

BREAST CANCER SCREENING AND THE IMPORTANCE OF CENTRALIZED EHR SCREENING SYSTEMS IN THE REPUBLIC OF SERBIA — AN OVERVIEW

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Breast cancer (BC) remains the most common malignancy among women in Serbia, contributing significantly to both cancer morbidity and mortality annually. In December 2012, in response to the then-growing incidence of BC, the Republic of Serbia implemented a National Program for early BC detection, aligned with recommendations from the World Health Organization (WHO) and globally enforced practices.

The program targets women aged 50 to 69 who are at higher risk for BC and is carried out in two-year screening cycles designed to ensure comprehensive population coverage. All eligible women are encouraged to undergo mammographic examination — the diagnostic tool of choice — during each screening cycle. So far, five such cycles of organized BC screening have been completed, while the sixth cycle is currently underway (since the beginning of 2023) and will continue throughout 2024. As such, the program aims to reach at least 75% of the target population coverage. The screening process itself consists of blinded double reading with arbitration of yielding mammograms by two independent radiology specialists, and the introduction of a third in case of arbitration. Positive findings lead to further diagnostic procedures (ultrasound, targeted mammography) to confirm or rule out malignancy. Primary health centers, hospitals, and regional public health institutes support the existing decentralized screening infrastructure, to ensure a coordinated response for patients requiring follow-up care.

Among the most significant advancements in the BC screening program in Serbia has been the integration of centralized electronic health record (EHR) systems. By integrating patient data from various healthcare providers, EHRs — as well as radiology platforms (RIS) — enable medical history and screening results to be made easily accessible, for better care coordination and timely follow-ups. These systems aim to allow standardized screening protocols, which will ensure consistent quality across healthcare facilities. Furthermore, once fully implemented, EHRs should create a digital space for public health officials to analyze screening rates, note trends, and optimize resource allocation accordingly. Patients stand to benefit from access to their health information, reminders for screenings, and educational resources, which should increase participation and improve overall health outcomes.

BC management in Serbia stands to be further improved by other technology advancements in both diagnostics and treatment. Artificial intelligence (AI) and machine learning are expanding their roles in analyzing large language models, improving diagnostic precision, and optimizing treatment planning. AI-based algorithms promise to help clinicians identify minute patterns in medical data, resulting in more accurate diagnoses and more tailored, effective treatment strategies. Precision medicine, driven by genomic profiling, enables personalized treatment plans, improving patient outcomes by tailoring therapies to individual genetic markers. Additionally, cutting-edge radiation therapies, such as stereotactic body radiation therapy (SBRT) and proton therapy, reduce collateral damage to healthy tissues.

The efforts to combat BC through organized screening, coupled with the integration of advanced technologies and treatment approaches in the future, are — and will continue — improving early detection rates, patient outcomes, and overall public health.

Keywords: breast cancer screening, mammography, EHR systems, AI