

Cancer Screening: difficulties and solutions for optimization in the public sector

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Abstract

Cancer screening is a fundamental strategy for reducing the disease burden in Brazil; however, its effectiveness depends on rigorous technical criteria and the organization of the healthcare network. This article aims to discuss the difficulties and strategies to optimize cancer screening within the Brazilian Unified Health System (SUS). It reflects on the challenges related to the availability of tests, diagnostic confirmation, time to treatment initiation, insufficient infrastructure and human resources, as well as low adherence to guidelines. The article differentiates opportunistic screening, which predominates in Brazil, from organized screening, which is considered more effective as it ensures active invitations, comprehensive follow-up, and a greater impact on mortality reduction. It also presents tools available to minimize these barriers, emphasizing the importance of disseminating evidence-based guidelines, implementing integrated information systems, applying technical parameters to guide healthcare network planning, promoting continuous training for healthcare professionals, ensuring clear communication with the population and using digital technologies for monitoring. The article concludes that strengthening the healthcare network, combined with the qualification of care and the implementation of organized strategies, is essential for screening to fulfill its role in early detection and cancer control, ensuring equity, access and effectiveness within SUS.

Keywords: Early Detection of Cancer; Health Planning; Unified Health System; Health Services Programming

Introduction

Cancer is a chronic disease that represents a major challenge for public health in Brazil and worldwide. It is estimated that about 50% of cases could be prevented through primary prevention, and that early detection combined with timely access to treatment can reduce incidence and mortality rates (WHO, 2020; INCA, 2020).

Early detection of cancer is divided into two strategies: screening and early diagnosis. The latter refers to testing symptomatic individuals for diagnostic purposes. Screening, on the other hand, is a systematic process applied to a predefined asymptomatic target population, with the aim of identifying suggestive alterations or cancer at an early stage (WHO, 2020).

Screening must be based on solid scientific evidence to ensure its benefit to the population and its impact on cancer control indicators, such as reducing incidence and, when possible, mortality rates, improving survival, quality of life and treatment response (INCA, 2021).

For screening to be effective, however, certain technical principles must be met. These include characteristics of the disease, such as its epidemiological relevance, adequate knowledge of its behavior, and the accuracy of the test used (sensitivity, specificity and acceptability by the population). Additionally, effective and accessible treatment must be available for those diagnosed, and benefits must outweigh potential harms, according to bioethical principles of beneficence and non-maleficence (Mosquera; Barajas; Zhang; Lucas et al., 2023).

Despite its potential positive impact, cancer screening also presents limitations and risks that must be carefully evaluated. False-positive results can cause anxiety, stress, unnecessary invasive procedures and healthcare system overload. False-negative results, on the other hand, can provide a false sense of security, delaying diagnosis and the start of treatment. Another potential harm is overdiagnosis, the detection of tumors that would not progress clinically nor harm individuals, potentially leading to overtreatment and unnecessary interventions. Thus, balancing risks and benefits is essential before establishing a screening program, always ensuring patients' participation in health decision-making (INCA, 2021).

The challenges of implementing screening in Brazil are diverse and involve different sectors of society and the tripartite management of the SUS, which materialize in difficulties in accessing health services, such as the provision of screening tests, diagnostic confirmation and the time to start treatment for confirmed cases. Furthermore, studies identify barriers related to the lack of tradition in the use of guidelines, conflicts in recommendations that are disseminated to the society, and inappropriate demand from the population for these exams, as well as insufficient human resources and infrastructure, especially in socioeconomically disadvantaged regions (SANTOS, 2019).

Therefore, considering the different challenges for implementing cancer screening in Brazil and the recommended actions to support its implementation, this article aims to discuss the difficulties and strategies to optimize cancer screening in SUS.

Content

Over the years, different publications have presented criteria for initiating cancer screening programs, with some variability in the premises to be followed. However, key elements include: an evidence-based protocol defining target population, exam type, periodicity and management guidelines for positive cases; an information system to identify eligible populations, send invitations, notify results, and track abnormal cases; monitoring and evaluation of indicators accessible to managers, health professionals, and the population; and adequate resources to achieve program goals (Zhang; Carvalho; Mosquera; Wen et al., 2022).

Currently in Brazil, population-based screening exists for breast cancer and cervical cancer, in line with WHO recommendations (WHO, 2020) on target population and periodicity. Recently, guidelines for cervical cancer screening using molecular HPV tests were published, with phased implementation underway (BRASIL, 2025). For colorectal cancer, although recommended by WHO, screening has not yet been implemented in Brazil. However, a task force established by Ordinance GM/MS No. 1,929, of November 23, 2023, is active and the development of recommendations to implement screening for this cancer is among its aims (BRASIL, 2023).

Due to long-standing actions for breast and cervical cancer, there are well-defined public policies for these cancers, with a significant accumulation of technical documents

and dissemination materials for the population, managers and professionals, which guide and recommend how screening should be implemented in states and cities of Brazil. However, analyses of the indicators show that there are still important challenges to be overcome, such as the low screening coverage rates, which are around 35% for cervical cancer and 32% for breast cancer, according to data from the Cancer Information System (SISCAN), in addition to the insufficient supply of procedures for diagnostic confirmation and the prolonged time to start treatment for these cancers (INCA, 2024; INCA, 2025; DIAS, 2024).

Screening programs can be opportunistic or organized. Opportunistic screening, which is currently predominant, occurs when the individual seeks the health service for some other reason and the health professional takes the opportunity to request the exam or at the individuals' own request. This strategy, in addition to being less effective in its impact on the morbidity and mortality attributed to the screened condition, is also more costly for health systems. Organized screening programs, on the other hand, are aimed at the target population of the intervention and have greater control over the process and information, identifying the eligible population and actively inviting them to perform the tests, with follow-up throughout their diagnostic and therapeutic course (INCA, 2021).

It is expected that organized screening promotes the participation of the population in screening in an appropriate manner, according to the recommendation of the guidelines, contributing to reducing access disparities to the entire line of care, minimizing potential harms arising from this practice (Zhang; Carvalho; Mosquera; Wen et al., 2022). According to the WHO, only when implemented through an organized approach can screening programs achieve high coverage of the eligible population and produce the desired impact, with a reduction in incidence and mortality (WHO, 2020).

Therefore, to implement organized screening, SUS health managers, according to their competence and agreements, must structure the care network, define reference services and establish flows for the care line in accordance with the Brazilian Guidelines for screening and other technical documents published by the Ministry of Health. Primary health care services play an essential role in screening, as they are the structuring point of the Health Care Network, preferably the entry point and the organizer of care in the Health System (Brasil, 2017).

Technical parameters for breast and cervical cancer, published by the National Cancer Institute, are examples of planning tools that can support managers in organizing the care pathway, facilitating planning in the Health Care Network. These documents guide the offer of tests for screening and diagnostic confirmation, as well as the referral for treatment, considering the epidemiological differences across regions (parameters). The parameters allow estimating how many procedures are necessary, based on the referral flows, so that state and city managers can adequately size their care network, according to their population (INCA, 2019; INCA, 2022).

Other actions that support the optimization of screening are the training and permanent education of local managers and health professionals, through the provision of protocols, manuals, technical books, and onsite and online courses, which disseminate recommendations and scientific evidence to different regions of Brazil. This is an essential action to ensure adherence to the guidelines and quality of the care provided in SUS (WHO, 2020; INCA, 2021).

Communication with the population is crucial in this process. It must be articulated in all dimensions, including clinical communication, which involves the training of health professionals for the development of communication skills and abilities, and communication about the program, which involves the elaboration and dissemination of informative materials, based on various criteria that enable the informed decision-making process (*shared decision-making*) (ARAÚJO, 2004).

Especially in the scenario of organized screening, where there is a formal invitation for the participation of a population that is, in principle, healthy, this component of screening as a choice reflects the need to inform clearly and accessibly about the benefits (early identification of cancer, reduction of incidence and mortality, improvement of quality of life) and possible limits/risks involved, in order to ensure transparency and build a lasting relationship of trust with the implemented strategy (IARC; IRELAND, 2023).

Health information systems are essential for screening. According to the criteria established for a screening program, their objective is to collect, store and process data that generates information for the understanding and decision-making of managers about the functioning of the program and its impact on the health of the population (WHO, 2010). In Brazil, historically fragmented systems have created redundancies and

inefficiencies, often associated with the unnecessary repetition of tasks by SUS professionals.

The surveillance and monitoring of indicators at the national or local level must be able to determine the baseline, monitor and evaluate the impact of the implemented interventions and activities (WHO, 2020). These information systems need to cover all levels of care, requiring the registration and monitoring of data about the population, individually, at the different points of attention of the care pathway. Therefore, it is imperative to advance in the qualification of information systems, considering the importance of digital health to achieve the objectives of cancer screening.

In Brazil, the consolidation of screening strategies depends on the organization of the health care network, which must observe the minimum conditions to ensure adequate coverage of the target population, the quality of the exams, guarantee diagnostic confirmation and timely treatment, and allow for the follow-up of altered cases. All these actions must be evaluated and monitored regularly through the program's effectiveness indicators.

Conclusion

Given the current scenario of cancer screening in Brazil, it can be referred to as a complex strategy, which should not be limited only to the provision of exams, but requires an articulated set of actions aimed at the integrality of care. Overcoming the implementation challenges in SUS implies not only expanding the offer of exams, but also ensuring the quality, equity and effectiveness of screening, meeting the criteria established for the organization of this practice, with a sensitive look at regional inequalities, but, mainly with powerful actions to face these difficulties, also guaranteeing access to diagnostic confirmation and timely treatment.

The strengthening of the healthcare network, combined with the rational use of available resources, the implementation of continuous professional training actions, the systematic evaluation and monitoring of quality, process, and care indicators, as well as the dissemination of clear and evidence-based information, constitutes an essential path for early detection to be consolidated as an effective strategy in reducing the burden of cancer in Brazil.

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