The Silent Pandemic: A European Call to Prevent a Growing Cancer Crisis

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Citation:	EMJ. 2025;10[2]:10-14. https://doi.org/10.33590/emj/VLOF5948

"As European doctors, citizens, and possible patients in the future, we need to plan ahead to avoid the silent pandemic of cancer," implored Milagros Otero-Garcia, University of Vigo, Pontevedra, Spain, who opened the 2025 European Congress of Radiology (ECR) session, entitled 'New cancer screening programmed: upcoming European strategies'.[1]

CONTEXTUALISING THE CRISIS AND EXPLORING EU RECOMMENDATIONS

According to Otero-Garcia, in 2020 alone, 2.7 million people across the European Union (EU) were diagnosed with cancer, and 1.3 million lost their lives (including more than 2,000 young people). Projections show that by 2035, cancer cases could rise by 24%, making it the leading cause of death in the EU. Yet, amid these alarming figures lies a powerful opportunity: up to 40% of cancer cases are preventable. This reality highlights the urgent need for proactive, coordinated action to stop a silent pandemic before it grows louder.

According to Regina Beets-Tan, the Netherlands Cancer Institute, Amsterdam, the Netherlands, improved cancer screening is essential to reducing the rising burden of cancer in Europe. As a member of the EU Cancer Mission Board, Beets-Tan emphasised that screening enables cancers to be caught earlier, often before symptoms appear, when treatment is more effective and less costly. The EU's updated 2022 screening recommendations expand access to breast, cervical, and colorectal cancer screening, with a target of reaching 90% of eligible citizens by 2025.[2] For high-risk groups, the EU is also exploring stepwise approaches to lung, prostate, and gastric cancer screening, she explained.

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Investment in digital transformation, particularly AI, is central to this strategy. "The EU is focusing on whether digital transformation of AI will help us to reduce the healthcare costs, and it's also focusing on improving their equitable access to screening and quality of care," Beets-Tan said.

Additionally, she explained that the "EU is focusing on prevention by projects that will explore the implementation of high-risk screening [and] develop new screening methods", including programmes such as Horizon Europe and EU4Health.

Ultimately, she emphasised that better screening is not just a clinical tool, it is a cornerstone of more efficient, equitable, and preventive healthcare for all Europeans. With continued support and collaboration, early detection could help shift cancer from a crisis into a manageable condition.

BUILDING A NEXT-GENERATION PROSTATE CANCER SCREENING STRATEGY

Efforts to improve prostate cancer screening are evolving rapidly, with MRI emerging as a key tool in the push towards earlier detection, more accurate diagnosis,

and more personalised care. “Prostate cancer is among the most frequent tumours in men, and we are facing an increase in its incidence over the last years,” explained Emmanuel Messina, Department of Radiological Sciences, Oncology and Pathology, Sapienza University of Rome, Italy.

According to Messina, MRI has become a cornerstone in the diagnostic workup of prostate cancer, particularly following development of the MRI-targeted biopsy pathway and the widespread implementation of PI-RADS scoring. “MRI has been introduced as a very strong tool in prostate cancer diagnostic workup, but MRI is still not recommended as an initial tool for prostate cancer screening,” Messina said.

MRI offers high sensitivity for detecting clinically significant tumours and reduces unnecessary biopsies, making it a promising candidate for use in population-level screening programs. However, despite its strengths, MRI as a standalone screening tool faces limitations. These include cost, access, interpretation variability, and the need for further refinement in low-risk populations. To address these challenges and unlock MRI’s full potential, Messina highlighted that research is increasingly focused on enhancing MRI through integration with AI, computational tools, and molecular biomarkers. “MRI indeed determined a revolution in prostate cancer diagnostic workup in the last decade, proving to be an essential tool in this setting, and non-contrast MRI proved to have a very high accuracy. However, we probably should refine MRI-based score assistance for this specific setting,” he said.

One major advancement is the use of AI-based image analysis, explained Messina. Deep learning models trained on large MRI datasets can now assist radiologists in lesion detection, PI-RADS scoring, and case prioritisation. These systems can improve accuracy, consistency, and reporting speed, particularly in settings with limited radiology expertise or high imaging volumes. AI can also generate synthetic high b-value diffusion-weighted imaging (DWI) images, improving image quality and enabling better lesion characterisation, especially valuable in non-contrast bi-parametric protocols, which are more suitable for mass screening.

In parallel, the integration of molecular biomarkers, especially from liquid biopsies, is proving essential for refining risk stratification. Biomarkers such as prostate-specific antigen (PSA) density, apparent diffusion coefficient (ADC) values, and specific microRNAs (e.g., miR-302, miR-367) have been shown to correlate strongly with clinically significant prostate cancer. When used alongside MRI, they enhance the predictive value of imaging and help reduce overdiagnosis and overtreatment.

Computational tools, including multivariate decision models and network-based analyses, further enable the fusion of imaging, and clinical and molecular data. These integrated approaches support the development of personalised screening pathways, where decisions are driven not by a single test, but by a combination of factors tailored to the individual's risk profile.

Importantly, this convergence of imaging, AI, and biomarker data is scalable and adaptable. It holds great promise for reducing inequalities in access by enabling standardised, high-quality screening protocols that can function even in resource-limited settings, where specialist interpretation or contrast media may not be readily available. To conclude, Messina said: "All of this considered, my final answer is yes, we are indeed on the right track to define the most appropriate prostate cancer screening pathway, and it should indeed include MRI."

> **We are indeed on the right track to define the most appropriate prostate cancer screening pathway**

AI-POWERED LUNG CANCER SCREENING

Lung cancer remains the leading cause of cancer-related death worldwide, largely due to late-stage diagnosis, explained Carlos F Muñoz-Núñez, La Fe University and Polytechnic Hospital, Valencia, Spain. He went on to say that approximately 75% of patients are diagnosed at Stage III and IV, and the global survival rate is less than 20% at 5 years.

Low-dose CT (LDCT) screening has been proven to reduce mortality in high-risk populations by enabling earlier detection. LDCT uses lower radiation doses than standard CT, making it suitable for repeated use, but it presents challenges such as image noise, false positives, and significant workload for radiologists.

AI offers promising solutions: improving risk-based population selection, enhancing image reconstruction with deep learning techniques, and supporting automated nodule detection and malignancy prediction. "Lung cancer based on risk models are tools designed to estimate an individual's risk of developing lung cancer based on risk factors, and these models help guide screen decisions, early detection, and personalised prevention strategies," he explained. AI can also help reduce overdiagnosis by integrating imaging with clinical, genomic, and biomarker data to identify indolent versus aggressive lesions.

However, Muñoz-Núñez continued that there are significant limitations and risks. "There are data biases in a model trained with non-representative data sets, especially if European versus Asian populations are

in these data sets, if the AI models are trained with different kind of data sets, and this affects diagnostic accuracy across diverse populations." Lack of transparency in AI decision-making can also undermine clinical trust, especially when predictions are not explainable. False positives remain a challenge, and AI-assisted screening can sometimes increase them if sensitivity is prioritised over specificity.

Furthermore, the psychological impact of false alarms, ethical concerns about data privacy, and unequal access to advanced AI tools raise critical questions about implementation. Regulatory oversight and rigorous validation in diverse, real-world settings are essential before wide deployment.

OPTIMISING COLORECTAL CANCER SCREENING ACROSS THE EU

The EU recommends colorectal cancer screening for asymptomatic individuals aged 50–74 years as part of population-based programmes.[2] This strategy addresses a major health burden: colorectal cancer is the second leading cause of cancer death in Europe, with over 300,000 new cases annually. Screening has significantly reduced incidence in countries with established programmes, though uptake varies widely across the EU, from nearly 94% in some areas to under 50% in others, explained Stuart Taylor, University College London, UK.

The cornerstone of the EU approach is the faecal immunochemical test (FIT), a simple, cost-effective, and quantitative assay detecting haemoglobin in stool. FIT has replaced the older guaiac faecal occult blood test (FOBT) due to its higher specificity and better patient compliance, Taylor said. A positive FIT typically leads to colonoscopy, as the likelihood of significant pathology is high. However, the FIT threshold can be adjusted: lower thresholds improve sensitivity (fewer missed cancers) but result in more colonoscopies, impacting healthcare resources. Each country sets thresholds based on capacity. "Colonoscopy is an expensive test, so how you organise your screening program depends on how many resources you have available to you to do multiple colonoscopies," Taylor explained.

Radiologists contribute primarily through CT colonography (CTC), used when colonoscopy is incomplete or contraindicated, for instance in frail patients or those with complex anatomy. CTC is sensitive for cancers and large polyps, but effectiveness depends heavily on radiologist training and experience. "The EU needs to make sure we train our radiologists well with appropriate training, looking at the whole spectrum of lesions, how to avoid interpretation pitfalls, and to test ourselves. Unfortunately, we can't assume that we're good just because we've taken a training course. We need to show that we are good and monitor our performance over time," Taylor said.

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Although CTC is promising, especially for symptomatic or high-risk individuals, its limited population compliance and cost prevent its widespread use as a primary screening tool. Thus, FIT remains the most effective and economical option in population screening programmes.

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A PATIENT PERSPECTIVE

The session was concluded with a talk by Erik Briers, an expert patient advocate and Vice Chairman of Europa Uomo, Antwerp, Belgium, who emphasised the lack of organised prostate cancer screening across

Europe, despite its high incidence and mortality. Unlike breast or cervical cancer, prostate cancer currently lacks a structured, population-wide screening approach.

He highlighted that early detection is crucial when cancers are still curable and treatment is more effective. However, not all cancers can be detected early or prevented. While some cancers like cervical (100% preventable via HPV vaccination) and lung (90% preventable by avoiding smoking) are highly preventable, prostate and brain cancers are considered 0% preventable, with no proven lifestyle or genetic factors to mitigate risk individually.

Prostate cancer also presents no early symptoms, making screening vital. Briers supports risk-based screening, starting with family history and demographic factors (e.g., African ancestry), followed by PSA tests and MRI where needed. The EU has recently supported this direction, funding pilot programmes to explore effective implementation.

Finally, he stressed the importance of distinguishing low-risk prostate cancers that can be monitored with active surveillance, avoiding overtreatment while still detecting and treating high-risk cancers early to reduce mortality.

CONCLUSION

Europe stands at a critical juncture in the fight against cancer. With incidence rising, early detection through organised, risk-based screening programmes is essential to improve outcomes and reduce costs. The EU's updated strategies, incorporating AI, molecular biomarkers, and improved imaging (particularly in prostate, lung, and colorectal cancer) signal a transformative shift toward personalised, equitable care. Yet, success depends on implementation across all member states, addressing disparities in access and ensuring quality. As patient advocate Briers reminds us, time is of the essence. With coordinated action, Europe can move from crisis management to prevention, ensuring more lives are saved through timely, targeted screening.

References

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