COCIR
Advancing Healthcare

# ENHANCING VALUE IN CANCER PREVENTION AND CARE:

## INDUSTRY PERSPECTIVES AND RECOMMENDATIONS

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COCIR, the European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry

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COCIR is the European Trade Association representing the leading industries in the medical imaging, radiotherapy, electromedical and health ICT sectors. Our members strive to create innovative solutions throughout the continuum of healthcare to allow European citizens to benefit from sustainable outcomes and added value. Our innovations enable better clinical outcomes, improve patient experience, increase satisfaction of health professionals, and contribute to overall cost containment.

In April 2020, the European Commission published its 'Europe's Beating Cancer Plan' roadmap.[1] The following recommendations summarise COCIR's position on the actions this roadmap proposes. In particular, this paper addresses (i) Early Detection and Early Diagnosis, (ii) Treatment, (iii) Rehabilitation and Survivorship and (iv) Knowledge Gaps. They convey the added value of imaging technologies, digital pathology, radiotherapy and overall digital solutions throughout the continuum of cancer care.

# 1. CANCER SCREENING AND EARLY DIAGNOSIS

Late diagnosis poses a severe risk to many cancer patients, as for many types of cancers, there are no curative late-stage therapies available. This makes early detection essential in reducing overall cancer mortality. Screening programmes can contribute greatly to early detection, if these programmes are designed in line with the latest scientific evidence and patient preferences and are organised and standardised in a way that assures high quality for everyone being screened. Such a shift towards early stages may also push the therapy mix towards less invasive options.

In 2003, the European Council adopted recommendations that led to better-synchronised implementation and more harmonised design of screening for breast, cervical and colorectal cancers. However, these recommendations have not been updated since their initial publication.

Emerging scientific evidence from numerous international and EU-based clinical trials indicates that there are other cancers where screening programmes would be effective and appropriate that can be enabled by technological innovations. An example of such an innovation is low dose computed tomography, which allows the screening for a certain lung cancer risk group that can lead to a reduction in mortality of up to 25 percent.[2]

To date, inequalities remain in access to screening programmes between Member States. In addition, not all screening programmes are designed and implemented in ways that comply with the respective EU Screening Guidelines. For this reason, we welcome the ambition of the Europe Beating Cancer Plan in suggesting measures for improving access to, and the quality of, existing screening programmes.

In Annex 1, we list examples of screening for different cancer types (breast and cervical). For instance, the improvement of stratification of risk groups allows for the use of innovative technologies that can better address the differing needs of each cancer group (e. g. Tomosynthesis or MRI for younger women with a family history of breast cancer, or Tomosynthesis or Ultrasound for women with elevated breast tissue density).

It is also worth mentioning that, by segmenting the target populations effectively, breast and prostate screening programmes could deliver greater effectiveness at lower cost. Coupled with reductions in radiation dose and the elimination of the need for contrast agents, these screening programmes could significantly improve cost-effectiveness and patient acceptance.

Digital health technologies are playing an increasingly important role in early detection and diagnosis. Computer-aided techniques, as well as other Artificial Intelligence (AI) applications and remote applications, are helping to lighten the load on clinicians, taking over repetitive tasks and helping identify anomalies and priority cases. Continued development at the interplay of genomics and data analytics will enable precision diagnosis, leading to more accurate and/or rapid detection, more consistent diagnoses and improve the overall decision-making processes.

1. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12154-Europe-s-Beating-Cancer-Plan
2. *NELSON: 'Reduced Lung-Cancer Mortality with Volume CT Screening in a Randomized Trial' https://www.nejm.org/doi/full/10.1056/NEJMoa1911793*

**IN SUMMARY, MEDICAL TECHNOLOGIES CAN CONTRIBUTE GREATLY TO EARLY AND PRECISION CANCER DIAGNOSIS BY:**

- Improving the stratification of risk groups allows the use of innovative technologies that can better address the differing needs of each cancer group
- Adopting up-to-date imaging equipment reduces radiation exposure and subsequently the risks for patients and healthcare professionals alike.[3]
- Adopting digital solutions such as AI-based decision support systems can help improve diagnostic accuracy, particularly for the standardised, high-volume procedures typical in cancer screening programmes.
- Utilising teleradiology helps improve access to screening programmes as well as supporting efficient resources use in healthcare.
- Generating, storing and annotating harmonised clinical data from screening programmes, based on international standards, would simplify the exchange of such data between Member States (e. g. for research purposes). This would help make large-scale, high-quality data available when integrated into a European Health Data Space.

## COCIR RECOMMENDATIONS TO THE EU INSTITUTIONS

1. **UPDATE** the 2003 European Council Recommendation on Cancer Screening according to the latest scientific evidence and assess screening for lung and prostate cancers, as two candidates for programmes to be recommended across the Union.
2. **PROPOSE** new EU screening guidelines for other types of cancer, such as lung[4] cancer- which is currently responsible for 18 percent of all cancer deaths - and prostate[5] cancers.
3. **REVIEW** the existing EU Screening Guidelines for breast[6], colorectal and cervical[7] cancer, to assess opportunities for improving access to, and quality of, screening programmes by using innovative medical technological and digital solutions.
4. **PROMOTE** targeted screening for high-risk groups such as hereditary breast cancer, based on the available evidence.
5. **LEVERAGE** EU funding mechanisms to support Member States in investing in the medical technologies and healthcare infrastructure required to improve access to, and the quality of, screening programmes as outlined in the EU Guidelines. Promote equal access to screening and early diagnosis throughout the EU.
6. **INVEST** in standardised digital data management of existing screening programmes and incentivise interoperability of these data lakes to allow them to contribute to the European Health Data Space.
7. **PROMOTE** medical technologies, such as breast or prostate MRI and contrast enhanced mammography, for allowing for early and precise detection.
8. **REVISE** the 2014 European Code against Cancer.[8]

**3.** *COCIR Age Profile Publication – click here*
**4.** *https://erj.ersjournals.com/content/early/2015/04/29/09031936.00033015*
**5.** *https://uroweb.org/epad-2019-the-current-status-of-prostate-cancer-screening-in-eu/*
**6.** *COCIR concerns expressed to Commissioner Andriukaitis, JRC and MEPs on possible exclusion of 3D mammography in screening guidelines for breast cancer in October 2019*
**7.** *COCIR Statement on Cervical Cancer In The EU*
**8.** *https://www.sciencedirect.com/science/article/pii/S1877782115001277*

# 2. CANCER TREATMENT

Social behaviour, genetic predisposition, increasing life expectancy and environmental factors are driving cancer rates. The impact of this is not restricted to those patients, caregivers, and families directly affected by the disease; it also affects the financially constrained national healthcare systems. In 2016, 1.3 million people in the EU28 died of cancer – more than one quarter (26 percent) of the total number of deaths. According to recent estimates, more than one person in three will be diagnosed with cancer at some point in their life.[9]

Medical Imaging is an essential part of the cancer treatment process. It helps target treatments, determining exact tumour locations, allowing less-invasive interventions, resulting in less radiation, minimising the negative impact on nearby healthy tissues and a shorter recovery period in many cases. Once diagnosed, cancer patients will require access to their appropriate, personalised treatment pathway. In many cases, this will include surgery, radiotherapy, and systemic therapies.

Increasingly, the optimal care pathway may be identified with the help of digital techniques, genomics and radiomics. The resulting tailored and targeted therapies maximise the chance for remission and recovery in patients. However, it is also crucial to inform and engage patients when deciding their treatment pathway and offer human and/or digital support to help empower patients to navigate the system.

Screenings and early detection have the potential to diagnose cancer at an earlier stage, meaning that therapies will increasingly shift towards minimally invasive treatment options with a curative intent. Projected on the current therapy mix, this means that key-hole surgery, robotic interventions, local thermal ablation, hybrid approaches, navigation technology and simulation will come even more into play. Educated patients will consequently ask for these options, which health systems must provide.

Radiotherapy plays a crucial role here. In fact, this treatment approach has reached an unprecedented level of sophistication: On-treatment imaging allows for the therapy delivery to be adapted to the patient's changing anatomy and to take any movement of the tumour into account. This is expected to increase the treatment's effectiveness in terms of outcome, clinical workflow and patient quality of life. In addition, solutions using AI can further personalise and adapt radiotherapy treatments to patient needs. Imaging technologies also provide the necessary information to evaluate the overall effectiveness of treatment.

These technological possibilities in cancer care should be a cause for celebration. Currently, however, patients across Europe do not enjoy equal or broad access to these advances. Looking at radiotherapy in particular – although this is recommended as part of treatment in 50-60 percent of cancer patients[10 11] – 25 percent of patients needing radiotherapy in Europe fail to receive it.

The reasons for this are manifold. However, one key issue is that decision makers are not fully aware of its true value,[12] resulting in a lack of the appropriate physical radiotherapy infrastructure. In addition, many countries in Europe are facing severe shortfalls in the numbers of radio oncologists, medical physicists, radiographers and other technical staff available. This situation is being exacerbated by the divergence in national reimbursement schemes. Currently, the majority of reimbursement schemes and funding models are not designed to support the use of new and more efficient medical equipment for early detection, diagnosis, radiotherapy treatment as well as digital technologies, including AI. This means that patients may not be able to receive the best available treatment, even though these could improve healthcare provision and enhance quality of life.

From a value-based care perspective, European and national decision-makers must consider the upfront investment required for such sophisticated technological innovations. Only if there is a will to invest in innovative and patient-centric solutions that drive efficiency and sustainability of cancer care can we move towards more value in healthcare, where cancer patients receive the highest standard of care, delivered with greatest efficiency. Digital health solutions allow for

**9.** https://www.medicalnewstoday.com/articles/288916
**10.** Borras JM, Barton M, Grau C, et al. 2015. The impact of cancer incidence and stage on optimal utilization of radiotherapy: Methodology of a population based analysis by the ESTRO-HERO project. Radiother Oncol 116(1): 45-50
**11.** Borras JM, Lievens Y, Dunscombe P, et al. 2015. The optimal utilization proportion of external beam radiotherapy in European countries: An ESTRO-HERO analysis. Radiother Oncol 116(1): 38-44
**12.** How many new cancer patients in Europe will require radiotherapy by 2025? An ESTRO-HERO analysis
Radiotherapy access in Belgium: How far are we from evidence-based utilisation?, European Journal of Cancer, Vol. 84, October 2017, pp. 102-113

a more-personalised care approach while accurately monitoring the treatment response. In radiation therapy, given over multiple days, adaptations based on 'during-treatment' imaging will help personalise the quality of treatment delivery. Available information suggests that targeted measures improve treatment conditions,[13] overall health outcomes and long-term survival rates.

## COCIR RECOMMENDATIONS TO THE EU INSTITUTIONS

1. **FOCUS** on minimally invasive therapy to master the expected case load of patients with early stage cancer diagnosis. This may include Horizon Europe funding to explore minimally invasive cancer therapy in terms of comparison studies to define the appropriate therapy mix.

2. **ESTABLISH** a pan-European cancer therapy registry to optimise strategies of diagnosis, treatment and care, quality of life and ultimately, survival.

3. **ENHANCE** general IT infrastructure to allow remote service. Accessing hospital networks and planning treatment regimens remotely from home – without compromising confidential patient information – could help increase access to radiation therapy.

4. **INCREASE** access to, and modernise, radiotherapy infrastructures:
   - EU cohesion funds should be used to allow investments into healthcare infrastructure and increase access to radiotherapy and hybrid operating rooms and to replace those ageing technologies not capable of taking advantage of advanced techniques. These funds should support initiatives that follow the principle of enabling the right treatment for the right patient at the right time.
   - The Horizon Europe Programme for research funding should provide incentives for industry and researchers to continue to develop minimally invasive surgery, interventional pulmonology and radiation therapy technologies.
   - National reimbursement systems must be revised to realise the full potential of currently available technologies. Any revisions should adequately reflect the complexity of treatment, the required expertise and resource use. Systems should offer incentives to encourage uptake of innovative technologies, such as radiation therapy[14], AI, genomics and leverage opportunities offered by combination therapies.

5. **DRIVE** EU-wide exchange and scaling up of best practices, such as 'same day' or rapid diagnostics clinics delivering faster diagnosis and treatment plans for cancer patients. If funded appropriately, such approaches could improve patient experience, shorten time to treatment, improve patient outcomes and quality of life.

6. **LEVERAGE** the Horizon Europe Cancer Mission, to fund applied research, combining molecular technologies, imaging diagnostics and computational power to help develop novel cancer therapies with predictive analytics.

7. **ESTABLISH** a pan-European multi-stakeholder forum (policy makers, manufacturers, patients, clinicians, academics and the scientific community) for the regular exchange of best practices in cancer radiotherapy treatment. This will ensure that there are sufficient medical professionals available to maximise the potential offered by cancer therapy technologies.

8. **ADVANCE** the training of healthcare staff by aligning the curricula of medical, physics, and technical trainings across Member States, so that professional qualifications are comparable across the EU.

9. **IMPROVE** patient awareness of life-saving technologies such as minimally invasive surgery, radiotherapy, by taking advantage of - among other things - the momentum generated by Europe's Beating Cancer plan to change existing negative perceptions surrounding the treatment.

**13.** *COCIR AI use cases, AI-based radiotherapy treatment planning, https://www.cocir.org/fileadmin/Publications_2020/20009_COC_AI_USE_CASES_10.pdf*
**14.** *iPAAC WP 8 Report: Tackling reimbursement for radiation oncology and cancer surgery: challenges and options (expected in 2020)*

# 3. REHABILITATION AND SURVIVORSHIP QUALITY OF LIFE

Unsustainable national healthcare systems and considerable levels of inequality in accessing care – and ultimately cancer care – are only a few of the current healthcare challenges. A patient-centric approach[15] could provide a plausible solution. However, the success of such an approach depends greatly upon stakeholder and system collaboration, as well as the uptake of technological advancement.

Sharing workflow between different care teams and applying ICT-enabled medical technologies can ensure targeted care solutions, increase conformity and bring cost-efficiency throughout the care continuum.

AI and digitally assisted medical technologies can provide personalised solutions in both in- and outpatient care settings, while minimising treatment and rehabilitation times. Digital health technologies can also contribute to the efficiency and interoperability of workflows in the care pathway, improving outcomes for patients, including accelerating rehabilitation and improving social inclusion.

Digital health technologies will make outpatient care more feasible and available. Telehealth solutions can support remote monitoring, reducing the need for visits and interventions. Meanwhile, mHealth applications may enable patient-reported outcomes that further improve quality of life and rehabilitation of patients, both individually and collectively.

## COCIR RECOMMENDATIONS TO THE EU INSTITUTIONS

1. **ELABORATE** EU patient-centred guidelines for all stages of care - not only for screening – as is the case in the October 2019 European recommendations for breast cancer,[16] elaborated by the JRC.
2. **DEVELOP** dedicated guidelines for following up with cancer patients, e.g. engaging with the patient, monitoring treatment as well as disease recurrence.[17]
3. **ENCOURAGE** a harmonised market access framework and approach to reimbursement of digital health technologies that support patients before, during and after treatment.

15. http://www.integratedcarealliance.org/
16. https://ec.europa.eu/jrc/en/news/new-european-recommendations-breast-cancer
17. https://www.nature.com/articles/s41571-019-0228-y & https://europepmc.org/article/PMC/6647838

# 4. KNOWLEDGE GAPS

Advances in medical and digital health technologies can significantly improve quality of life for patients and their informal caregivers as well as removing a significant burden from national healthcare systems. Despite this, research suggests that access to holistic and patient-centred care in the EU remains uneven.[18] These challenges are reflected throughout the continuum of care.

**HEREAFTER ARE THE GAPS THAT WE HAVE IDENTIFIED:**

### BEST USE OF INTEGRATED CARE:

An integrated care approach can help ensure sustainable healthcare systems and improve health services for patients and their carers throughout the continuum of care, including the rehabilitation phase. Appropriate areas for investment include AI and ICT-embedded medical solutions, as well as digital applications for monitoring and rehabilitation.

### INVESTMENT IN TECHNOLOGY RESEARCH, DEVELOPMENT, DEPLOYMENT AND INFRASTRUCTURE:

Europe has been at the forefront of health research. However, translating this research into innovative products that are available on the market, with uptake by European healthcare systems, has proved slow. This reflects a lack of investment in supporting the development and deployment of medical and digital health technologies. Already, Europe has fallen behind in some international research areas, such as AI in medical technology.

### REGULATORY BARRIERS:

Inconsistent implementation of measures, such as the General Data Protection Regulation,[19] are complicating the use and sharing of health data needed to boost evidence generation and close knowledge gaps.

### TECHNICAL BARRIERS:

Interoperability has long been a fundamental element for exchanging relevant health data within and across Member States. Availability of, and access to, health data such as electronic health records will help improve outcome analyses and provide better insights into all aspects of cancer care and prevention.

### MARKET ACCESS BARRIERS:

Manufacturers face uneven market access requirements in EU Member States. Often, there are no established reimbursement mechanisms and/or funding schemes in place to encourage uptake of new health technologies. Costs of innovation carried by the manufacturer rarely translate to appropriate reimbursement and/or funding, even although they normally generate substantial clinical benefits and enhance access to care.

### TRAINING AND EDUCATION:

There is unequal access for medical staff and civil society to the training needed to bridge knowledge gaps, thus allowing them to benefit from technical and scientific advances. There is a need to encourage medical staff and patients to share appropriate data with care providers. Similarly, education would encourage civil society to provide better outpatient care, for example by learning how to apply digital tools following treatment, improving quality of life post-cancer.

**18.** *Knowledge gaps are a challenge identified by the European Commission both in the Roadmap for Beating Cancer Plan and the latest cycle of the State of Health in the EU.*
**19.** *https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R0679*

## COCIR RECOMMENDATIONS TO THE EU INSTITUTIONS

1. **MOBILISE** and deploy the relevant funding instruments in the upcoming Multiannual Financial Framework to invest in cancer care:
    - **HORIZON EUROPE**, (including the Cancer Mission[20] and the Public-Private Partnership on Health Innovation[21]) for funding high quality, impactful cancer research and innovation. This could include but is not limited to supporting cross-sectoral partnerships and drive individualised and patient-centered cancer therapies The Cancer Mission should also fund projects with shorter-term outcomes, focusing on sustainability and impact.
    - **DIGITAL EUROPE PROGRAMME** and the Connecting Europe Facility[22] to help establish the necessary infrastructure and capacities for the digital transformation of cancer care. The convergence of biomedical understanding, data analysis and AI will drive future innovation in cancer care, which we strongly recommend the European Commission supports. It will empower the development of predictive analytics and personalised treatment for each patient. We recommend the Commission to support the extensive ongoing work for the development of algorithms that not only diagnose cancer but predict it. This can include the prediction of risk of disease severity, the most beneficial treatment for each patient, the type of treatment side effects that might be most likely and which treatments should be avoided.
    - **EU4HEALTH PROGRAMME**, to provide equitable access to quality care, invest in prevention and innovation and improve the resilience of health systems.
    - **COHESION AND STRUCTURAL FUNDS**, to purchase and maintain state-of-the art medical devices that embed novel technologies and ICT. ESIF, and particularly, ERDF, ESF and the Cohesion Fund constitute the EU's most powerful investment tools to support Member States in providing the best care and health infrastructure for citizens.
    - **DIGITAL INNOVATION HUBS** and Testing and Experimentation Facilities, to train hospitals and other healthcare providers (SMEs) on innovative digital health solutions.
2. **EXAMINE**, in the context of audits in Member States, the issue of waste in healthcare system and promote improvements in structures and workflows.
3. **FACILITATE** a structured multistakeholder process to establish a clear framework on the primary and secondary use of health data.
4. **PROMOTE** an enhanced version of the European Reference Networks (ERNs), expanding their scope beyond rare diseases alone to embrace cancer care in order to ensure all EU citizens can benefit from the best-in-class cancer care currently available in some parts of the EU.
5. **EXPAND** the annex V: '*Recognition on the basis of coordination of the minimum training conditions*' of the Professional Qualifications Directive[23] to include digital skills in the mutual recognition of qualifications.
6. **PROMOTE** the Digital Education Action Plan, and more specifically Actions 4 and 5, as the platform for developing digital skills.
7. **DRIVE** uptake of new technologies in healthcare systems and increase equitable patient access by harmonising evidence generation requirements (e.g., real-world data). In addition, offer progressive funding for promising medical technology innovations (e.g. time-limited coverage with evidence generation).

**20.** *Horizon Europe – Cancer Mission: https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/missions-horizon-europe_en*
**21.** *www.EUHealthPPP.org*
**22.** *Connecting Europe Facility for creating the digital infrastructure needed for digital health tools: https://ec.europa.eu/inea/en/connecting-europe-facility*
**23.** *Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications, as last amended by Directive 2013/55/EU of the European Parliament and of the Council of 20 November 2013 on the recognition of professional qualifications*

# 5. CONCLUSIONS

Risk-adjusted cancer screening could make a substantial positive impact on survival rates if established in a constructive, coordinated way. Screening programmes will shift treatment of cancer patients towards earlier stages of the disease. This will inevitably improve outcomes and deliver better value for under-pressure healthcare systems.

Clearly, the current blend of therapeutic approaches to cancer treatment will change. Target populations will be smaller, while patients are increasingly being encouraged to express their preferences and to contribute to defining their optimum treatment approach.

This trend will also see an increase in minimally invasive treatments and the emergence of increasingly better-tailored and more accurate approaches, aided by AI and digital health technologies.

This challenge now passes to the European Union, Member State governments, hospitals and other healthcare providers - and civil society - to create an environment that can make this a reality. One that is patient-centred, that is able and willing to invest to provide genuine value-based care, that embraces the promise of technology and data in improving delivery and outcomes.

This way, cancer will no longer be viewed as a 'final destination' but rather as the manageable, sometimes chronic, disease that it now is.

# ANNEX 1
# EXAMPLES ON SCREENING AND EARLY DIAGNOSIS

## EXAMPLE 1
### TARGETED BREAST CANCER SCREENING FOR ADDITIONAL RISK GROUPS:

Screening of potentially high-risk breast cancer patients would bring major societal benefits, as early detection would improve survival rates and treatment possibilities. There is sufficient scientific evidence that MRI has a higher sensitivity and specificity for women at high risk, especially in younger age, and those with dense breasts. Clinical trials to prove the clinical effectiveness of screening in these groups are ongoing or about to be published.

Current guidelines recommend that only women at high risk should be screened using MRI. High risk means those women with a gene mutation or strong family history. However:

- 10 percent of women have BRA1/2 mutation with ~70 percent risk of breast cancer.
- 40 percent of women have dense breasts, and thus have an elevated risk of ~20 percent
- The remaining 50 percent of women have an approximately 6 percent risk on breast cancer[24]

Based on these data, screening would be equally beneficial to this segment of the population of women with dense breasts.

Currently the guideline recommendations are not implemented in all healthcare systems across Europe – not all systems allow access to these technologies or provide reimbursement for these examinations.

## EXAMPLE 2
### IMPLEMENTATION OF LATEST EVIDENCE FOR CERVICAL CANCER SCREENING

PAP smear and cytology has been used since 1928 to screen for pre-stages of cervical cancer. It has been successfully implemented over the years and has now saved many million lives worldwide. In recent years, infections with the human papilloma virus (HPV) have been discovered to cause cervical cancer[25], and nucleic acid tests for HPV have proven to be more sensitive in detecting pre-stage cervical cancer than manual cytology. Many countries have acted to switch their screening programmes from cytology[26] to primary HPV detection with DNA-based assays. However, the improved sensitivity of HPV-DNA tests comes at the expense of specificity: healthcare systems now have to follow up on more false positive screening results.

New technologies, such as mRNA-based tests, digital cytology and other approaches could improve cervical cancer screening further and reduce the burden on women of false positive results[27]. We ask the European Commission to assess the latest evidence for these new technologies in the upcoming revision of the European guidelines for cervical cancer screening. Refer also the COCIR Statement on cervical cancer In the EU.

**24.** *Sources:*
1. *Christoph I. Lee, MD, MS, Linda E. Chen, MD, and Joann G. Elmore, MD M. Risk-Based Breast Cancer Screening: Implications of Breast Density. Med Clin North Am. 2017;101(4):725-741. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5458625/.*
2. *Ho JM, Jafferjee N, Covarrubias GM, Ghesani M, Handler B. Dense breasts: A review of reporting legislation and available supplemental screening options. Am J Roentgenol. 2014;203(2):449-456. doi:10.2214/AJR.13.11969Kuhl C. Predict, Then Act: Moving Toward Tailored Prevention. Editorial. J Clin Onco (2019) 37:943-945. DOI https://doi.org/10.1200/JCO.19.00068*

**25.** *Zur Hausen et al. Condylomata Acuminata and Human Genital Cancer. Cancer Res. 1976;36:794.t*

**26.** *Saslow D, Solomon D, Lawson HW, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Am J Clin Pathol. 2012;137(4):516-542. doi:10.1309/AJCPTGD94EVRSJCG*

**27.** *Sources:*
1. *Reuschenbach et al. Performance of p16INK4a-cytology, HPV mRNA, and HPV DNA Testing to Identify High Grade Cervical Dysplasia in Women With Abnormal Screening Results. Gynecol Oncol. 2010 Oct;119(1):98-105. doi: 10.1016/j.ygyno.2010.06.011. Epub 2010 Jul 8.*
2. *Iftner T et al. Head-to-Head Comparison of the RNA-Based Aptima Human Papillomavirus (HPV) Assay and the DNA-Based Hybrid Capture 2 HPV Test in a Routine Screening Population of Women Aged 30 to 60 Years in Germany. J Clin Microbiol 2015;53:2509-16*

# ANNEX 2
# EXISTING EU RECOMMENDATION AND GUIDELINES ON CANCER SCREENING

## EU RECOMMENDATION

**RECOMMENDATION OF 2 DECEMBER 2003 ON CANCER SCREENING** (Recommendation 2003/878/EC)

The Recommendation urges EU countries to implement cancer screening programmes. It covers factors such as registering and managing screening data, monitoring the process and training of personal. The European Commission reports on the implementation of these programmes, encourages national authorities to cooperate on research and best practice and helps develop guidelines on cancer screening.

## EU GUIDELINES

**BREAST CANCER**
European guidelines on breast cancer screening and diagnosis
European quality assurance scheme for breast cancer services
European guidelines for quality assurance in breast cancer screening and diagnosis (4th Edition)

**CERVICAL CANCER**
European guidelines for quality assurance in cervical cancer screening (2nd Edition)

**COLORECTAL CANCER**
European guidelines for quality assurance in colorectal cancer screening and diagnosis

## GENERAL INFORMATION ABOUT COCIR

COCIR is the European Trade Association representing the medical imaging, radiotherapy, health ICT and electromedical industries.

Founded in 1959, COCIR is a non-profit association headquartered in Brussels (Belgium) with a China Desk based in Beijing since 2007. COCIR is unique as it brings together the healthcare, IT and telecommunications industries.

Our focus is to open markets for COCIR members in Europe and beyond. We provide a range of services in the areas of regulatory, technical, market intelligence, environmental, standardisation, international and legal affairs.

COCIR is also a founding member of DITTA, the Global Diagnostic Imaging, Healthcare IT and Radiation Therapy Trade Association (www.globalditta.org).

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