all of Europe) and its follow-up EUTOPIA EAST. The objective of EU-TOPIA was to systematically evaluate and quantify the harms and benefits of the running programmes for breast, cervical, and colorectal cancer in all European countries, and identify ways to improve health outcomes and equity for citizens. EU-TOPIA was a five year project (2015-2020) funded by the European Commission's Horizon 2020 programme.

Dr. Nygård further mentioned that there are multiple cancer sites, which can be suitable for the early detection and treatment in the future. From the point of view of the citizen, this can be overwhelming. Dr. Nygard wondered whether the efforts should be made to co-ordinate cancer screening efforts. This might be relevant aspect to assure that screening countries to be popular and accepted.

Dr. Anttila responded by confirming that this is a very important area for quality improvement and social innovations. For cancer sites targeted by population-based screening, it is important that the monitoring and evaluation (and also developing recommendations) would take into account all services, not only the services e.g. in the invitational programme but also outside it. For other cancer sites there are also important possibilities for early diagnosis and similar data collection as for the population-based screening cancer sites is possible through the current electronical data systems for quality assurance, monitoring and evaluation purposes – meaning that the services would be part of an appropriate framework of the health policy. But the organizational basis for such work has not yet been adequately solved. Even though many cancer screening registers already have much expertise on this field particularly on cancer sites target by the screening programmes, it may not be feasible that the screening registers can do such work as a part of the screening services. It needs further consideration how this area can be developed but indeed, this is a neglected area for quality improvement in the whole of Europe.

9 Conclusion of the meeting

Assist. Prof. Tit Albreht concluded the webinar with exposing the tendency to gradual move towards stratification of the target population in the future. Screening programmes definitely provide an excellent opportunity of offering a service to the entire target population. Nevertheless, the issues regarding health literacy should be addressed. Additionally, countries should not expect to replace the tobacco control strategies with the lung cancer screening programmes. One of the JA iPAAC aim was to help identify some of the challenges and issues related to cancer screening programmes.